Dean and Pocono Roads Sanitary Sewer Extension

Contract Documents and Technical Specifications

Contract No. 2026-01

Prepared for:
Town of Brookfield, CT Water Pollution Control Authority

Issued date
April 2026



Digitally signed by Kristie G Wagner
Date: 2026.04.29 21:59:41-04'00'

CDM Smith

© 2026 CDM Smith
All Rights Reserved

TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING DOCUMENTS GROUP

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

001116 Invitation to Bid
002113 Instructions to Bidders
004113 Bid Form
004313 Bid Bond
005214 Agreement
006113 Performance Bond
006115 Payment Bond
007200 Standard General Conditions of the Construction Contract
007300 Supplementary Conditions
State Required Construction Contract Provisions under Department of Energy and Environmental Protection's Clean Water Fund
22a-482-4(g) Required Provisions for Construction Contracts
22a-482-4(h) Procurement Requirements - General
22a-482-4(i) Construction Contract Procurement Requirements
22a-482-4(k) Negotiation of Contract Amendments (Change Orders)
22a-482-4(l) Subcontracts under Construction Contracts
22a-482-4(m) Progress Payments to Contractors
22a-482-4(n) Retention from Progress Payments
22a-482-4(o) Protests
Additional Required Contract Provisions
Contractor's Exempt Purchase Certificate
DAS Update (Bid) Statement
Executive Order No. Three
Executive Order No. Seventeen
Connecticut Clean Water Fund Project Sign
Clean Water Fund Memorandum (2021-001) Policy for Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment on Clean Water Fund Projects
Clean Water Fund Memorandum (2010-0816) Davis Bacon Requirements for Construction Contracts
Requirements Under the Water Resources Reform and Development Act of 2014 (WRRDA) for Sub recipients that are Government Entities
Wage Determination Schedules, Connecticut Department of Labor Wage Rates, and Davis-Bacon (U.S. Department of Labor) Wage Rates
Payroll Certification Forms - Connecticut Department of Energy and Environmental Protection Payroll Certification and U.S. Department of Labor
Section 31-53 Construction Safety and Health and Wage Information
Interim Guidance for Minority Business Enterprise and Women's Business Enterprise Requirement of 40 CFR §33.240

EPA Guidance for Utilization of S/M/WBE in Procurement Under Assistance Agreements
State of Connecticut Department of Energy and Environmental Protection Disadvantaged Business Enterprise (DBE) Subcontract Participation on Clean Water Fund Construction Projects, Clean Water Fund Memorandum (2019-003)
Minority Business Enterprise / Women's Business Enterprise Subcontractor Verification Form
EPA Form 6100-4 (DBE Subcontractor Utilization Form)
American Iron and Steel Requirements
Connecticut Department of Revenue Services CERT-124: Purchases of Tangible Personal Property Incorporated into or Consumed in Water Pollution Control Facilities

SPECIFICATIONS GROUP

DIVISION 01 - GENERAL REQUIREMENTS

011000	Summary
012001	Price and Payment
012600	Contract Modification Procedures
013100	Project Management and Coordination
013200	Construction Progress Documentation
013233	Photographic Documentation
013300	Submittal Procedures
013529	Safety, Health, and Emergency Response Procedures
014000	Quality Requirements
014200	References
015000	Temporary Facilities and Controls
015526	Traffic Control
016000	Product Requirements
017300	Execution
017419	Construction Waste Management and Disposal
017700	Closeout Procedures
017823	Operation and Maintenance Data
017839	Project Record Documents
017900	Demonstration and Training

DIVISION 02 - EXISTING CONDITIONS

026110	Excavation and Management of Soils
028100	Transportation and Disposal of Excavated Material

DIVISION 03 - CONCRETE

033000	Cast-In-place Concrete
033053.13	Cast-In-Place Concrete for Underground Ducts and Raceways for Electrical
036000	Grouting

DIVISION 05 - METALS
050519 Post-Installed Anchors

DIVISION 26 - ELECTRICAL
260510 Limited Electrical for Small Projects
263213.13 Diesel-Engine-Driven Generator Sets

DIVISION 31 – EARTHWORK
310515 Soils and Aggregates for Earthwork
310519.13 Geotextiles for Earthwork
310900 Geotechnical Instrumentation and Monitoring
311000 Site Clearing
312000 Earthwork
312316 Rock Removal
312319 Dewatering
312333 Trenching and Backfilling
312500 Erosion and Sedimentation Controls
315000 Excavation Support and Protection

DIVISION 32 - EXTERIOR IMPROVEMENTS
321123 Aggregate Base Courses
321216 Asphalt Paving
329200 Turf and Grasses

DIVISION 33 - UTILITIES
330513 Manholes And Structures
330526 Utility Identification
333113 Public Sanitary Utility Sewerage Piping
333126 Sanitary Pressure Sewer Piping
333216.13 Packaged Sewage Grinder Pumping Units
333219 Public Utility Wastewater Pumping Stations
333400 Sanitary Utility Sewerage Force Mains

APPENDICES

Appendix A Geotechnical Information
Appendix B Soil Environmental Data
Appendix C Natural Diversity Database (NDDB) Information and Requirements

END OF TABLE OF CONTENTS 000110

©2026 CDM Smith
All Rights Reserved

SECTION 001116 - INVITATION TO BID

TOWN OF BROOKFIELD, CT WATER POLLUTION CONTROL AUTHORITY
DEAN AND POCONO ROADS SANITARY SEWER EXTENSION
CONTRACT NO. **2026-01**

INVITATION TO BID

Sealed Bids for construction of the Dean and Pocono Roads Sewer Extension will be received by the Brookfield Water Pollution Control Authority (WPCA) at the WPCA office, 53A Commerce Road Unit 1, Brookfield CT 06804 until **10:00 AM on Wednesday June 3, 2026** and at that time and place bids will be publicly opened and read aloud.

Contract Documents may be examined and/or obtained from the CT Source State Contracting Portal at CT.gov or from the WPCA website at www.brookfieldwpca.org. The work includes construction of a sanitary sewer extension by one of two alternatives: gravity sewers with pump station, or a low-pressure system with grinder pumps for each property.

A pre-bid conference will be held at **10:00 AM on Tuesday May 12, 2026** in the WPCA office, 53A Commerce Road Unit 1, Brookfield CT 06804, with a site visit to follow.

Each Bid shall be accompanied by a Bid Security in the amount of five percent of the Bid.
Bidders may not withdraw their Bids for a period of 180 days after the actual date of the opening of the Bids.

The Successful Bidder must furnish a 100 percent Performance Bond and a 100 percent Payment Bond with a surety company acceptable to the Owner.

Complete instructions for filing Bids are included in the Instructions to Bidders.

Any contract or contracts awarded under this invitation for bids are expected to be funded in part by the State of Connecticut, Department of Environmental Protection. Neither the State of Connecticut nor any of its departments, agencies or employees is or will be a party to this invitation for bids or any resulting contract. The procurement will be subject to the requirements contained in Section 22a-482(h), (j) and (o) of the Regulations of Connecticut State Agencies.

Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) policies of the State of Connecticut are applicable to this Contract. The requirement for MBE/WBE Subcontractor participation, expressed as a percentage of the total contract amount, shall be a minimum of 8.0 percent with the following makeup, MBE 3.0 percent and WBE 5.0 percent. Failure to meet or exceed the required percentages shall render a bid non-responsive and cause the rejection of the Bid. Clean Water Fund Memorandum dated June 19, 2019 must be completed and submitted with the Bid, or that Bid will be deemed nonresponsive.

Bidders must be prequalified through the Connecticut Department of Administrative Services (DAS) in the classification of "Sewer and Water Lines" and must submit with their bid a copy of their Prequalification Certificate and a copy of their current Update (Bid) Statement.

©2026 CDM Smith
All Rights Reserved

Wage rates for this Project are subject to the minimum wage rates as per State of Connecticut Labor Department “Prevailing Wage Rates” and Federal Davis-Bacon Act.

Bidders and subcontractors are required to ensure equal opportunity employment as noted in the Governor’s Executive Orders 3 and 17.

The Owner reserves the right to waive any informality in or to reject any or all Bids if deemed to be in its best interest.

MR. NELSON MALWITZ
CHAIRMAN
BROOKFIELD WATER POLLUTION CONTROL AUTHORITY

END OF DOCUMENT 001116

©2026 CDM Smith
All Rights Reserved

SECTION 002113 - INSTRUCTIONS TO BIDDERS

TOWN OF BROOKFIELD, CT WATER POLLUTION CONTROL AUTHORITY
DEAN AND POCONO ROADS SANITARY SEWER EXTENSION
CONTRACT NO. 2026-01

ARTICLE 1. QUALIFICATIONS OF BIDDERS

1.1 Bidders may be investigated by OWNER to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five days of OWNER's or ENGINEER's request, written evidence of such information and data necessary to make this determination.

1.2 The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

1.3 In evaluating Bids, OWNER will consider the qualifications of only those Bidders whose Bids are in compliance with the prescribed requirements.

1.4 OWNER reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.

1.5 Bidders must be prequalified through the Connecticut Department of Administrative Services (DAS) in the classification of “Sewer and Water Lines” and must submit with their bid a copy of their Prequalification Certificate and a copy of their Current Update (Bid) Statement. Substantial subcontractors (>$1,000,000) must also be prequalified through the Connecticut DAS.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

2.1 Complete sets of Contract Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

2.2 OWNER and ENGINEER in making copies of Contract Documents available do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

ARTICLE 3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

3.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work, (c) become familiar with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the requirements of the Contract Documents.

3.2 Boring locations are indicated in Plan and Profile views on the Drawings. The boring logs are included in the Appendix to the Project Manual. Soil samples may be examined at the Engineer's office during regular business hours.

3.3 Surveys and investigative reports of subsurface or latent physical conditions at the site which have been relied upon by ENGINEER in preparing the Contract Documents are identified in Article 5 of the Supplementary Conditions. Copies of these reports are included in the Appendix to the Project Manual. These reports are not guaranteed or warranted as to accuracy or completeness, nor are they part of the Contract Documents.

3.4 Before submitting a Bid, Bidders may, at their own expense, make such additional investigations and tests as they may deem necessary to determine their Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

3.5 On request, OWNER will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for the submission of a Bid.

3.6 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Supplementary Conditions, General Requirements or on the Drawings.

3.7 The submission of a Bid will constitute an incontrovertible representation that the Bidder has complied with every requirement of this Article 3 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Contract Documents shall be received in writing by CDM Smith, 101 East River Drive, Suite 1A East Hartford, CT 06108 Attn: Carrington Henry, HenryCM@cdmsmith.com, at least twelve days before the date set herein for the opening of bids.

4.2 Written clarifications or interpretations will be issued by Addenda not later than five days before the bid opening date. Only questions answered by formal written Addenda will be binding. Oral and other clarifications or interpretations will be without legal effect. Addenda will be emailed to all parties recorded as having received the Contract Documents.

4.3 Bidders are responsible for determining that they have received all Addenda issued.

ARTICLE 5. PRE-BID CONFERENCE

5.1 A pre-bid conference will be held at the date and time indicated in the Invitation to Bid at the Brookfield Water Pollution Control Authority (WPCA) office, 53A Commerce Road Unit 1, Brookfield CT 06804 to discuss the requirements of the Contract Documents.

ARTICLE 6. BID SECURITY

6.1 Each Bid must be accompanied by cash, bid bond, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to OWNER. The Bid Security shall be in the amount stated in the Invitation to Bid. Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid. All Bid Securities except those of the three lowest responsible and eligible Bidders will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after opening of the Bids. All Bid Securities will be returned on the execution of the Agreement or if no award is made, within 180 days after the actual date of opening of the Bids, unless forfeited under the conditions herein stipulated.

6.2 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, OWNER may determine that the Bidder has abandoned the Contract, and thereupon the Bid Forms and acceptance shall be null and void and the Bid Security accompanying the Bid Form shall be forfeited to OWNER as liquidated damages for such failure or neglect and to indemnify said OWNER for any loss which may be sustained by failure of the Bidder to execute the Agreement and furnish the bonds as aforesaid, provided that the amount forfeited to OWNER shall not exceed the difference between the Bid Price of said Bidder and that of the next lowest responsible and eligible bidder and provided further that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to the Bidder. After execution of the Agreement and acceptance of the bonds by OWNER, the Bid Security accompanying the Bid Form of the Successful Bidder will be returned.

ARTICLE 7. PERFORMANCE, PAYMENT AND OTHER BONDS

7.1 Performance, Payment and other Bonds shall be provided in accordance with Article 6 of the Conditions of the Contract.

7.2 All Bonds required as Contract Security shall be furnished with the executed Agreement.

ARTICLE 8. BID FORM

8.1 Each Bid shall be submitted on the Bid Form on the perforated pages appended to the Project Manual. The Bid Form shall be removed and submitted separately. All blank spaces for Bid prices must be filled in with the unit price for the item or the lump sum for which the Bid is made.

8.2 Bid Forms shall be completed in ink or by typewriter. The Bid price of each item on the form shall be stated in words, and figures. If unit prices are required on the Bid Form, discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

8.3 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

8.4 Bids by Limited Liability Companies shall be executed in the Limited Liability name by the Manager (or other Limited Liability Company officer/representative accompanied by evidence of authority to sign.) The Limited Liability Company address and state where the Limited Liability Company was formed shall be shown below the signature.

8.5 Bids by partnerships shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature.

8.6 All names shall be typed or printed below the signature.

8.7 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

8.8 The address to which communications regarding the Bid are to be directed shall be shown.

8.9 One copy of each Bid shall be submitted in a sealed opaque envelope bearing on the outside the Bidder's name, address, and the Project Title for which the Bid is submitted. (If forwarded by mail, Bid and sealed envelope marked as described above shall be enclosed in another envelope with the notation "BID ENCLOSED" on the face and addressed as indicated in the Invitation to Bid.)

ARTICLE 9. RECEIPT OF BIDS

9.1 Sealed Bids for the work of this Contract will be received at the time and place indicated in the Invitation to Bid.

9.2 OWNER may consider informal any Bid not prepared and submitted in accordance with the provisions hereof.

9.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that their bid is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by mail and/or delivery services, of any nature.

ARTICLE 10. MODIFICATION AND WITHDRAWAL OF BIDS

10.1 Bids may be modified only by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

10.2 Bids may be withdrawn prior to the scheduled time (or authorized postponement thereof) for the opening of Bids.

10.3 Any Bid received after the time and date specified shall not be considered. No Bid may be withdrawn for a period of 180 days, after the actual date of the opening of the Bids.

ARTICLE 11. AWARD OF CONTRACT

11.1 The Contract will be awarded to the lowest responsible and eligible Bidder (Successful Bidder), for **either PART 1 (Gravity Sanitary Sewer Extension and Pump Station) or PART II (Low-Pressure Sanitary Sewer Extension). After receipt of bids, the OWNER will determine whether PART I or PART II will be awarded, based on life cycle cost and affordability.** Such a Bidder shall possess the skill, ability, and integrity necessary for the faithful performance of the work. The term "lowest responsible and eligible Bidder" as used herein shall mean the Bidder whose Bid is the lowest of those Bidders possessing the skill, ability and integrity necessary to the faithful performance of the Work.

11.2 OWNER reserves the right to reject any and all Bids, to waive any and all informalities if it is in Owner's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Bids.

11.3 A Bid which includes for any item a Bid Price that is abnormally low or high may be rejected as unbalanced.

11.4 OWNER also reserves the right to reject the Bid of any Bidder that OWNER considers to be unqualified relative to Article 1 above.

11.5 If the Contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within 180 days, after the actual date of the opening of the Bids. All bids shall remain open for 180 days, after the actual date of the opening of the Bids but OWNER may, at OWNER's sole discretion, release any Bid and return the Bid Security prior to that date.

ARTICLE 12. EXECUTION OF AGREEMENT

12.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents. Within five days, excluding Saturdays, Sundays and legal holidays, after the date of receipt of such notification CONTRACTOR shall execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER.

ARTICLE 13. SAFETY AND HEALTH REGULATIONS

13.1 This project is subject to the Safety and Health Regulations (CFR 29, Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24,1974 and CFR 29, Part 1910, General Industry Safety and Health Regulations Identified as Applicable to Construction.

13.2 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

13.3 The Successful Bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act, on the Site to inspect the Work and to supervise the conformance of the Work with the regulations of the Act.

ARTICLE 14.FEDERAL WAGE RATES

14.1 Davis Bacon (DB) Prevailing Wage Requirements

14.1.1 The following clauses shall apply to any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1 (b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(l)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(l)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The Owner(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known) or their representatives, and the Owner(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Owner(s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Owner(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(l)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The Owner(s) shall, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, their correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section l(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(l)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the Owner, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the Owner shall provide written confirmation in a form

satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(l) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Owner(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the Owner(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or its agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in their first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(l) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1,3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Owner(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10)Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(l).

(11)No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(l).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

15.1.2 Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (a)(l), (2), (3), and (4) of this section in full shall apply to any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall apply in addition to the clauses required by Item 1, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less

than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(l) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(l) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(l) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Owner, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(l) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(l) through (4) of this section.

(b) In addition to the clauses contained in Item 1, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Owner shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Owner shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Owner and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

14.2 It is the responsibility of the Contractor before the bid opening to request, if necessary, any additional information on Federal Wage Rates for those tradespeople who are not covered by the applicable Federal Wage Determination, but who may be employed for the proposed work under this Contract.

14.3 All construction associated with this contract will be governed by Heavy and Highway Rates.

ARTICLE 15. STATE WAGE RATES

15.1 State of Connecticut Labor Department "Prevailing Wage Rates" apply to this project. It is the responsibility of the CONTRACTOR, before bid opening, to request if necessary, any additional information on Minimum Wage Rates for those tradespeople who are not covered by the applicable Wage Rates but who may be employed for the proposed work under this contract.

15.2 It is the responsibility of the CONTRACTOR before the bid opening to inform himself as to the local labor conditions such as the length of workday and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustments in rates or other requirements.

15.3 Heavy construction rates will apply for this project.

15.4 Where federal wage rates differ from State Wage Rates, the greater rate shall apply.

ARTICLE 16. ACCESS TO SITE

16.1 Representatives of the State and any local agencies having a direct interest in the Work shall have access to the Work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection.

ARTICLE 17. AMERICAN IRON AND STEEL REQUIREMENT

17.1 This project is subject to the American Iron and Steel Requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014.

ARTICLE 18. PROJECT SIGN

18.1 The Contractor shall construct a sign in accordance with the Standard Detail included in Part II of the Supplementary Conditions. The sign shall be erected in a location selected by the Engineer. The Contractor shall maintain the sign throughout the duration of the Contract and remove and dispose of the sign when directed by Engineer.

ARTICLE 19. STATE OF CONNECTICUT MINORITY AND WOMEN BUSINESS ENTERPRISES (MBEs AND WBEs)

19.1 Bidders on this work are required to comply with the State of Connecticut regarding the use of three (3) percent Minority Business Enterprise (MBE) and five (5) percent Woman Business Enterprises (WBE). The requirements for Bidders and Contractors are explained in the attached "Recipients Guidance for Utilization of Minority Business Enterprise in procurements under EPA Assistance Agreements."

ARTICLE 20. SALES TAX

20.1 The goods and services to be provided under any contract or purchase order awarded pursuant to this Invitation to Bid is exempt from the sales taxes of the State of Connecticut.

©2026 CDM Smith
All Rights Reserved

ARTICLE 21. GUARANTEE

21.1 The CONTRACTOR shall guarantee all materials furnished and WORK performed for a period of one year from the date of SUBSTANTIAL COMPLETION (as defined in the General Conditions) except where a longer period is required in the Project Manual. The CONTRACTOR warrants and guarantees for a period of one year, or for the longer guarantee period, from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason or such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, to the satisfaction of the OWNER within ten days from the date of receipt of such notice, or having commenced fails to prosecute such WORK with diligence, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

MR. NELSON MALWITZ
CHAIRMAN
BROOKFIELD WATER POLLUTION CONTROL AUTHORITY

END OF DOCUMENT 002114

©2026 CDM Smith
All Rights Reserved

BID FORM
TO

TOWN OF BROOKFIELD, CT WATER POLLUTION CONTROL AUTHORITY
DEAN AND POCONO ROADS SANITARY SEWER EXTENSION
CONTRACT NO. 2026-01

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared by CDM Smith, 101 East River Drive, Suite 1A, East Hartford, Connecticut 06108 and dated April, 2026 have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within 180 days, after the actual date of the opening of the Bids, the undersigned will within five days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER. The premiums for all Bonds required shall be paid by CONTRACTOR and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of OWNER if the Bidder fails to execute the Agreement as stated above.

The undersigned hereby agrees that the Contract Time shall commence twenty days following the Effective Date of the Agreement and to fully complete the Work within 450 Calendar Days and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, $1,500 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

Bidders may choose to propose on PART 1 – GRAVITY SANITARY SEWER EXTENSION AND PUMP STATION, OR PART 2 – LOW-PRESSURE SANITARY SEWER EXTENSION, OR BOTH PART 1 and PART 2. Refer to Instructions to Bidders, Section 002113, for information on the basis for Award of Contract.

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
PART 1 – GRAVITY SANITARY SEWER EXTENSION AND PUMP STATION				
1.1a	5,700 lin. ft.	Furnish and install 8-in PVC sewer pipe including excavation and backfill, at depths up to 12-ft deep _____ per linear foot	$_____	$_____
1.1b	2,400 lin. ft.	Furnish and install 8-in PVC sewer pipe including excavation and backfill, at depths of 12-ft to 16-ft deep _____ per linear foot	$_____	$_____
1.1c	700 lin. ft.	Furnish and install 8-in PVC sewer pipe including excavation and backfill, at depths greater than 16-ft _____ per linear foot	$_____	$_____
1.1d	2,400 lin. ft.	Furnish and install 6-in PVC service laterals including excavation and backfill _____ per linear foot	$_____	$_____
1.1e	95 EA	Furnish and install lateral wye & cleanout _____ per each	$_____	$_____
1.1f	140 vert. ft.	Furnish and install 6-in DI chimneys including fittings _____ per vertical foot	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
1.1g	3,100 lin. ft.	Furnish and install 4-in PVC force main pipe including excavation and backfill _____ per linear foot	$_____	$_____
1.2a	380 vert. ft.	Furnish and install 4-ft diameter precast concrete sewer manholes _____ per vertical foot	$_____	$_____
1.2b	55 vert. ft.	Furnish and install 5-ft diameter precast concrete internal drop manhole _____ per vertical foot	$_____	$_____
1.2c	20 vert. ft.	Furnish and install PVC internal drop connections including fittings, all types and sizes _____ per vertical foot	$_____	$_____
1.2d	2 EA	Furnish and install 4-ft diameter Combination Air Valve Manhole _____ per each	$_____	$_____
1.3a	5 EA	Furnish Packaged Simplex Sewage Grinder Pumping Units _____ per each	$_____	$_____

(Item 3b not used in PART 1)

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
1.4a	L.S.	Furnish and Install Pumping Station with on-site generator including site work _____ lump sum	$_____	$_____
1.4b	Allowance	Reimbursable Expenses - for installation of electric service by utility company Twenty Thousand Dollars Allowance	$ 20,000.00	$ 20,000.00
1.5	50 cu. yds.	Test Pits _____ per cubic yard	$_____	$_____
1.6a	50 lin. Ft.	Miscellaneous drain pipe replacements, 12” to 24” diameter _____ per linear foot	$_____	$_____
1.6b	50 lin. Ft.	Miscellaneous drain pipe replacements, 30” to 40” diameter _____ per linear foot	$_____	$_____
1.7	25 cu. yds.	Rock and Boulder Excavation _____ per cubic yard	$_____	$_____
1.8	50 cu. yds.	Earth excavation and refill below normal grade _____ per cubic yard	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
1.9a	7,000 ton	Handling, transportation and disposal of soils at a soil reclamation/reuse/ recycling facility _____ per ton	$_____	$_____
1.9b	2,000 ton	Handling, transportation and disposal of regulated soils at an in-state or out-of-state landfill _____ per ton	$_____	$_____
1.9c	2,000 ton	Handling, transportation and disposal of regulated soils at a non-hazardous RCRA Subtitle D landfill _____ per ton	$_____	$_____
1.9d	100 ton	Handling, transportation and disposal of hazardous soils at a hazardous RCRA Subtitle C landfill _____ per ton	$_____	$_____
1.10a	100 cu. yds.	Common Fill _____ per cubic yard	$_____	$_____
1.10b	1,000 cu. yds.	Select Common Fill _____ per cubic yard	$_____	$_____
1.10c	200 cu. yds.	Screened gravel for utility crossings and miscellaneous purposes _____ per cubic yard	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
1.10d	2,200 cu. yds.	Processed Aggregate Base for pavement base _____ per cubic yard	$_____	$_____
1.11a	10,000 sq. yds.	Furnish, install and maintain trench width Pavement, 4-in thick _____ per square yard	$_____	$_____
1.12	L.S.	Traffic Management _____ Lump sum	$_____	$_____
1.13	L.S.	Miscellaneous Work and Cleanup _____ Lump sum	$_____	$_____
1.14	Allowance	Reimbursable Expenses – Traffic Control Officers One Hundred Thousand Dollars Allowance	$ 100,000.00	$ 100,000.00
1.15	Allowance	Reimbursable Expenses – Groundwater Testing and Treatment Ten Thousand Dollars Allowance	$ 10,000.00	$ 10,000.00
1.16	Allowance	Reimbursable Expenses – Pump Station Programming and Integration Ten Thousand Dollars Allowance	$ 10,000.00	$ 10,000.00
		SUBTOTAL PART 1 BASE BID PRICE		$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
1.17	L.S.	Mobilization - not to exceed 5% of Subtotal Part 1 Base Bid Price above _____ Lump sum		$_____

TOTAL PART 1 BID PRICE
GRAVITY SANITARY SEWER EXTENSION AND PUMP STATION

_____ ***$***_____
(total in words) *(total in figures)*

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
PART 2 – LOW-PRESSURE SANITARY SEWER EXTENSION				
2.1a	1,600 lin. ft.	Furnish and install 2-in HDPE low-pressure sewer pipe including excavation and backfill _____ per linear foot	$_____	$_____
2.1b	7,200 lin. ft.	Furnish and install 3-in HDPE low-pressure sewer pipe including excavation and backfill _____ per linear foot	$_____	$_____
2.1c	400 lin. ft.	Furnish and install 4-in HDPE low-pressure sewer pipe including excavation and backfill _____ per linear foot	$_____	$_____
2.1d	2,400 lin. ft.	Furnish and install 1.25-in HDPE service laterals including excavation and backfill _____ per linear foot	$_____	$_____
2.1e	95 EA	Furnish and install low-pressure lateral connection including lateral kit _____ per each	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
2.2a	6 EA	Furnish and install 4-ft diameter Flushing Manholes Including Pipe, Fittings, and Valves _____ per each	$_____	$_____
2.2b	4 EA	Furnish and install 4-ft diameter Air and Vacuum Valve Manholes Including Pipe, Fittings, and Valves _____ per each	$_____	$_____
2.3a	90 EA	Furnish Packaged Simplex Sewage Grinder Pumping Units _____ per each	$_____	$_____
2.3b	3 EA	Furnish Packaged Duplex Sewage Grinder Pumping Units _____ per each	$_____	$_____
(Items 4 Not Used in PART 2)				
2.5	50 cu. yds.	Test Pits _____ per cubic yard	$_____	$_____
2.6a	50 lin. Ft.	Miscellaneous drain pipe replacements, 12” to 24” diameter _____ per linear foot	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
2.6b	50 lin. Ft.	Miscellaneous drain pipe replacements, 30” to 40” diameter _____ per linear foot	$_____	$_____
2.7	10 cu. yds.	Rock and Boulder Excavation _____ per cubic yard	$_____	$_____
2.8	50 cu. yds.	Earth excavation and refill below normal grade _____ per cubic yard	$_____	$_____
2.9a	4,500 ton	Handling, transportation and disposal of soils at a soil reclamation/reuse/ recycling facility _____ per ton	$_____	$_____
2.9b	1,500 ton	Handling, transportation and disposal of regulated soils at an in-state or out-of-state landfill _____ per ton	$_____	$_____
2.9c	1,500 ton	Handling, transportation and disposal of regulated soils at a non-hazardous RCRA Subtitle D landfill _____ per ton	$_____	$_____
2.9d	50 ton	Handling, transportation and disposal of hazardous soils at a hazardous RCRA Subtitle C landfill _____ per ton	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
2.10a	50 cu. yds.	Common Fill _____ per cubic yard	$_____	$_____
2.10b	500 cu. yds.	Select Common Fill _____ per cubic yard	$_____	$_____
2.10c	200 cu. yds.	Screened gravel for utility crossings and miscellaneous purposes _____ per cubic yard	$_____	$_____
2.10d	1,600 cu. yds.	Processed Aggregate Base for pavement base _____ per cubic yard	$_____	$_____
2.11a	6,900 sq. yds.	Furnish, install and maintain trench width Pavement, 4-in thick _____ per square yard	$_____	$_____
2.12	L.S.	Traffic Management _____ Lump sum	$_____	$_____
2.13	L.S.	Miscellaneous Work and Cleanup _____ Lump sum	$_____	$_____

Item No.	Estimated Quantity	Brief Description of Items With Unit Price Bid in Words	Unit Bid Price in Figures	Extended Amount in Figures
2.14	Allowance	Reimbursable Expenses – Traffic Control Officers		
		One Hundred Thousand Dollars Allowance	$ 100,000.00	$ 100,000.00
2.15	Allowance	Reimbursable Expenses – Groundwater Testing and Treatment		
		Ten Thousand Dollars Allowance	$ 10,000.00	$ 10,000.00

(Item 16 Not Used in PART 2)

SUBTOTAL PART 2 BASE BID PRICE $_____

2.17	L.S.	Mobilization - not to exceed 5% of Subtotal Part 2 Base Bid Price above _____ Lump sum		$_____

TOTAL PART 2 BID PRICE
LOW-PRESSURE SANITARY SEWER EXTENSION

_____ ***$***_____
(total in words) *(total in figures)*

ADDITIVE ALTERNATE – FULL-WIDTH MILL AND OVERLAY PAVING

(May be added to either PART 1 or PART 2 at discretion of the OWNER)

ALT.11b	26,000 sq. yds.	Furnish and install full-width final pavement MILL AND OVERLAY _____ per square yard	$_____	$_____

The undersigned agrees that extra work, if any, will be performed and will be paid for in accordance with Article 11 of the Conditions of the Contract.

Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words will govern. Discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices.

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company [LLC], see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

The undersigned hereby certifies that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____ _____

Social Security Number or Federal Identification Number

Signature of Individual or Corporate Name

By: _____
Corporate Officer
(if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date _____

If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

©2026 CDM Smith
All Rights Reserved

END OF SECTION 004113

©2026 CDM Smith
All Rights Reserved

SECTION 004313 – BID BOND

TOWN OF BROOKFIELD, CT WATER POLLUTION CONTROL AUTHORITY
DEAN AND POCONO ROADS SANITARY SEWER EXTENSION
CONTRACT NO. 2026-01

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____

_____ as Principal, and

_____ as Surety, are hereby held and firmly

bound unto as OWNER in the penal sum of _____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves,

successors and assigns.

Signed, this day of_____, 2026

The Condition of the above obligation is such that whereas the Principal has submitted to certain Bid,

attached hereto and hereby made a part hereof to enter into a contract in writing, for Dean and Pocono

Roads Sanitary Sewer Extension, Contract No. 2026-01

NOW THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver to OWNER the appropriate documents including the Contract Form and Contract Bond Form, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such Bid; and said Surety does hereby waive notice of any such extension.

©2026 CDM Smith
All Rights Reserved

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (Print Full Name)	Surety (Print Full Name)
_____	_____
BY:_____(L.S.)	BY:_____(L.S.)
TITLE:_____	TITLE:_____

IMPORTANT – Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

END OF SECTION 004313

©2026 CDM Smith
All Rights Reserved

SECTION 005214 – AGREEMENT

TOWN OF BROOKFIELD, CT WATER POLLUTION CONTROL AUTHORITY
DEAN AND POCONO ROADS SANITARY SEWER EXTENSION
CONTRACT NO. **2026-01**

AGREEMENT

THIS AGREEMENT made as of the _____ day of _____ in the year 20__ by and between The Town of Brookfield, Connecticut Water Pollution Control Authority hereinafter called OWNER and _____ with legal address and principal place of business at _____ _____ hereinafter called CONTRACTOR. OWNER and CONTRACTOR in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

1.1 CONTRACTOR shall perform the Work as specified or indicated in the Contract Documents. The Work is as described in SECTION 011000.

ARTICLE 2. ENGINEER

2.1 The Project has been designed by CDM Smith, 101 East River Drive, Suite 1A, East Hartford CT 06108 who will act as ENGINEER in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME

3.1 The Contract Time shall be 450 Calendar Days commencing twenty days following the Effective Date of this Agreement.

3.2 CONTRACTOR agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract Time stated above. It is expressly understood and agreed, by and between CONTRACTOR and OWNER that the Contract Time is reasonable for the completion of the Work, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

ARTICLE 4. CONTRACT PRICE.

4.1 OWNER will pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in current funds at the Total Bid Price agreed upon in the CONTRACTOR's Bid Form attached to this Agreement.

ARTICLE 5. APPLICATIONS FOR PAYMENT

5.1 CONTRACTOR shall submit Applications for Payment in accordance with Article 15 of the Conditions of the Contract. Applications for Payment will be processed by ENGINEER as provided in the Conditions of the Contract.

ARTICLE 6. PROGRESS AND FINAL PAYMENTS

6.1 OWNER will make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 15.01. of the Conditions of the Contract.

6.2 Prior to Substantial Completion, progress payments will be in an amount equal to 95 percent of the value of the Work completed and 75 percent of the value of materials and equipment not incorporated in the Work but delivered and suitably stored, less, in each case, the aggregate of payments previously made.

6.3 Upon Substantial Completion, OWNER will pay an amount sufficient to increase total payments to CONTRACTOR to 99 percent of the Contract Price, less retainages as ENGINEER shall determine, in accordance with Paragraph 15.01. of the Conditions of the Contract.

6.4 Upon final inspection and acceptance of the Work, in accordance with Paragraph 15.06. of the Conditions of the Contract, OWNER will pay the remainder of the Contract Price as recommended by ENGINEER.

ARTICLE 7. LIQUIDATED DAMAGES

7.1 OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the Contract Time specified in Article 3 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER $1,500 per day for each calendar day of delay until the Work is complete.

7.2 Provided, that CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is for reasons included in Paragraph 4.05. of the General Conditions.

7.3 Provided, further, that CONTRACTOR shall furnish OWNER the required notification of such delays in accordance with Paragraph 11.06. of the General Conditions.

ARTICLE 8. ASSURANCE

8.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

8.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which

were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in Article 5 of the Supplementary Conditions.

8.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in the above paragraph as CONTRACTOR deems necessary for the performance of the Work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required for such purposes.

8.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

8.5 CONTRACTOR has given ENGINEER written notice of any conflict, error or discrepancy that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

8.6 CONTRACTOR agrees that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 9. CONTRACT DOCUMENTS

9.1 The Contract Documents which comprise the Contract between OWNER and CONTRACTOR are attached hereto and made a part hereof and consist of the following:

9.1.1 Invitation To Bid.

9.1.2 Instructions To Bidders.

9.1.3 Bid Form.

9.1.4 This Agreement.

9.1.5 Performance Bond, EJCDC Document C-610, 2018 edition, Payment Bond, EJCDC Document C-615, 2018 edition, and other required Bonds.

9.1.6 General Conditions, EJCDC Document No. C-700, 2018 edition.

9.1.7 Supplementary Conditions Parts I and II.

9.1.8 Specifications (as listed in Table of Contents).

9.1.9 Drawings, numbered COVER AND G-1 through I-3, inclusive (Gravity Set) and COVER and G-1 through TM-1, inclusive (Low-Pressure Set) and dated April 2026.

9.1.10 Addenda numbers _____ to _____, inclusive.

9.1.11 Any modification, including Change Orders, duly delivered after execution of Agreement.

©2026 CDM Smith
All Rights Reserved

ARTICLE 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in Article 1 of the Conditions of the Contract shall have the meanings assigned in the Conditions of the Contract.

10.2 Neither OWNER nor CONTRACTOR shall, without the prior written consent of the other, assign or sublet in whole or in part any interest under any of the Contract Documents; and, specifically but without limitation, CONTRACTOR shall not assign any monies due or to become due without the prior written consent of OWNER. In case CONTRACTOR assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to CONTRACTOR shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

10.3 OWNER and CONTRACTOR each binds themselves, their partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.4 The Contract Documents constitute the entire agreement between OWNER and CONTRACTOR and may only be altered, amended or repealed by a Modification.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in sextuple. Four copies each have been delivered to OWNER and one copy each to CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement shall become effective on _____, 202_.

CONTRACTOR	OWNER
_____	_____
BY	BY
_____	_____
(CORPORATE SEAL)	(CORPORATE SEAL)
Attest	Attest
_____	_____
Address for giving notices	Address for giving notices
_____	_____
_____	_____

Note: If CONTRACTOR is a corporation, an affidavit giving the principal the right to sign the Agreement must accompany the executed Agreement.

END OF DOCUMENT 005214

PERFORMANCE BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **[Full formal name of Owner]** Mailing address *(principal place of business)*: **[Address of Owner's principal place of business]**	**Contract** Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount from Contract]** Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

PAYMENT BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **[Full formal name of Owner]** Mailing address *(principal place of business)*: **[Address of Owner's principal place of business]**	**Contract** Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment

furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project an the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

ACEC
AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

NSPE®
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed By

CSI®
Building Knowledge
Improving Project Delivery

NUCA
We Dig America

Copyright© 2018

National Society of Professional Engineers

1420 King Street, Alexandria, VA 22314-2794

(703) 684-2882

www.nspe.org

American Council of Engineering Companies

1015 15th Street N.W., Washington, DC 20005

(202) 347-7474

www.acec.org

American Society of Civil Engineers

1801 Alexander Bell Drive, Reston, VA 20191-4400

(800) 548-2723

www.asce.org

The copyright for this EJCDC document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1—Definitions and Terminology 1
1.01 Defined Terms 1
1.02 Terminology 6
Article 2—Preliminary Matters 7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance 7
2.02 Copies of Documents 7
2.03 Before Starting Construction 7
2.04 Preconstruction Conference; Designation of Authorized Representatives 8
2.05 Acceptance of Schedules 8
2.06 Electronic Transmittals 8
Article 3—Contract Documents: Intent, Requirements, Reuse 9
3.01 Intent 9
3.02 Reference Standards 9
3.03 Reporting and Resolving Discrepancies 10
3.04 Requirements of the Contract Documents 10
3.05 Reuse of Documents 11
Article 4—Commencement and Progress of the Work 11
4.01 Commencement of Contract Times; Notice to Proceed 11
4.02 Starting the Work 11
4.03 Reference Points 11
4.04 Progress Schedule 12
4.05 Delays in Contractor's Progress 12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions 13
5.01 Availability of Lands 13
5.02 Use of Site and Other Areas 14
5.03 Subsurface and Physical Conditions 15
5.04 Differing Subsurface or Physical Conditions 16

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

5.05 Underground Facilities 17
5.06 Hazardous Environmental Conditions at Site 19
Article 6—Bonds and Insurance 21
6.01 Performance, Payment, and Other Bonds 21
6.02 Insurance—General Provisions 22
6.03 Contractor's Insurance 24
6.04 Builder's Risk and Other Property Insurance 25
6.05 Property Losses; Subrogation 25
6.06 Receipt and Application of Property Insurance Proceeds 27
Article 7—Contractor's Responsibilities 27
7.01 Contractor's Means and Methods of Construction 27
7.02 Supervision and Superintendence 27
7.03 Labor; Working Hours 27
7.04 Services, Materials, and Equipment 28
7.05 "Or Equals" 28
7.06 Substitutes 29
7.07 Concerning Subcontractors and Suppliers 31
7.08 Patent Fees and Royalties 32
7.09 Permits 33
7.10 Taxes 33
7.11 Laws and Regulations 33
7.12 Record Documents 33
7.13 Safety and Protection 34
7.14 Hazard Communication Programs 35
7.15 Emergencies 35
7.16 Submittals 35
7.17 Contractor's General Warranty and Guarantee 38
7.18 Indemnification 39
7.19 Delegation of Professional Design Services 39
Article 8—Other Work at the Site 40
8.01 Other Work 40
8.02 Coordination 41
8.03 Legal Relationships 41

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Article 9—Owner's Responsibilities 42
9.01 Communications to Contractor 42
9.02 Replacement of Engineer 42
9.03 Furnish Data 42
9.04 Pay When Due 42
9.05 Lands and Easements; Reports, Tests, and Drawings 43
9.06 Insurance 43
9.07 Change Orders 43
9.08 Inspections, Tests, and Approvals 43
9.09 Limitations on Owner's Responsibilities 43
9.10 Undisclosed Hazardous Environmental Condition 43
9.11 Evidence of Financial Arrangements 43
9.12 Safety Programs 43
Article 10—Engineer's Status During Construction 44
10.01 Owner's Representative 44
10.02 Visits to Site 44
10.03 Resident Project Representative 44
10.04 Engineer's Authority 44
10.05 Determinations for Unit Price Work 45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work 45
10.07 Limitations on Engineer's Authority and Responsibilities 45
10.08 Compliance with Safety Program 45
Article 11—Changes to the Contract 46
11.01 Amending and Supplementing the Contract 46
11.02 Change Orders 46
11.03 Work Change Directives 46
11.04 Field Orders 47
11.05 Owner-Authorized Changes in the Work 47
11.06 Unauthorized Changes in the Work 47
11.07 Change of Contract Price 47
11.08 Change of Contract Times 49
11.09 Change Proposals 49
11.10 Notification to Surety 50

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Article 12—Claims 50
12.01 Claims 50
Article 13—Cost of the Work; Allowances; Unit Price Work 51
13.01 Cost of the Work 51
13.02 Allowances 55
13.03 Unit Price Work 55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work 56
14.01 Access to Work 56
14.02 Tests, Inspections, and Approvals 56
14.03 Defective Work 57
14.04 Acceptance of Defective Work 58
14.05 Uncovering Work 58
14.06 Owner May Stop the Work 58
14.07 Owner May Correct Defective Work 59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period 59
15.01 Progress Payments 59
15.02 Contractor's Warranty of Title 62
15.03 Substantial Completion 62
15.04 Partial Use or Occupancy 63
15.05 Final Inspection 64
15.06 Final Payment 64
15.07 Waiver of Claims 65
15.08 Correction Period 66
Article 16—Suspension of Work and Termination 67
16.01 Owner May Suspend Work 67
16.02 Owner May Terminate for Cause 67
16.03 Owner May Terminate for Convenience 68
16.04 Contractor May Stop Work or Terminate 68
Article 17—Final Resolution of Disputes 69
17.01 Methods and Procedures 69
Article 18—Miscellaneous 69
18.01 Giving Notice 69
18.02 Computation of Times 69

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

18.03 Cumulative Remedies 70
18.04 Limitation of Damages 70
18.05 No Waiver 70
18.06 Survival of Obligations 70
18.07 Controlling Law 70
18.08 Assignment of Contract 70
18.09 Successors and Assigns 70
18.10 Headings 70

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

THIS PAGE INTENTIONALLY LEFT BLANK.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

    a. will certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design;

        2) be similar in substance to the item specified; and

        3) be suited to the same use as the item specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

©2026 CDM Smith
All Rights Reserved

SECTION 007300 - SUPPLEMENTARY CONDITIONS

TABLE OF CONTENTS

PART I - AMENDMENTS TO GENERAL CONDITIONS

Article Number	Title
1	DEFINITIONS AND TERMINOLOGY
2	PRELIMINARY MATTERS
3	CONTRACT DOCUMENTS; INTENT, REQUIREMENTS, REUSE
4	COMMENCEMENT AND PROGRESS OF THE WORK
5	SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS
6	BONDS AND INSURANCE
7	CONTRACTOR'S RESPONSIBILITIES
8	OTHER WORK AT THE SITE
9	OWNER'S RESPONSIBILITIES
10	ENGINEER'S STATUS DURING CONSTRUCTION
11	CHANGES TO THE CONTRACT
13	COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK
14	TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK
15	PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD
16	SUSPENSION OF WORK AND TERMINATION
17	FINAL RESOLUTION OF DISPUTES
18	MISCELLANEOUS

PART II - FEDERAL AND STATE GOVERNMENT PROVISIONS

1.0. FEDERAL GOVERNMENT PROVISIONS

2.0. STATE GOVERNMENT PROVISIONS

©2026 CDM Smith
All Rights Reserved

SECTION 007300 - SUPPLEMENTARY CONDITIONS

PART 1 - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2018 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01A.39.

Delete paragraph 1.01A.39. of the General Conditions in its entirety and replace with the following:

39. Specifications - Sections included under Division 01 through Division 33 of the Project Manual.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01C.

Delete Paragraph 2.01C of the General Conditions in its entirety.

SC-2.02A.

Delete "four" in the first line and replace with "six."

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01G.

Add the following new paragraph immediately after Paragraph 3.01G. of the General Conditions which is to read as follows:

H. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though they were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01A.

Delete Paragraph 4.01A of the General Conditions in its entirety and replace with the following:

A. The Contract Time will commence to run on twentieth day following the Effective Date of the Agreement.

SC-4.03A.

Add the following new paragraph immediately after Paragraph 4.03A of the General Conditions which is to read as follows:

B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

ARTICLE 5 - SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.01A.

Add the following new paragraph immediately after Paragraph 5.01A. of the General Conditions which is to read as follows:

1. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon such land and rights-of-way as Owner has previously acquired.

SC-5.03

Delete Paragraph 5.03 A.1 of the General Conditions in its entirety and replace it with the following:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents. In the preparation of Drawings and Specifications, Engineer has relied upon the data obtained from subsurface investigations made at the site in the form of test borings. Such data is in the form of boring logs which are included in the Appendix to the Project Manual. The locations of the test borings are indicated on the Drawings. Such logs and samples are not part of the Contract Documents.

SC-5.06

Delete Paragraph 5.06A.1 of the General Conditions in its entirety and insert the following:

a. Information regarding Hazardous Environmental Conditions at the Site are known to Owner: Refer to Division 02, Division 31, and Appendix B.

ARTICLE 6 - BONDS AND INSURANCE

SC-6.02D

Add the following paragraphs immediately after Paragraph 6.02D of the General Conditions which are to read as follows:

1. Contractor shall provide evidence of its insurance coverage on the ACORD certificate of insurance form and shall include the following statement in its entirety in the section of the form entitled "Description of Operations/Locations/Vehicles/Special Items".

2. The Town of Brookfield, Connecticut and CDM Smith Inc., and their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds with respect to the insured's Commercial General Liability, Automobile Liability and Pollution Liability Insurance Policies. All insurers waive all rights of subrogation against the Town of Brookfield, Connecticut and CDM Smith Inc., their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors. All insurance is primary for all claims covered thereby. Commercial General Liability Insurance includes contractual liability coverage.

SC-6.02.G.

Replace the existing Paragraph 6.02.G with the following:

G. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

1.	Bodily Injury	$1,000,000	Each Occurrence
2.	Property Damage	$1,000,000	Each Occurrence
		$1,000,000	Annual Aggregate

SC-6.03

Add new Subparagraph 6.03.A.1 as follows:

1. Contractor's Insurance
   a. Workers' Compensation: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
      1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
      2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
      3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
      4. Foreign voluntary worker compensation (if applicable)
      5. Stop Gap Employer Liability for work in ND, OH, WA, WY & Puerto Rico
      6. The limits of liability for the workers compensation insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law.

         (1) Worker's Compensation Statutory

(2)	Employer's Liability	$1,000,000 $1,000,000	Each Occurrence Disease per employee
(3)	U.S. Longshoremen's and Harbor Workers' Compensation Act	$1,000,000	
(4)	Admiralty Jurisdiction, Coverage/Program II	$1,000,000	

b. Commercial General Liability – Claims Covered: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
4. Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
5. Products and completed operations coverage:

    1) Such insurance shall be maintained for three years after final payment.
    2) Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

6. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to tort liability and coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
7. Severability of interest.
8. Underground, explosion, and collapse coverage.
9. Personal injury coverage.
10. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
11. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
12. There shall be no specific exclusions associated with scope or work or any cross-suit exclusions for Additional Insureds.
13. Commercial General Liability Insurance shall not be less than the following amounts.

Bodily Injury:	$2,000,000 $4,000,000	Each Occurrence Annual Aggregate
Property Damage:	$2,000,000 $4,000,000	Each Occurrence Annual Aggregate

Personal Injury:	$4,000,000	Annual Aggregate

c. Comprehensive Automobile Liability including all owned (private and others), hired and non-owned vehicles, including contractual liability coverage and MCS-90 endorsement if Contractor is hauling goods:

Bodily Injury	$1,000,000	
Each Person	$1,000,000	Each Accident
Property Damage: Each accident or Combined Single Limit of	$1,000,000	Each Occurrence

d. Umbrella or Excess Liability:

Per Occurrence	$5,000,000
General Aggregate	$5,000,000

e. Contractor's Pollution Liability:

Each Occurrence	$2,000,000
General Aggregate	$2,000,000

☐ If box is checked, Contractor is required to provide Contractor's Pollution Liability insurance under this Contract.

f. Contractor's Professional Liability:

Each Claim	$1,000,000
Annual Aggregate	$2,000,000

☐ If box is checked, Contractor is required to provide Contractor's Professional Liability insurance under this Contract.

SC 6.03 B

Add a new subparagraph 6.03 B .6 as follows

6. All policies of insurance required to be provided by the Contractor shall contain provisions that the insurer(s) waive all rights of subrogation against the Owner, Engineer, and their officers, directors, partners and other consultants and subcontractors of each and any of them and other parties identified in the Supplementary Conditions.

SC 6.03 C.1 Additional Insureds

Add the following two sentences to subparagraph 6.03.C.1 of the General Conditions:

The Town of Brookfield, Connecticut and CDM Smith Inc., and their subsidiaries officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds. All insurers waive all rights of subrogation against the Town of Brookfield, Connecticut and CDM Smith Inc., their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors.

SC 6.04 Builder's Risk and Other Property Insurance

SC-6.04.A.1

Add the following new subparagraph after subparagraph 6.04.A:

1. In addition to Owner, Contractor, and all Subcontractors, include as insureds the following: CDM Smith Inc., and their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors.

2. include for the benefit of Owner loss of profits and soft cost coverage including, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, plus attorneys' fees and engineering or other consultants' fees, if not otherwise covered;

3. include by express endorsement coverage of damage to Contractor's equipment.

SC-6.04F

Add Paragraph 6.04.F after Paragraph 6.04E of the General Conditions.

F. All policies required by this Paragraph shall contain provisions to the effect that the insurer(s) waive all rights of subrogation against the Owner, Engineer and their officers, directors, partners, employees and other consultants and subcontractors of each and any of them.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.03

Add the following 2 new paragraphs immediately after Paragraph 7.03C. of the General Conditions which are to read as follows:

D. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 7:00 PM. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours' notice is given to Engineer.

E. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Paragraph SC-7.02C. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner.

SC-7.02E.

Add the following new paragraphs immediately after what will be Paragraph 7.03E. (or 7.03D. if D and E are not used) of the General Conditions, which are to read as follows:

F. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.

G. Contractor shall employ only competent persons to do the work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

H. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

I. Contractor and all Subcontractors shall pay to all laborers and mechanics employed for the construction covered by this Contract the minimum rates of pay as determined by the Secretary of Labor in accordance with the Act of March 3, 1931, as amended, known as the Davis-Bacon Act (40 U.S.C. 276a through 276a-7). Furthermore, Contractor and Subcontractors shall adhere to the stipulations and provisions published by the Secretary of Health, Education, and Welfare in "Labor Standards (Federal Water Pollution Control Act)." The Wage Rate Schedule as prepared by the Secretary of Labor and the "Labor Standards" are part of this Contract and are included in PART II of these Supplementary Conditions.

J. Except as may be otherwise required by law, all claims and disputes pertaining to the classification of labor employed on the project under this Contract shall be decided by the governing body having jurisdiction.

K. Contractor and all Subcontractors shall comply with the Regulations of the Secretary of Labor made pursuant to the Anti-Kickback Act of June 30, 1940 (40 U.S.C. 276c) and all amendments or modifications thereto. Contractor and all Subcontractors shall furnish Owner with weekly Statements of Compliance. In case of Subcontracts, Contractor shall cause appropriate provision to be inserted in all subcontracts for the Work which Contractor may let to ensure compliance with said Anti-Kickback Act by all Subcontractors subject thereto, and Contractor shall be responsible for the submission of all Statements of Compliance required of Subcontractors by said Anti-Kickback Act except as the Secretary of Labor may specifically provide for reasonable limitations, variations, and exemptions from the requirements thereof. These Regulations are part of this Contract and are included in PART II of these Supplementary Conditions.

SC-7.10A

Add the following new Paragraph 7.10B to the General Conditions to read as follows:

B. Certain materials and supplies to be used in the Work of this Contract may be exempt from the Sales and Use Tax of the State of Connecticut. Contractor shall obtain the proper certificates, maintain the necessary records and otherwise comply with the requirements of the State and any amendments thereto.

SC-7.15A.

Delete the last sentence in Paragraph 7.15A. of the General Conditions in its entirety and replace with the following:

If Engineer determines that the incident giving rise to the emergency action was not the responsibility of the Contractor and that a change in the Contract Document is required because of the action taken by the Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC-7.16D.1.

Add the following new sentence at the end of paragraph 7.16.D.1 of the General Conditions to read as follows:

Approval of Shop Drawings for equipment requiring Efficiency Guarantee Bonds will be withheld until the receipt of such Bonds.

SC-7.17A.

Add the following new paragraph immediately after Paragraph 7.17A. of the General Conditions which is to read as follow:

1. The Contractor guarantees that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other Contract Documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of substantial completion. If part of the Work is accepted in accordance with Paragraph 15.04 of the General Conditions, the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.

2. If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, correction or replacements. If the Contractor neglects to commence making such repairs, corrections or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, correction or replacements, and charge the costs, including compensation for additional professional services, to the Contractor.

3. The Contractor's guarantee under Paragraph 7.17A, is in addition to the Contractor's express or implied warranties under this Contract and State law and in no way diminish any other rights that the Owner may have against the Contractor.

SC-7.17E.

Add the following new paragraph immediately after Paragraph 7.17E. of the General Conditions which is to read as follows:

F. Manufacturer's Guaranty/Warranty

1. The Contractor shall obtain the following guaranty/warranty from the manufacturer of all major pieces of equipment furnished and installed on this Project. Such guaranty/warranty shall be for the benefit of Owner and be furnished in writing by the manufacturer. The Contractor's and manufacturer's obligations under this provision are in addition to other express or implied warranties under the Contract Documents and under the law and in no way diminish any other right that the Owner may have against the Contractor or manufacturer for faulty material, equipment or work. The warranty period shall not be interpreted as a limitation on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

2. The manufacturer warrants and guarantees for a period of one year from the date of Substantial Completion, or such longer period that may be specified in the Contract Documents, that all materials and equipment furnished and installed shall be free from flaws, defects in material and workmanship and shall be in conformance with the Contract Documents.

SC-7.18A.

Delete Paragraph 7.18A of the General Conditions in its entirety and replace with the following:

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall defend, indemnify and hold harmless Owner, Engineer and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including but not limited to all reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost or loss or damage:

1. is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such indemnified party unless caused by the sole negligence of a party indemnified hereunder. If through the omissions or acts of neglect on the part of Contractor, any other contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other contractor or Subcontractor by agreement or arbitration if such other contractor or Subcontractor will so settle. If such other contractor or Subcontractor shall assert any claim against Owner and/or Engineer, or the officers, directors, members, partners, employees, agents, consultants and subcontractors of each on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall defend, indemnify and save harmless Owner, Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each against any such claims.

ARTICLE 8. OTHER WORK AT THE SITE

SC-8.03 A

Delete paragraph 8.03 A of the General Conditions in its entirety and replace with the following.

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall not institute any action, legal or equitable, against Owner, Engineer, Engineer's Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, Engineer's Consultants or the Construction Coordinator on account of any such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, Engineer's Consultants and Construction Coordinator for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, Engineer's Consultant or Construction Coordinator for activities that are their respective responsibilities.

SC-8.03C.

Delete Paragraph 8.03C of the General Conditions in its entirety and replace with the following.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, Engineer's Consultants, the Construction Coordinator or any person then Contractor shall promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, Contractor shall, to the fullest extent permitted by Laws and Regulations defend, indemnify and hold Owner, Engineer, Engineer's Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, Engineer's Consultants or the Construction Coordinator to the extent based on a claim arising out of Contractor's performance of the Work.

ARTICLE 9. OWNER'S RESPONSIBILITIES

SC-9.11A.

Add the following new paragraph immediately after Paragraph 9.11A of the General Conditions which is to read as follows:

B. Upon request of Contractor prior to the execution of any Change Order involving a significant percent increase in the Contract Price, Owner shall furnish to Contractor responsible evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Resident Project Representative

SC-10.03C.

Add the following new paragraphs immediately after paragraph 10.03B of the General Conditions which are to read as follows:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

   a. Serve as Engineer’s liaison with Contractor. Working principally through Contractor’s authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

   b. Assist Engineer in serving as Owner’s liaison with Contractor when Contractor’s operations affect Owner’s on-Site operations.

   c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

   a. Record date of receipt of Samples and Contractor-approved Shop Drawings.

b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. Records:

a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

c. Maintain records for use in preparing Project documentation.

11. Reports:

a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

D. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 - CHANGES TO THE CONTRACT

SC-11.07B.2

Delete paragraph 11.07B.2. of the General Conditions in its entirety.

SC-11.07C.1.

Delete paragraph 11.07C.1 of the General Conditions in its entirety.

SC-11.07C.2.

Delete “15 percent” in the second line of paragraph 11.07C.2.a of the General Conditions and replace with “20 percent”.

SC-11.07C.2.b.

In paragraph 11.07C.2.b, before the semicolon add the following words "based on subcontractor's Cost of the Work";

Delete "5 percent" in paragraph 11.07C.2.b of the General Conditions and replace with "7-1/2 percent."

Delete "15 percent" in the third line of paragraph 11.07C.2.c, of the General Conditions and replace with "20 percent" and delete "5 percent" in the seventh line and replace with "7-1/2 percent."

ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01B.1.

Delete the second sentence in paragraph 13.01B.1. of the General Conditions in its entirety and replace with the following:

Such employees shall include foremen at the site.

SC-13.01B.1.

Add the following new paragraph immediately after paragraph 13.01B.1. of the General Conditions which is to read as follows:

a. Following award and prior to execution of a construction contract Contractor shall establish, in the Agreement, the Direct Labor Cost percentage. This percentage, where approved by Owner, will be used in the determination of the Direct Labor Cost listed in the Change Order Form included in PART II of the Supplementary Conditions. The Direct Labor Costs are defined to include social security contributions,

unemployment, excise and payroll taxes, workers' and workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay, and cost of premiums for all additional insurance required because of changes in the Work.

SC-13.02.

Delete Paragraph 13.02 of the General Conditions in its entirety.

SC-13.03E.

Delete Paragraph 13.03E. of the General Conditions in its entirety and replace with the following:

E. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:

1. if the total cost of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Unit Price for that quantity by which the actual quantity exceeds 115% of the estimated quantity in accordance with Article 12 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 14 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.06A.

Add the following new paragraph immediately after Paragraph 14.06A. of the General Conditions to read as follows:

B. If Owner stops Work under Paragraph 14.06A. Contractor shall not be entitled to any extension of Contract Time or increase in Contract Price.

ARTICLE 15 - PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01B.1.

In the first sentence of paragraph 15.01.B.1 of the General Conditions delete the number "20" and replace with the number "30".

SC-15.01B.4.

Add the following new paragraph immediately after paragraph 15.01B.4 of the General Conditions which is to read as follows:

5. Contractor shall furnish evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective supplier(s) within sixty (60) days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

SC-15.01D.1.

In paragraph 15.01D.1. of the General Conditions delete the word "Ten" and replace with the word "forty-five".

SC-15.01D.1.

Add the following new paragraphs immediately after paragraph 15.01D.1. of the General Conditions which are to read as follows:

2. Should Contractor neglect to pay any undisputed claims, made in writing to Owner within thirty days after completion of the Work, but continuing unsatisfied for a period of ninety days, Owner may pay such claim and deduct the amount thereof from the balance due Contractor. Owner may also, with the written consent of Contractor, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for the Work, for which claims have not been filed.

3. Security is provided both by the Payment Bond and the power of Owner to retain any monies for claims, but payment by one shall in no way impair or discharge the liability of the other.

4. All monies paid by Owner in settlement of liens, with the costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment due Contractor under the terms of this Contract.

SC-15.02

Add the following new paragraphs immediately after Paragraph 15.02A of the General Conditions which are to read as follows:

B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

C. Contractor shall defend, indemnify and save Owner and Engineer harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to

either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-15.06B.

Delete paragraph 15.06B of the General Conditions in its entirety and replace with the following:

Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will indicate in writing Engineer's recommendation of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 15.07. Otherwise, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with the applicable laws and regulations, pay Contractor the amount recommended by Engineer.

SC-15.06E.

Add the following new paragraph immediately after Paragraph 15.06E. of the General Conditions which is to read as follows:

F. Final payment will be reduced by the amount of excessive costs of plant inspection of pipe. Excessive costs are defined as the inspection costs incurred by Owner for that amount of pipe which exceeds 125 percent of the aggregate length of each type installed.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.02A.4.

Add the following new paragraph immediately after paragraph 16.02.A.4 of the General Conditions which is to read as follows:

5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified.

ARTICLE 17 - FINAL RESOLUTION OF DISPUTES

SC-17.01A

Insert new paragraph 17.01A.3 of the General Conditions as follows:

3. Either Owner or Contractor may request mediation of any Claim. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of this Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract.

SC-17.01B.

Add a new paragraph immediately after paragraph 17.01B. of the General Conditions which is to read as follows:

C. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.

ARTICLE 18 - MISCELLANEOUS

SC-18.10

Add the following new paragraphs immediately after Paragraph 18.10 of the General Conditions which are to read as follows:

18.11 Addresses

A. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above-named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

18.12 Wage Rates

A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. Copies of the wage schedules are included in PART II of these Supplementary Conditions. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administrating the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Contractor shall notify Owner of Contractor's intention to employ persons in trades or occupations not classified in sufficient time for Owner to obtain approved rates for such trades or occupations.

B. The schedules of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes between Contractor and employees of Contractor in regard to the payment of wages in excess of these specified in the schedules shall be resolved by Contractor.

C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

D. Both Federal and State schedules of minimum wage rates are included in PART II of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

PART 2 - FEDERAL AND STATE GOVERNMENT PROVISIONS

Federal, State and Local Government Provisions included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with Paragraph 3.01H of the Supplementary Conditions.

1.0. FEDERAL GOVERNMENT PROVISIONS

1.1. Davis Bacon Act Requirements

1.2. Federal Wage Rates

1.3. American Iron and Steel Requirements of P. L. 113-76, the Consolidated Appropriations Act of 2014.

1.4. Build America, Buy America Act Requirements

This project is subject to American Iron and Steel and the Build America, Buy America Act (BABA). The amendments to the Clean Water Act, as part of WRRDA, apply the American Iron and Steel (AIS) requirements to all treatment works projects. Furthermore, Bipartisan Infrastructure Law (BIL) extends this procurement requirement to all State Revolving Fund (SRF) construction projects going forward with the inclusion of the Build America, Buy America Act (BABA). Starting on May 14, 2022, all steel, iron, manufactured products, non-ferrous metals, plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber, and drywall used in infrastructure projects for federal financial assistance programs must be produced in the United States. MassDEP ensures that the required procurement language is included in contracts and conducts field verifications of project compliance.

2.0. STATE GOVERNMENT PROVISIONS

2.1. Owner and Contractor agree that the following State Government Provisions apply to the work to be performed under this Contract and that these provisions supersede any conflicting provisions of this Contract.
State Required Construction Contract Provisions under Department of Energy and Environmental Protection’s Clean Water Fund
22a-482-4(g) Required Provisions for Construction Contracts
22a-482-4(h) Procurement Requirements - General
22a-482-4(i) Construction Contract Procurement Requirements
22a-482-4(k) Negotiation of Contract Amendments (Change Orders)

22a-482-4(l) Subcontracts under Construction Contracts
22a-482-4(m) Progress Payments to Contractors
22a-482-4(n) Retention from Progress Payments
22a-482-4(o) Protests
Contractor's Exempt Purchase Certificate
DAS Update (Bid) Statement
Executive Order No. Three
Executive Order No. Seventeen
Connecticut Clean Water Fund Project Sign
Clean Water Fund Memorandum (2021-001) Policy for Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment on Clean Water Fund Projects
Clean Water Fund Memorandum (2010-0816) Davis Bacon Requirements for Construction Contracts
Requirements Under the Water Resources Reform and Development Act of 2014 (WRRDA) for Sub recipients that are Government Entities
Connecticut Department of Energy and Environmental Protection Payroll Certification – Davis Bacon Compliance
Wage Determination Schedule
Connecticut Department of Labor Wage Rates
Davis-Bacon (U.S. Department of Labor) Wage Rates
Payroll Certification Forms, Prevailing Wage Rate, and Section 31-53b Information
Interim Guidance for Minority Business Enterprise and Women's Business Enterprise Requirement of 40 CFR §33.240
EPA Guidance for Utilization of S/M/WBE in Procurement Under Assistance Agreements
State of Connecticut Department of Energy and Environmental Protection Disadvantaged Business Enterprise (DBE) Subcontract Participation on Clean Water Fund Construction Projects, Clean Water Fund Memorandum (2019-003)
Minority Business Enterprise / Women's Business Enterprise Subcontractor Verification Form
EPA Form 6100-4 (DBE Subcontractor Utilization Form)
American Iron and Steel Requirements
Purchases of Tangible Personal Property Incorporated into or Consumed in Water Pollution Control Facilities

18.13 ARCHAEOLOGICAL FINDS

Should the Contractor or Engineer discover evidence of remains, such as stone masonry building foundations, bones or other items of archaeological significance, Contractor shall report these findings to (1) Owner, (2) Local Historical Society, (3) State Historic Preservation Office (860) 256-2761, and (4) Resident Project Representative, and shall exercise the utmost care to ensure that these areas remain undisturbed. Contractor shall allow recovery of such finds by the authorities, shall not remove such artifacts under penalty of law, and shall prevent constriction or private vehicles from crossing over these areas. In addition, when directed by the Engineer, cover these areas with 1-ft common fill to the limits directed by the Engineer. Be advised that graves and any associated human remains are protected by Connecticut State law (C.G.S. Section 10-388 and 10-390). Any possible human skeletal remains must be reported to the State Archaeologist (860) 486-5248 and the State's Chief Medical Examiner (860) 679-3980 immediately upon discovery. If the State Archaeologist is unavailable, please contact the State Historic Preservation Office at the number above for immediate assistance.

END OF SECTION 007300

REQUIRED CONSTRUCTION CONTRACT PROVISIONS UNDER THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION'S CLEAN WATER FUND

22a-482-4 (g) REQUIRED PROVISIONS FOR CONSTRUCTION CONTRACTS

Municipalities must include, when appropriate, the following clauses or their equivalent in each subagreement and may substitute other terms for "grantee" and "contractor" in their subagreements.

22a-482-4 (g)(1) Supersession

The municipality and the contractor agree that that the following general provisions, or their equivalent, apply to eligible work to be performed under this contract and that these provisions supersede any conflicting provisions of this contract

22a-482-4 (g)(2) Privity of contract

This contract is expected to be funded in part by the State of Connecticut. Neither the State, nor any of its departments, agencies, or employees is or will be a party to this contract or any lower tier subcontract. This contract is to be subject to regulations adopted in accordance with Section 22a-482 of the Connecticut General Statutes.

22a-482-4 (g)(3) Changes for contracts for construction

(A) The municipality may, at any time, without notice to any surety, by written order designated or indicated to be a change order, make any change in the work within the general scope of the subagreement, including but not limited to changes:

(i) In the specifications (including drawings and designs);
(ii) In the time, method, or manner of performance of the work;
(iii) In the municipality-furnished facilities, equipment, materials, services, or site; or
(iv) Directing acceleration in the performance of the work.

(B) A change order shall also be any other written or oral order (including direction, instruction, interpretation or determination) from the municipality which causes any change, provided the contractor gives the municipality written notice stating the date, circumstances, and source of the order and that the contractor regards the order as a change order.

(C) Except as provided in this clause, no order, statement, or conduct of the municipality shall be treated as a change under this clause or entitle the contractor to an equitable adjustment.

(D) If any change under this clause causes an increase or decrease in the contractor's cost or the time required to perform any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the subagreement modified in writing. However, for claims based on defective specifications, no claim for any change under (B) above shall be allowed for any costs incurred more than 20 days before the contractor gives written notice as required in paragraph (B). In the case of defective specifications for which the municipality is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the contractor in attempting to comply with those defective specifications.

(E) If the contractor intends to assert a claim for an equitable adjustment under this clause, he must, within thirty (30) days after receipt of a written change order under (A) of this change clause or the furnishing of a written notice under (B) of this clause, submit to the grantee a written statement setting forth the general nature and monetary extent of such claim. The municipality may extend the 30-day period. The statement of claim may be included in the notice under (B) of this clause.

(F) No claim by the contractor for an equitable adjustment shall be allowed if made after final payment under this contract.

22a-482-4 (g)(4) Changes for contracts for supplies

(A) The municipality may at any time, by a written order and without notice to the sureties, make changes within the general scope of this subagreement in any one or more of the following:

(i) Drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the municipality;
(ii) Method of shipment or packing; and
(iii) Place of delivery.

(B) If any change causes an increase or decrease in the cost or the time required to perform any part of the

work under this subagreement, whether or not changed by any such order, an equitable adjustment shall be made in the subagreement price or delivery schedule, or both, and the subagreement shall be modified in writing. Any claim by the contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the contractor of the notification of change. If the municipality decides that the facts justify such action, the municipality may receive and act upon any such claim asserted at any time before final payment under this subagreement. Where the cost of property made obsolete or excess as a result of a change is included in the contractor's claim for adjustment, the grantee shall have the right to prescribe the manner of disposition of such property. Nothing in this clause shall excuse the contractor from proceeding with the subagreement as changed.

22a-482-4 (g)(5) Differing site conditions

(A) The contractor shall promptly, and before such conditions are disturbed, notify the municipality in writing of:

(i) Subsurface or latent physical conditions at the site differing materially from those indicated in this subagreement; or

(ii) Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this subagreement. The municipality shall promptly investigate the conditions and, if it finds that conditions are materially different and will cause an increase or decrease in the contractor's cost or the time required to perform any part of the work under this subagreement, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the subagreement modified in writing.

(B) No claim of the contractor under this clause shall be allowed unless the contractor has given notice required in (A) of this clause. However, the municipality may extend the prescribed time.

(C) No claim by the contractor for an equitable adjustment shall be allowed if asserted after final payment under this subagreement.

22a-482-4 (g)(6) Suspension of work

(A) The municipality may order the Contractor, in writing, to suspend, delay, or interrupt all or any part of the work for such period of time as the municipality may determine to be appropriate for the convenience of the municipality.

(B) If the performance of all or any part of the work is suspended, delayed, or interrupted for an unreasonable period of time by an act of the municipality in administration of the contract, (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the contractor, or for which an equitable adjustment is provided for or excluded under any other provision of the contract.

(C) No claim under this clause shall be allowed for any costs incurred more than 20 days before the contractor notified the municipality in writing of the act or failure to act involved (this requirement does not apply to a claim resulting from a suspension order), and unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the contract.

22a-482-4 (g)(7) Termination

(A) This contract may be terminated in whole or in part in writing by either party in the event of substantial failure by the party to fulfill its obligations under this subagreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate and an opportunity for consultation with the terminating party prior to termination.

(B) This contract may be terminated in whole or in part in writing by the municipality for its convenience, provided that the contractor is given not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate and an opportunity for consultation with the terminating party prior to termination.

(C) If termination for default is effected by the municipality, an equitable adjustment in the price provided for in this contract shall be made but no amount shall be allowed for anticipated profit on unperformed

services or other work, and any payment due to the contractor at the time of termination may be adjusted to cover any additional costs to the municipality because of the contractor's default. If termination for default is effected by the contractor, or if termination for convenience is effected by the municipality, the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to the contractor for services rendered and expenses incurred prior to the termination in addition to termination settlement costs reasonably incurred by the contractor relating to commitments which had become firm prior to the termination.

(D) Upon receipt of a termination action pursuant to (A) or (B) above, the contractor shall promptly discontinue all services affected (unless the notice directs otherwise), and deliver or otherwise make available to the recipient all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the contractor in performing this contract whether completed or in process.

(E) Upon termination under (A) or (B) of this clause the municipality may take over the work and may award another party a contract to complete the work under this contract.

(F) If, after termination for failure of the contractor to fulfill contractual obligations, it is determined that the contractor had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the municipality. In such event, adjustment of the price provided for in this contract shall be made as provided in (C) of this clause.

22a-482-4 (g)(8) Remedies

Except as may be otherwise provided in this contract, all claims, counter-claims, disputes, and other matters in question between the municipality and the contractor arising out of or relating to this contract or the breach thereof will be decided by arbitration if the parties mutually agree or in a court of competent jurisdiction within the district in which the municipality is located.

22a-482-4 (g)(9) Price reduction for defective cost or pricing data

NOTE - This clause is applicable to any contract negotiated between the municipality and its contractor in excess of $500,000; negotiated change orders in excess of $500,000 or 10 percent of the contract, whichever is less, affecting the price of a formally advertised, competitively awarded, fixed price contract; or any lower tier subcontract or purchase order in excess of $500,000 or 10 percent of the assistance agreement, whichever is less, under a contract other than a formally advertised, competitively awarded, fixed price subagreement. This clause is not applicable for contracts to the extent that they are awarded on the basis of effective price competition.

The contractor and subcontractor, where appropriate, warrant that cost and pricing data submitted for evaluation with respect to negotiation of prices for negotiated contracts, lower tier subcontracts and change orders is based on current, accurate, and complete data supported by their books and records. If the municipality or the Commissioner determines that any price (including profit) negotiated in connection with this contract, any lower tier subcontract, or any amendment thereunder was increased by any significant sums because the data provided was incomplete, inaccurate, or not current at the time of submission, then such price, cost or profit shall be reduced accordingly, and the contract shall be modified in writing to reflect such reduction. Failure to agree on a reduction shall be subject to the remedies clause of this agreement.

NOTE - Since the contract is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with lower tier subcontracts, the contractor may wish to include a clause in each lower tier subcontract requiring the lower tier subcontractor to appropriately indemnify the contractor. It is also expected that any lower tier subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by lower tier contractors.

22a-482-4 (g)(10) Audit; Access to records

(A) The contractor shall maintain books, records, documents, and other evidence directly pertinent to performance on grant work under this contract in accordance with generally accepted accounting principles and practices consistently applied. The contractor shall also maintain the financial information and data used by the contractor in the preparation or support of the cost submission required under Section 22a-482-4(i)(6) for any negotiated contract or change order and a copy of the cost summary submitted to the municipality. The municipality and the Commissioner or any of his authorized representatives shall have access to all such

books, records, documents, and other evidence for the purpose of inspection, audit and copying during normal business hours. The contractor will provide proper facilities for such access and inspection.

(B) If this is a formally advertised, competitively awarded, fixed price contract, the contractor agrees to make (A) through (F) of this clause applicable to all negotiated change orders and contract amendments affecting the contract price. In the case of all other types of prime contracts, the contractor agrees to include (A) through (F) of this clause in all his subcontracts in excess of $10,000 and to make paragraphs (A) through (F) of this clause applicable to all change orders directly related to project performance.

(C) Audits conducted under this provision shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit departments and meeting the requirements of Section 20-282 of the Connecticut General Statutes.

(D) The contractor agrees to disclose all information and reports resulting from access to records under (A) and (B) of this clause.

(E) Records under (A) and (B) above shall be maintained and made available during performance on assisted work under this contract and until three years from the date of final State payment for the project. In addition, those records which relate to any dispute appeal arising under a grant assistance agreement, to litigation, to the settlement of claims arising out of such performance, or to costs or items to which an audit exception has been taken, shall be maintained and made available until three years after the date of resolution of such appeal, litigation, claim, or exception.

(F) This right of access clause (with respect to financial records) applies to:

(i) Negotiated prime subagreements;
(ii) Negotiated change orders or contract amendments in excess of $10,000 affecting the price of any formally advertised, competitively awarded, fixed price contract; and
(iii) Subcontracts or purchase orders under any contract other than a formally advertised, competitively awarded, fixed price contract. However, this right of access does not apply to a prime contract, lower tier subcontract, or purchase order awarded after effective price competition, except with respect to records pertaining directly to contract performance, (excluding any financial records of the contractor); if there is any indication that fraud, gross abuse, or corrupt practices may be involved or if the contract is terminated for default or for convenience.

22a-482-4 (g)(11) Covenant against contingent fees

The contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this warranty the grantee shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

22a-482-4 (g)(12) Gratuities

(A) If the municipality finds, after a notice and hearing, that the contractor, or any of the contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise), to any official, employee, or agent of the municipality or the State, in an attempt to secure a contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this agreement, the municipality may, by written notice to the contractor, terminate this agreement. The municipality may also pursue other rights and remedies that the law or this agreement provides. However, the existence of the facts on which the municipality bases such findings shall be in issue and may be reviewed in proceedings under the Remedies clause of this agreement.

(B) In the event this contract is terminated, as provided in (A) in this clause, the recipient may pursue the same remedies against the contractor as it could pursue in the event of a breach of the contract by the contractor and, as a penalty, in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the grantee) which shall be not less than three nor more than ten times the costs the contractor incurs in providing any such gratuities to any such officer or employee.

22a-482-4 (g)(13) Responsibility of the contractor

(A) The contractor agrees to perform all work under this agreement in accordance with this agreement's

designs, drawings, and specifications.

(B) The contractor warrants and guarantees for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials, equipment or workmanship; and the contractor shall promptly make whatever adjustments or corrections necessary to cure such defects, including repairs of any damage to other parts of the system resulting from such defects. The municipality shall give notice to the contractor of observed defects with reasonable promptness. In the event that the contractor fails to make adjustments, repairs, corrections or other work that may be made necessary by such defect, the municipality may do so and charge the contractor the cost incurred. The performance bond shall remain in full force and effect through the guarantee period.

(C) The contractor's obligations under this clause are in addition to the contractor's other express or applied warranties under this agreement or State law and in no way diminish any other rights that the municipality may have against the contractor for faulty material, equipment, or work.

22a-482-4 (g)(14) Final payment

Upon satisfactory completion of the work performed under this agreement, as a condition before final payment under this agreement, or as a termination settlement under this agreement, the contractor shall execute and deliver to the municipality a release of all claims against the municipality arising under or by virtue of this agreement, except claims which are specifically exempted by the contractor to be set forth therein. Unless otherwise provided in this agreement or by State law or otherwise expressly agreed to by the parties to this agreement, final payment under this agreement or settlement upon termination of this agreement shall not constitute a waiver of the municipality's claims against the contractor or his sureties under this agreement or applicable performance and payment bonds.

22a-482-4(h) PROCUREMENT REQUIREMENTS - GENERAL

22a-482-4(h)(1) Applicability

This defines the responsibilities of the State and the municipality and the minimum procurement standards for each municipality's procurement system.

22a-482-4(h)(2) Municipality responsibility

(A) The municipality is responsible for the settlement and satisfactory completion in accordance with sound business judgement and good administrative practice of all contractual and administrative issues arising out of subagreements entered into under the assistance agreement. This includes issuance of invitations for bids or requests for proposals, selection of contractors, award of subagreements, settlement of protests, claims, disputes and other related procurement matters.

(B) The municipality shall maintain a subagreement administration system to assure that contractors perform in accordance with the terms, conditions and specifications of their subagreements.

(C) The municipality shall review its proposed procurement actions to avoid purchasing unnecessary or duplicative items.

(D) The municipality shall consider consolidating its procurement or dividing it into parts to obtain a more economical purchase.

(E) Where appropriate, the municipality shall make an analysis of lease versus purchase alternatives in its procurement actions.

(F) A municipality may request technical assistance from the Commissioner for the administration and enforcement of any subagreement awarded under this section. However, such assistance does not relieve the municipality of its responsibilities under this section.

(G) A municipality may use innovative procurement methods or procedures only if it receives the Commissioner's prior written approval.

22a-482-4(h)(3) Municipality reporting requirements

The municipality shall request, in writing, the Commissioner's authorization to award each construction subagreement which has an aggregate value over $10,000. The request shall include:

(A) Name, address, telephone number and employee identification number of the construction contractor;

(B) Amount of the award;

(C) Estimated starting and completion dates;

(D) Project number, name and site location of the project; and

(E) Copy of the tabulations of bids or offers and the name of each bidder or offeror.

22a-482-4(h)(4) Copies of contract documents.

The municipality must promptly submit to the Commissioner copies of any prime contract or modification thereof, and revisions to plans and specifications.

22a-482-4(h)(5) Limitations on subagreement award

(A) The municipality shall award subagreements only to responsible contractors that possess the potential ability to perform successfully under the terms and conditions of a proposed procurement. A responsible contractor is one that has:

(i) Financial resources, technical qualifications, experience, an organization and facilities adequate to carry out the project, or a demonstrated ability to obtain these;
(ii) Resources to meet the completion schedule contained in the subagreement;

(iii) A satisfactory performance record for completion of subagreements;
(iv) Accounting and auditing procedures adequate to control property, funds and assets; and
(v) Demonstrated compliance or willingness to comply with the civil rights, equal employment opportunity, labor laws and other statutory requirements.

(B) The municipality shall not make awards to contractors who have been suspended or debarred by Connecticut State Agencies.

22a-482-4(h)(6) Violations.

The municipality shall refer violations of law to the local or State officials having the proper jurisdiction.

22a-482-4(h)(7) Competition

(A) The municipality shall conduct all procurement transactions in a manner that provides maximum open and free competition.

(B) Procurement practices shall not unduly restrict or eliminate competition. Examples of practices considered to be unduly restrictive include:

(i) Noncompetitive practices between firms;
(ii) Organizational conflicts of interest;
(iii) Unnecessary, experience and bonding requirements;
(iv) Local laws, ordinances, regulations or procedures which give local bidders or proposers preference over other bidders or proposers in evaluating bids or proposals; and
(v) Placing unreasonable requirements on firms in order for them to qualify to do business.

(C) The municipality may use a prequalification list(s) of persons, firms or products if it:

(i) Updates its prequalified list(s) at least every six months;
(ii) Reviews and acts on each request for prequalification made more than thirty (30) days before the closing date for receipt of proposals or bid opening; and
(iii) Gives adequate public notice of its prequalification procedures in accordance with the public notice procedures.

(D) A municipality may not use a prequalified list(s) of persons or firms if the procedure unnecessarily restricts competition.

22a-482-4(h)(8) Profit

(A) Municipalities must assure that only fair and reasonable profits are paid to contractors awarded subagreements under State assistance agreements.

(B) The municipality shall negotiate profit as a separate element of price for each subagreement in which there is no price competition, or where price is based on cost analysis.

(C) Where the municipality receives two or more bids, profit included in a formally advertised, competitively bid, fixed price subagreement shall be considered reasonable.

(D) Off-the-shelf or catalog supplies are exempt from this section.

22a-482-4(h)(9) Use of small, minority, and women's businesses

The municipality must take affirmative steps to assure that small, minority, and women's businesses are used to the maximum extent practicable. The

Commissioner may impose goals as conditions of financial assistances.

22a-482-4(h)(10) Privity of subagreement.

The State shall not be a party to any subagreement nor to any solicitation or request for proposals.

22a-482-4(h)(11) Documentation

(A) Procurement records and files for procurements in excess of $10,000 shall include the following:

(i) Basis for contractor selection;
(ii) Written justification for selection of the procurement method;
(iii) Written justification for use of any specification which does not provide for maximum free and open competition;
(iv) Written justification for the type of subagreement;
(v) Basis for award cost or price, including a copy of the cost or price analysis made and documentation of negotiations; and
(vi) A municipality must state the reasons in writing for rejecting any or all bids and the justification for procurements on a noncompetitively negotiated basis and make them available for public inspection.

22a-482-4(h)(12) Specifications

(A) Nonrestrictive specifications.
(i) No specification for bids or statement of work in connection with such works shall be written in such a manner as to contain proprietary, exclusionary or discriminatory requirements other than those based upon performance, unless such requirements are necessary to test or demonstrate a specific thing or to provide for necessary interchangeability of parts and equipment, **or at least two brand names** or trade names of comparable quality or utility are listed and are followed by the words "or equal". If brand or trade names are specified, the municipality must be prepared to identify to the Commissioner, or in any protest action, the salient requirements (relating to the minimum needs of the project) which must be met by any offeror. The single base bid method of solicitation for equipment and parts for determination of a low, responsive bidder may not be utilized. With regard to materials, if a single material is specified, the municipality must be prepared to substantiate the basis for the selection of the material.

(ii) Project specifications shall, to the extent practicable, provide for maximum use of structures, machines, products, materials, construction methods, and equipment which are readily available through competitive procurement, or through standard or proven production techniques, methods, and processes.

(B) Sole source restriction. A specification shall not require the use of structures, materials, equipment, or processes which are known to be available only from a sole source, unless the Commissioner determines in advance that the municipality's engineer has adequately justified in writing that the proposed use meets the particular project's minimum needs or the Commissioner determines that use of a single source is necessary to promote innovation.

(C) Experience clause restriction. The general use of experience clauses requiring equipment manufacturers to have a record of satisfactory operation for a specified period of time or of bonds or deposits to guarantee replacement in the event of failure is restricted to special cases where the municipality's engineer adequately justifies any such requirement in writing. Where such justification has been made, submission of a bond or deposit shall be permitted instead of a specified experience period. The period of time for which the bond or deposit is required should not exceed the experience period specified.

22a-482-4(h)(13) Force account work

(A) The municipality must receive the Commissioner's prior written approval for use of the force account method for any planning, design work or construction work.

(B) The Commissioner may approve the force account method upon the municipality's demonstration that it possesses the necessary competence required to accomplish such work and that the work can be accomplished more economically by use of the force account method, or emergency circumstances dictate its use.

(C) Use of the force account method for construction work shall generally be limited to minor portions of a project.

22a-482-4(h)(14) Code of conduct

(A) The municipality shall maintain a written code or standards of conduct which shall govern the performance

of its officers, employees, or agents engaged in the award and administration of subagreements supported by State funds. No employee, officer or agent of the municipality shall participate in the selection, award or administration of a subagreement supported by State funds if a conflict of interest, real or apparent, would be involved.

(B) Such a conflict would arise when:

(i) Any employee, officer or agent of the municipality, any member of the immediate families, or their partners, have a financial or other interest in the firm selected for award; or
(ii) An organization which may receive or has been awarded a subagreement employs, or is about to employ, any person under (B)(i) of this Section.

(C) The municipality's officers, employees or agents shall neither solicit nor accept gratiuties, favors or anything of monetary value from contractors, potential contractors or other parties to subagreements.

(D) Municipalities may set minimum rules where the financial interest is not substantial or the gift is an unsolicited item of nominal value.

(E) To the extent permitted by State or local law or regulations, the municipality's code of conduct shall provide for penalities, sanctions or other disciplinary actions for violations of the code by the municipality's officers, employees or agents or by contractors or their agents.

22a-482-4(h)(15) Payment to consultants

(A) For all State assistance agreements, the State will limit its participation in the salary rate (excluding overhead) paid to individual consultants retained by a municipality or by a municipality's contractors or subcontractors to the maximum daily rate for a GS-18 federal employee. (Municipality's may, however, pay contractors and subcontractors more than this amount.) This limitation applies to consultation services of designated individuals with specialized skills who are paid at a daily or hourly rate. The rate does not include transportation and subsistence costs for travel performed; municipality's will pay these in accordance with their normal travel reimbursement practices.

(B) Subagreements with firms for services which are awarded using these procurement requirements are not affected by this limitation.

22a-482-4(h)(16) Cost and price considerations

(A) The municipality shall conduct a cost analysis of all negotiated change orders and all negotiated subagreements estimated to exceed $10,000.

(B) The municipality shall conduct a price analysis of all formally advertised procurements estimated to exceed $10,000 if there are fewer than three bidders.

(C) For negotiated procurement, contractors and subcontractors shall submit cost or pricing data in support of their proposals to the municipality.

22a-482-4(h)(17) Small purchases

(A) Small Purchase Procurement. If the aggregate amount involved in any one procurement transaction does not exceed $10,000, including estimated handling and freight charges, overhead and profit, the municipality may use small purchase procedures.

(B) Small Purchase Procedures. Small purchase procedures are relatively simple procurement methods that are sound and appropriate for procurement of services, supplies or other property costing in the aggregate not more than $10,000.

(C) Requirements for Competition.

(i) Municipalities shall not divide a procurement into smaller parts to avoid the dollar limitation for competitive procurement.
(ii) Municipalities shall obtain price or rate quotations from an adequate number of qualified sources.

22a-482-4(h)(18) Negotiation and award of subagreements

(A) Unless the request for proposals states that award may be based on initial offers alone, the municipality must conduct meaningful negotiations with the best qualified offerors with acceptable proposals within the competitive range, and permit revisions to obtain best and final offers. The best qualified offerors must have equal opportunities to negotiate or revise their proposals. During negotiations, the municipality must not disclose the identity of competing offerors or any information from competing proposals.

(B) The municipality must award the subagreement to the responsible offeror whose proposal is determined in writing to be the most advantageous to the

municipality, taking into consideration price and other evaluation criteria set forth in the request for proposals.

(C) The municipality must promptly notify unsuccessful offerors that their proposals were rejected.

(D) The municipality must document its procurement file to indicate how proposals were evaluated, what factors were used to determine the best qualified offerors within the competitive range, and what factors were used to determine the subagreement award.

22a-482-4(h)(19) Optional selection procedure for negotiation and award of subagreement for architectural and engineering services

(A) The municipality may evaluate and select an architect or engineer using the procedures in this subdivision in place of the procedures in "Negotiation and award of subagreements" in subdivision (18).

(B) The municipality may use responses from requests for statement of qualifications to determine the most technically qualified architects or engineers.

(C) After selecting and ranking the most qualified architects or engineers, the municipality will request technical proposals from those architects or engineers and inform them of the evaluation criteria the municipality will use to rank the proposals.

(D) The municipality shall then select and determine, in writing, the best technical proposal.

(E) After selecting the best proposal, the municipality shall attempt to negotiate fair and reasonable compensation with that offeror.

(F) If the municipality and the offeror of the best proposal cannot agree on the amount of compensation, the municipality shall formally terminate negotiations with that offeror. The municipality shall then negotiate with the offeror with the next best proposal. This process will continue until the municipality reaches agreement on compensation with an offeror with an acceptable proposal. Once the municipality terminates negotiations with an offeror, the municipality cannot go back and renegotiate with that offeror.

22a-482-4(h)(20) Noncompetitive negotiation procurement method

Noncompetitive negotiation may be used only when the award of a subagreement is not feasible under small purchase, formal advertising, or competitive negotiation procedures. The municipality may award a noncompetitively negotiated subagreement only under the following circumstances:

(A) The item is available only from a single source;

(B) A public exigency or emergency exists and the urgency for the requirement will not permit a delay incident to competitive procurement; or

(C) After solicitation from a number of sources, competition is determined to be inadequate.

22a-482-4(h)(21) Use of the same architect or engineer during construction

(A) If the municipality is satisfied with the qualifications and performance of the architect or engineer who provided any or all of the planning or design services for the project, it may wish to retain that firm or individual during construction of the project. The municipality may do so without further public notice and evaluation of qualifications provided that it received financial assistance for the planning and/or design services and selected the architect or engineer in accordance with these procurement regulations.

(B) However, if the municipality uses the procedures in (A) to retain an architect or engineer, any construction subagreements between the architect or engineer and the municipality must meet the procurement provisions of subsection (i)(5) of this section..

22a-482-4(h)(22) Negotiation of subagreements

(A) Formal advertising, with adequate purchase descriptions, sealed bids, and public openings shall be the required method of procurement unless negotiation under (B) of this section is necessary to accomplish sound procurement.

(B) All negotiated procurement shall be conducted in a manner to provide to the maximum practicable extent open and free competition appropriate to the type of project work to be performed. The municipality is authorized to negotiate subagreements if any of the following conditions exist:

(i) Public exigency will not permit the delay incident to formally advertised procurement (e.g. an emergency procurement);
(ii) The aggregate amount involved does not exceed $10,000;

(iii) The material or service to be procured is available from only one person or entity. If the procurement is expected to aggregate more than $10,000, the municipality must document its file with a justification of the need for noncompetitive procurement, and provide such documentation to the Commissioner on request;

(iv) The procurement is for personal or professional services (including architectural or engineering services) or for any service that a university or other educational institution may render;

(v) No responsive, responsible bids at acceptable price levels have been received after formal advertising, and the Commissioner's prior written approval has been obtained;

(vi) The procurement is for materials or services where the price is established by law;

(vii) The procurement is for technical items or equipment requiring standardization and interchangeability of parts with existing equipment; or

(viii) The procurement is for experimental, developmental or research services.

22a-482-4(h)(23) Enforcement

If the Commissioner determines that the municipality has failed to comply with any of these procurement provisions, he or she may impose any of the following sanctions:

(A) The grant may be terminated or annulled under Section 22a-482-4(t).

(B) Project costs directly related to the noncompliance may be disallowed.

(C) Payment otherwise due to the municipality of up to 10 percent may be withheld.

(D) Project work may be suspended under Sec. 22a-482-4(g) (6).

(E) A noncomplying municipality may be found nonresponsible or ineligible for future state funding assistance or a noncomplying contractor may be found nonresponsible or ineligible for approval for future contract award under state grants.

(F) An injunction may be entered or other equitable relief afforded by a court of appropriate jurisdiction.

(G) Such other administrative or judicial action may be instituted if it is legally available and appropriate.

22a-482-4(h)(24) Contract Enforcement

Commissioner authority. At the request of a municipality, the Commissioner is authorized to provide technical and legal assistance in the administration and enforcement of any contract related to pollution abatement facilities for which a State grant was made and to intervene in any civil action involving the enforcement of such contracts, including contract disputes which are the subject of either arbitration or court action in accordance with the requirements of Section 22a-482-4(f)(1).

22a-482-4 (j) CONSTRUCTION CONTRACT PROCUREMENT REQUIREMENTS

(This section applies to construction contracts in excess of $10,000 awarded by municipalities for any construction projects.)

22a-482-4 (j)(1) Type of Contract

Each contract shall be a fixed price (lump sum or unit price or a combination of the two) contract, unless the Commissioner gives advance written approval for the municipality to use some other acceptable type of contract. The cost-plus-percentage-of-cost contract shall not be used in any event.

22a-482-4 (j)(2) Formal Advertising

Each contract shall be awarded after formal advertising, unless negotiations are permitted in accordance with Sec. 22a-482-4(h)(18). Formal advertising shall be in accordance with the following:

(A) Adequate public notice. The municipality will cause adequate notice to be given of the solicitation by publication in newspapers or journals of general circulation beyond the municipality's locality (statewide, generally), inviting bids on the project work and stating the method by which bidding documents may be obtained or examined. Where the estimated cost of construction is $10 million or more, the municipality should publish the notice in trade journals of nationwide distribution. The municipality may solicit bids directly from bidders if it maintains a bidders list;

(B) Adequate time for preparing bids. Adequate time, generally not less than 30 days, must be allowed between the date when public notice is first published and the date by which bids must be submitted. Bidding documents (including specifications and drawings) shall

be available to prospective bidders from the date when such notice is first published;

(C) Adequate bidding documents. The municipality shall prepare a reasonable number of bidding documents (invitations for bids) and shall furnish them upon request on a first-come, first-served basis. The municipality shall maintain a complete set of bidding documents and shall make them available for inspection and copying by any party. The bidding documents shall include:

(i) A complete statement of the work to be performed, including necessary drawings and specifications, and the required completion schedule;
(ii) The terms and conditions of the contract to be awarded;
(iii) A clear explanation of the method of bidding and the method of evaluation of bid prices, and the basis and method for award of the contract;
(iv) Responsibility requirements or criteria which will be employed in evaluating bidders;
(v) The following statement:

Any contract or contracts awarded under this invitation for bids are expected to be funded in part by the State of Connecticut (Department of Environmental Protection). Neither the State of Connecticut nor any of its departments, agencies or employees is or will be a party to this invitation for bids or any resulting contract. This procurement will be subject to the requirements contained in Section 22a-482-4, (h), (j) and (o) of the regulations of Connecticut State Agencies;

(vi) A copy of Sec. 22a-482-4, (h), (j) and (o); and
(vii) The prevailing State Wage Determination as applicable.

(D) Sealed bids. The municipality shall provide for bidding by sealed bid and for the safeguarding of bids received until public opening.

(E) Addenda to bidding documents. If a municipality desires to amend any part of the bidding documents (including drawings and specifications) during the period when bids are being prepared, the addenda shall be communicated in writing to all firms which have obtained bidding documents at least five (5) working days prior to the bid opening.

(F) Bid modifications. A firm which has submitted a bid shall be allowed to modify or withdraw its bid before the time of bid opening.

(G) Public opening of bids. The municipality shall provide for a public opening of bids at the place, date and time announced in the bidding documents.

(H) Award to the low, responsive, responsible bidder.

(i) After bids are opened, the municipality shall evaluate them in accordance with the methods and criteria set forth in the bidding documents.
(ii) The municipality may reserve the right to reject all bids. Unless all bids are rejected for good cause, award shall be made to the low, responsive, responsible bidder.
(iii) If the municipality intends to make the award to a firm which did not submit the lowest bid, it shall prepare a written statement before any award, explaining why each lower bidder was deemed nonresponsible or nonresponsive. The Municipality shall retain such statement in its files and forward a copy to the Commissioner for review.
(iv) Local laws, ordinances, regulations or procedures which are designed or which operate to give local bidders preference over other bidders shall not be employed in evaluating bids.
(v) If an unresolved procurement review issue or a protest relates only to award of a subcontract or procurement of an item under the prime contract, and resolution of that issue or protest is unduly delaying performance of the prime contract, the Commissioner may authorize award and performance of the prime contract before resolution of the issue or protest, if the Commissioner determines that resolution of the protest will not affect the placement of the prime contract bidders and will not materially affect initial performance of the prime contract; and that award of the prime contract is in the State's best interest, will not materially affect resolution of the protest, and is not barred by State or local law.
(vi) The municipality shall not reject a bid as nonresponsive for failure to list or otherwise indicate the selection of a subcontractor(s) or equipment, unless the municipality has unambiguously stated in the solicitation documents that such failure to list shall render a bid nonresponsive and shall cause rejection of a bid.

22a-482-4 (k) NEGOTIATION OF CONTRACT AMENDMENTS (CHANGE ORDERS)

22a-482-4 (k)(1)

The Municipality is responsible for the negotiation of construction contract change orders. This function may be performed by the municipality directly or, if authorized, by its engineer. During negotiations with the contractor the municipality shall:

(A) Make certain that the contractor has a clear understanding of the scope and extent of work and other essential requirements;

(B) Assure that the contractor demonstrates that he will make available or will obtain the necessary personnel, equipment and materials to accomplish the work within the required time; and

(C) Assure a fair and reasonable price for the required work.

22a-482-4 (k)(2)

The contract price or time may be changed only by a change order. When negotiations are required, they shall be conducted in accordance with Section 22a-482(k)(3) and (4) as appropriate. The value of any work covered by a change order or of any claim for increase or decrease in the contract price shall be determined by the method set forth in paragraphs (2)(A) through (2)(C) of this section, whichever is most advantageous to the municipality.

(A) Unit prices.

(i) Original bid items. Unit prices previously approved are acceptable for pricing changes of original bid items. However, when changes in quantities exceed 15 percent of the original bid quantity and the total dollar change of that bid item is significant, the municipality shall review the unit price to determine if a new unit price should be negotiated.

(ii) New items. Unit prices of new items shall be negotiated.

(B) A lump sum to be negotiated.

(C) Cost reimbursement. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work plus an amount to be agreed upon to cover the cost of general overhead and profit to be negotiated.

22a-482-4 (k)(3)

For each change order not in excess of $100,000 the contractor shall submit sufficient cost and pricing data to the municipality to enable the municipality to determine the necessity and reasonableness of costs and amounts proposed, and the allowability and eligibility of costs proposed.

22a-482-4 (k)(4)

For each change order in excess of $100,000, the contractor shall submit to the municipality for review sufficient cost and pricing data as described in paragraphs (4)(A) through (4)(E) of this section to enable the municipality to ascertain the necessity and reasonableness of costs and amounts proposed, and the allowability and eligibility of costs proposed.

(A) The contractor shall certify that proposed costs reflect complete, current, and accurate cost and pricing data applicable to the date of the change order.

(B) In addition to the specific elements of cost, the estimated amount of profit shall be set forth separately in the cost summary for fixed price change orders and a specific total dollar amount of profit will be set forth separately in the cost summary for cost reimbursement change orders.

(C) The municipality may require more detailed cost data in order to substantiate the reasonableness of proposed change order costs. The Commissioner may, on a selected basis, perform a detailed cost analysis on any change order.

(D) For costs under cost reimbursement change orders, the contractor shall have an accounting system which accounts for such costs in accordance with generally accepted accounting principles. This system shall provide for the identification, accumulation and segregation of allowable and unallowable change orders. Allowable change order costs shall be determined in accordance with Sections 22a-482-4(a), (b), (c), (d), and (e). The contractor must propose and account for such costs in a manner consistent with his normal accounting procedures.

(E) Change orders awarded on the basis of review of a cost element summary and a certification of complete, current, and accurate cost and pricing data shall be subject to downward renegotiation and recoupment of funds where a subsequent audit substantiates that such

certification was not based on complete, current and accurate cost and pricing data.

22a-482-4 (k)(5)Review by Commissioner.

The municipality shall submit, before the execution of any change order in excess of $100,000, to the Commissioner for review and approval:

(A) The cost and pricing data the contractor submitted;

(B) A certification of review and acceptance of the contractor's cost or price; and

(C) A copy of the proposed change order.

22a-482-4 (k)(6)Profit.

The objective of negotiations shall be the exercise of sound business judgement and good administrative practice including the determination of a fair and reasonable profit based on the contractor's assumption of risk and input to total performance and not merely the application of a predetermined percentage factor. For the purpose of negotiated change orders to construction contracts profit is defined as the net proceeds obtained by deducting all allowable costs (direct and indirect) from the price. The municipality should review the estimate of profit as it reviews all other elements of price.

22a-482-4 (k)(7)Related work.

Related work shall not be split into two amendments or change orders merely to keep it under $100,000 and thereby avoid the requirements of (4) of this section. For change orders which include both additive and deductive items:

(A) If any single item (additive or deductive) exceeds $100,000 the requirements of (4) of this section shall be applicable;

(B) If no single additive or deductive item has a value of $100,000 but the total price of the change order is over $100,000, the requirements of (4) of this section shall be applicable; and

(C) If the total of additive items of work in the change order exceeds $100,000 or the total of deductive items of work in the change order exceeds $100,000 and the net price of the change order is less than $100,000, the requirements of (4) of this section shall be applicable.

22a-482-4 (1) SUBCONTRACTS UNDER CONSTRUCTION CONTRACTS.

22a-482-4 (1)(1)

The award or execution of subcontracts by a prime contractor under a construction contract awarded to the prime contractor by the municipality, and the procurement and negotiation procedures used by prime contractors in awarding or executing subcontracts are not required to comply with any of the provisions, selection procedures, policies or principles set forth in Section 22a-482-4(h) or (j) except those specifically stated in this section. In addition, the bid protest procedures of Section 22a-482-4(o) are not available to parties executing subcontracts with prime contractors except as specifically provided in that section.

22a-482-4 (1)(2)

The award or execution of subcontracts by a prime contractor under a formally advertised, competitively bid, fixed price construction contract awarded to the prime contractor by the municipality, and the procurement and negotiation procedures used by such prime contractors in awarding or executing such subcontracts must comply with any municipality procurement system, State small, minority and women's business policy, (Section 22a-482-4(h)(9)), negotiation of contract amendments (Section 22a-482-4(k)), and clauses (8) and (9) of Section 22a-482-4(g).

22a-482-4 (m) PROGRESS PAYMENTS TO CONTRACTORS

22a-482-4 (m)(1)

Except as State law otherwise provides, municipalities must make prompt progress payments to prime contractors and prime contractors should make prompt progress payments to subcontractors and suppliers for eligible construction, material, and equipment costs, including those of undelivered, specifically manufactured equipment, incurred under a contract under this program. The Clean Water Fund shall only be obligated to pay the municipality amounts that the municipality is actually going to pay contractors.

22a-482-4 (m)(2) Conditions of progress payments.

For purposes of this section, progress payments are defined as follows:

(A) Payments for work in place;

(B) Payments for materials or equipment which have been delivered to the construction site, or which are stockpiled in the vicinity of the construction site, in accordance with the terms of the contract, when conditional or final acceptance is made by or for the municipality. The municipality shall assure that items for which progress payments have been made are adequately insured and are protected through appropriate security measures. Costs of such insurance and security are allowable costs; or

(C) Payments for undelivered specifically manufactured items or equipment (excluding off-the-shelf or catalog items) as work on them progresses. Such payments must be made if provisions therefor are included in the bid and contract documents. Such provisions may be included at the option of the municipality only when all of the following conditions exist:

(i) The equipment is so designated in the project specifications;
(ii) The equipment to be specifically manufactured for the project could not be readily utilized on nor diverted to another job; and
(iii) A fabrication period of more than 6 months is anticipated.

22a-482-4 (m)(3) Protection of progress payments made for specifically manufactured equipment.

The municipality will assure protection of the State's interest in progress payments made for items or equipment referred to in (2)(C) of this section. The protection must be acceptable to the municipality and must take the form of:

(A) Securities negotiable without recourse, condition or restrictions, a progress payment bond, or an irrevocable letter of credit provided to the municipality through the prime contractor by the subcontractor or supplier; and

(B) For items or equipment in excess of $200,000 in value which are manufactured in a jurisdiction in which the Uniform Commercial Code is applicable, the creation and perfection of a security interest under the Uniform Commercial Code which is reasonably adequate to protect the interests of the municipality.

22a-482-4 (m)(4) Limitations on progress payments for specifically manufactured equipment.

(A) Progress payments made for specifically manufactured equipment or items shall be limited to the following:

(i) A first payment upon submission by the prime contractor of shop drawings for the equipment or items in an amount not exceeding 15 percent of the contract or item price plus appropriate and allowable higher tier costs; and
(ii) Subsequent to the municipality's release or approval for manufacture, additional payments not more frequently than monthly thereafter up to 75 percent of the contract or item price plus appropriate and allowable higher tier costs. However, payment may also be made in accordance with the contract and grant terms and conditions for ancillary onsite work before delivery of the specifically manufactured equipment or items.

(B) In no case may progress payments for undelivered equipment or items under (4)(A)(i) or (4)(A)(ii) of this section be made in an amount greater than 75 percent of the cumulative incurred costs allocable to contract performance with respect to the equipment or items. Submission of a request for any such progress payments must be accompanied by a certification furnished by the fabricator of the equipment or item that the amount of progress payment claimed constitutes not more than 75 percent of cumulative incurred costs allocable to contract performance and, in addition, in the case of the first progress payment request a certification that the amount claimed does not exceed 15 percent of the contract or item price quoted by the fabricator.

(C) As used in this section, the term "costs allocable to contract performance" with respect to undelivered equipment or items includes all expenses of contract performance which are reasonable, allocable to the contract, consistent with sound and generally accepted accounting principles and practices consistently applied and which are not excluded by the contract.

22a-482-4 (m)(5) Enforcement.

A subcontractor or supplier which is determined by the Commissioner to have frustrated the intent of the provisions regarding progress payments for major equipment or specifically manufactured equipment through intentional forfeiture of its bond or failure to deliver the equipment may be determined nonresponsible and ineligible for further work under State funded projects.

22a-482-4 (m)(6) Contract provisions.

Where applicable, appropriate provisions regarding progress payments must be included in each contract and subcontract.

22a-482-4 (m)(7) Implementation.

The foregoing progress payments policy should be implemented in invitations for bids for project funded by the Clean Water Fund. If provision for progress payments is made after contract award, it must be for consideration that the municipality deems adequate.

22a-482-4 (n) RETENTION FROM PROGRESS PAYMENTS

22a-482-4 (n)(1)

The municipality may retain a portion of the amount otherwise due the contractor. The amount the municipality retains shall be limited to the following:

(A) Withholding of not more than 5 percent of the payment claimed until work is 50 percent complete;

(B) When work is 50 percent complete, reduction of the withholding to 2 percent of the dollar value of all work satisfactorily completed to date, provided that the contractor is making satisfactory progress and there is no specific cause for greater withholding;

(C) When the work is substantially complete (operational or beneficial occupancy), the withheld amount shall be further reduced below 2 percent to only that amount necessary to assure completion;

(D) The municipality may reinstate up to 5 percent withholding if the municipality determines, at its discretion, that the contractor is not making satisfactory progress or there is other specific cause for such withholding; and

(E) The municipality may accept securities negotiable without recourse, condition or restrictions, a release of retainage bond, or an irrevocable letter of credit provided by the contractor instead of all or part of the cash retainage.

22a-482-4 (n)(2)

The foregoing retention policy shall be implemented with respect to all construction projects. Appropriate provision to assure compliance with this policy must be included in the bid documents for such projects initially or by addendum before the bid submission date and as a special condition in the funding agreement or in an amendment which is issued by the Commissioner.

22a-482-4 (n)(3)

A municipality which delays disbursement to contractors of funds will be required to credit to the Clean Water Fund all interest earned on those funds and will be responsible for any and all tax law violations which occur as a result of their actions.

22a-482-4 (o) PROTESTS

22a-482-4 (o)(1) General

A protest based upon an alleged violation of the procurement requirements may be filed against a municipality's procurement action by a party with an adversely affected direct financial interest. Any such protest must be received by the municipality within the time period in (2)(A) of this section. The municipality is responsible for resolution of the protest before taking the protested action, in accordance with (4) of this section, except as otherwise provided by (9) of this section or 22a-482-4(j)(2)(H)(v).

22a-482-4 (o)(2) Time limitations

(A) A protest under (4) of this section should be made as early as possible during the procurement process to avoid disruption of or unnecessary delay to the procurement process. A protest authorized by (4) of this section must be received by the municipality within one week after the basis for the protest is known or should have been known, whichever is earlier.

(i) In the case of an alleged violation of the specification requirements of Section 22a-482-4(h)(12), relating to specifications (e.g., that a product fails to qualify as an "or equal") a protest need not be filed prior to the opening of bids. The municipality may resolve the issue before receipt of bids or proposals through a written or other formal determination, after notice and opportunity to comment is afforded to any party with a direct financial interest.

(ii) When an alleged violation of the specification requirements of Section 22a-482-4(h)(12) first arises subsequent to the receipt of bids or proposals, the municipality must decide the protest if the protest was received by the municipality within one week of the time that

the municipality's written or other formal notice is first received.

(B) A protest appeal authorized by this section must be filed in a court of competent jurisdiction within the locality of the municipality within one week after the complainant has received the municipality's determination.

(C) If a protest is mailed, the complaining party bears the risk of nondelivery within the required time period. All documents transmitted in accordance with this section shall be mailed by certified mail (return receipt requested) or otherwise delivered in a manner which will objectively establish the date of receipt. Initiation of protest actions under (4) or (5) of this section may be made by brief telegraphic notice accompanied by prompt mailing or other delivery of a more detailed statement of the basis for the protest. Telephone protests will not be considered.

22a-482-4 (o)(3) Other initial requirements

(A) The initial protest document must briefly state the basis for the protest and should:

(i) Refer to the specific portions of these regulations which allegedly prohibit the procurement action;
(ii) Specifically request a determination pursuant to this section;
(iii) Identify the specific procurement document(s) or portion(s) of them in issue; and
(iv) Include the name, telephone number, and address of the person representing the protesting party.

(B) The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest which may be adversely affected by the determination of the protest (all bidders or proposers who appear to have a substantial and reasonable prospect of receiving an award if the protest is denied or sustained) and to the Commissioner.

22a-482-4 (o)(4) Municipality determination

(A) The municipality is responsible for the initial resolution of protests based upon alleged violations of the procurement requirements.

(B) When the municipality receives a timely written protest, it must defer the protested procurement action in accordance with (7) of this section and:

(i) Afford the complaining party and interested parties an opportunity to present arguments in support of their views in writing or at a conference or other suitable meeting (such as a city council meeting);
(ii) Inform the complainant and other interested parties of the procedures which the municipality will observe for resolution of the protest;
(iii) Obtain an appropriate extension of the period for acceptance of the bid and bid bond(s) of each interested party, where applicable (failure to agree to a suitable extension of such bid and bid bond(s) by the party which initiated the protest shall be cause for summary dismissal of the protest by the municipality or the Commissioner); and
(iv) Promptly deliver (by certified mail, return receipt requested, or by personal delivery) its written determination of the protest to the complaining party and to each other participating party.

(C) The municipality's determination must be accompanied by a legal opinion addressing issues arising under State, or local law, if any and, when construction is involved, by an engineering report, if appropriate.

(D) The municipality should decide the protest as promptly as possible - generally within 3 weeks after receipt of a protest, unless extenuating circumstances require a longer period of time for proper resolution of the protest.

22a-482-4 (o)(5) Procedures

(A) Where resolution of an issue properly raised with respect to a procurement requirement necessitates prior or collateral resolution of a legal issue arising under State or local law, and such law is not clearly established in published legal decisions of the State or other relevant jurisdiction, the municipality may rely upon:

(i) An opinion of the municipality's legal counsel adequately addressing the issue;
(ii) The established or consistent practice of the municipality, to the extent appropriate;
(iii) The law of other local jurisdictions as established in published legal decisions; or
(iv) If none of the foregoing adequately resolve the issue, published decisions of the Comptroller General of the United States (U.S. General Accounting Office) or of the Federal or State courts addressing Federal or State requirements comparable to procurement requirements of this section.

(B) A party who submits a document subsequent to initiation of a protest proceeding must simultaneously furnish each of the other parties with a copy of such document.

(C) The procedures established herein are not intended to preclude informal resolution or voluntary withdrawal of protests. A complainant may withdraw its appeal at any time, and the protest proceedings shall thereupon be terminated.

(D) A protest may be dismissed for failure to comply with procedural requirements set forth in this section.

22a-482-4 (o)(6) Burden of proof

(A) In protest proceedings, if the municipality proposes to award a formally advertised, competitively bid, fixed price contract to a party who has submitted the apparent lowest price, the party initiating the protest will bear the burden of proof.

(B) In protest proceedings:

(i) If the municipality proposes to award a formally advertised, competitively bid, fixed price contract to a bidder other than the bidder which submitted the apparent lowest price, the municipality will bear the burden of proving that its determination concerning responsiveness is in accordance with these regulations; and
(ii) If the basis for the municipality's determination is a finding of nonresponsibility, the municipality must establish and substantiate the basis for its determination and must adequately establish that such determination has been made in good faith.

22a-482-4 (o)(7) Deferral of procurement action

Upon receipt of a protest, the municipality must defer the protested procurement action (for example, defer the issuance of solicitations, contract award, or issuance of notice to proceed under a contract) until ten days after delivery of its determination to the participating parties. The municipality may receive or open bids at its own risk, if it considers this to be in its best interest. When the Commissioner has received a written protest, he or she must notify the municipality promptly to defer its protested procurement action until notified of the formal or informal resolution of the protest.

22a-482-4 (o)(8) Enforcement

Noncompliance with the procurement provisions by the municipality shall be cause for enforcement action in accordance with one or more of the provisions of Section 22a-482-4(h)(23).

22a-482-4 (o)(9) Limitation

A protest may not be filed with respect to the following:

(A) Issues not arising under the procurement provisions;

(B) Issues relating to the selection of a consulting engineer, provided that a protest may be filed only with respect to the mandatory procedural requirements of Section 22a-482-4(i);

(C) Issues primarily determined by local law or ordinance and as to which the Commissioner, upon review, determines that there is no contravening state requirement and that the municipality's action has a rational basis;

(D) Provisions of State regulations applicable to direct State contracts unless such provisions are explicitly referred to or incorporated in these regulations;

(E) Basic project design determinations; or

(F) Award of subcontracts or issuance of purchase orders under formally advertised, competitively bid, lump sum construction contracts. However, protest may be made to alleged violations of the following:

(i) Specification requirements of Section 22a-482-4(h)(12); or
(ii) Provisions applicable to the procurement procedures, negotiation or award of subcontracts or issuance of purchase orders under Section 22a-482-4(l).

ADDITIONAL REQUIRED CONTRACT PROVISIONS

Construction Safety and Health Standards

It is a condition of this contract, and shall be made a condition of each subcontract entered into pursuant to this contract, that the contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part

1518 - published in the Federal Register on April 17, 1971) promulgated by the United States Secretary of Labor, in accordance with section 107 of the Contract Work Hours and Safety Standards Act (83 Stat. 96).

Service of Process

The successful bidder, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract, and six (6) years thereafter.

Substitution of Securities for Retainage

The Contractor is advised of the provisions of section 3-112a of the General Statutes of the State of Connecticut, Revision of 1966, which is quoted as follows:

SECTION 3.112a. Substitution of securities for retainages on state contracts. (a) Under any contract made or awarded by the state, or by any public department of official thereof, the contractor may, from time to time withdraw the whole or any portion of the amount retained for payments to the contractor pursuant to the terms of the contract, upon depositing with the comptroller (1) United States treasury bonds, United States treasury notes, United States treasury certificates of indebtedness or United States treasury bills, or (2) bonds or notes of the state of Connecticut or (3) bonds of any political subdivision in the state of Connecticut. No amount shall be withdrawn in excess of the market value of the securities at the time of deposit or of the par value of such securities, whichever is lower. (b) The comptroller shall, on a regular basis, collect all interest or income on the obligations so deposited and shall pay the same, when and as collected, to the contractor who deposited the obligations. If the deposit is in the form of coupon bonds, the comptroller shall deliver each coupon as it matures to the contractor. (c) Any amount deducted by the state, or by any public department or official thereof, pursuant to the terms of the contract, from the retainages due the contractor, shall be deducted, first from that portion of the retainage for which no security has been substituted, then from the proceeds of any deposited security. In the latter case, the contractor shall be entitled to receive interest, coupons or income only from those securities which remain after such amount has been deducted.

Requirements for Timely Payments

The Contractor is advised of the provisions of section 49-41a of the General Statutes of the State of Connecticut, Revision of 1958, which is quoted as follows:

SECTION 49-41a Enforcement of payment by general contractor to subcontractor and by subcontractor to his subcontractors. (a) When any public work is awarded by a contract for which a payment bond is required by section 49-41, the contract for the public work shall contain the following provisions: (1) A requirement that the general contractor, within forty-five days after payment to the contractor by the state or a municipality, pay any amounts due any subcontractor, whether for labor performed or for materials furnished, when the labor or materials have been included in a requisition submitted by a contractor and paid by the state or a municipality; (2) a requirement that the general contractor shall include in each of its subcontracts a provision requiring each subcontractor to pay any amounts due any of its subcontractors, whether for labor performed or materials furnished, within twenty days after such subcontractor receives a payment from the general contractor which encompasses labor or materials furnished by such subcontractor.

(b) If payment is not made by the general contractor or any of its subcontractors in accordance with such requirements, the subcontractor shall set forth his claim against the general contractor and the subcontractor of a subcontractor shall set forth its claim against the subcontractor through notice by registered or certified mail. Ten days after receipt of that notice, the general contractor shall be liable to the subcontractor, and the subcontractor shall be liable to the subcontractor, for interest on the amount due and owing at the rate of one per cent per month. In addition, the general contractor, upon written demand of its subcontractor, or the subcontractor, upon written demand of its subcontractor, shall be required to place funds in the amount of the claim, plus interest of one per cent, in an interest-bearing escrow account in a bank in this state, provided the general contractor or subcontractor may refuse to place the funds in escrow on the grounds that the subcontractor has not substantially performed the work according to the terms of his or its employment. In the event that such general contractor or subcontractor refuses to place such funds in escrow, and the party making a claim against it under this section is found to have substantially performed its work in accordance with the terms of its employment in any arbitration or litigation to determine the validity of such claim, then such general contractor or subcontractor shall pay the attorney's fees of such party.

(c) No payment may be withheld from a subcontractor for work performed because of a dispute between the general contractor and another contractor or subcontractor.

(d) This section shall not be construed to prohibit progress payments prior to final payment of the contract and is applicable to all subcontractors for material or labor whether they have contracted directly with the general contractor or with some other subcontractor on the work.

Maximum Retainage Allowed

SECTION 49-41b. Release of payments on public works construction projects. When any public work is awarded by a contract for which a payment bond is required by section 49-41 and such contract contains a provision requiring the general or prime contractor under such a contract to furnish a performance bond in the full amount of the contract price, the awarding authority shall be prohibited from withholding more than five per cent from any periodic or final payment which is otherwise properly due to the general or prime contractor under the terms of such contract, and any such general or prime contractor shall be prohibited from withholding more than five per cent from any periodic or final payment which is otherwise due any subcontractor.

Nondiscrimination

The contractor agrees and warrants that in the performance of this contract he will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age marital status, national origin, sex, mental retardation, or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved in any manner prohibited by the laws of the United States or of the State of Connecticut, and further agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission concerning the employment practices and procedures of the contractors as relate to the provisions of Public Act 78-148.

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971 and, as such, this contract may be cancelled, terminated or suspended by the State Labor Commissioner for violation of or non-compliance with said Executive Order No. Three or any state or federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this contract. The parties to this contract as part of the consideration hereof, agree that Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion.

The contractor or subcontractor agrees, as part consideration hereof, that this contract is subject to the Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner.

The Governor's Executive Order No. Three and the Guidelines and Rules implementing the Governor's Executive Order No. Three are included elsewhere herein.

Construction, Alteration or Repair of Public Works Projects by the State or Political Subdivision

The contractor shall comply with the provisions of Section 31-53 of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

> SECTION 31-53-1(a). Each contract for the construction, alteration or repair of any public works projects by the State or any of its agents, or by any political subdivision of the State or any of its agents, shall contain the following provision: "The wages paid on an hourly basis to any mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee welfare fund, as defined in subsection (h) of this section, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works contract work is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such employees to any such employee welfare fund shall pay to each employee as part of his wages the amount of payment or contribution for his classification on each pay day."

Listing All Employment Openings With the Office of the Connecticut State Employment Service

This contract is executed subject to the Governor's

Executive Order No. 17, a copy of which is attached hereto and is hereby made a part of this Agreement. Governor's Executive Order No. 17 requires, inter alia, that all contractors and subcontractors shall list all employment openings with the office of the Connecticut State Employment Service in the area where the work is to be performed or where the services are to be rendered. Failure of the contractor to conform with the requirements of the Governor's Executive Order No. 17 and any orders, rules or regulations issued pursuant thereto, shall be a basis for termination of this agreement by the State.

Residents Preference in Work on Other Public Facilities

The contractor shall comply with the provisions of Section 31-52a of the General Statutes of the State of Connecticut, Revision of 1967, a part of which is quoted as follows:

> SECTION 31-52a-2(b). Each contract for any such project covered by this section under the supervision of the state or any of its agents shall contain the following provision: "In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available then to residents of other states."

Project Sign

The Contractor shall erect a sign at the project site identifying the project and indicating that the Connecticut Department of Environmental Protection is providing funding for the construction of the project. The sign shall be erected within 14 days after the notice to proceed has been issued, and shall be in accordance with these specifications and the enclosed project sign detail. The sign shall be furnished, erected, and maintained by the Contractor at a location designated by the Engineer. The names of the Commissioner of Environmental Protection and the Governor of the State of Connecticut as shown on the sign shall be kept current, and shall be revised within 30 days of such notice to the Contractor that a change has occurred, at no cost to the Owner. No additional information shall be placed on the project sign beyond that shown in the project sign detail. If the owner desires to erect a supplemental sign with additional detail regarding the project or its sponsors, that sign shall be placed in such a manner that the project sign is not obscured from public view.

The sign shall be constructed of 3/4" minimum thickness exterior plywood (A-B) or APA high density overlay plywood (HDO). All fasteners shall be of a rustproof nature. The sign face background shall consist of at least three (3) coats of white outdoor enamel paint. The sign shall be fastened securely in an upright position and maintained in a location on the construction site clearly visible to the public and to visitors to the site.

Education, Welfare, and Public Health Tax (Sales and Use Tax)

The Contractor's attention is called to Regulation 18 as amended, promulgated by the Sales and Use Tax Division of the State Department of Revenue Services, which provided for the exemption of the sales and use tax on the purchase of such materials and supplies as are to be physically incorporated in and become a permanent part of the project being performed under this contract. The contractor may avail himself of the savings of this tax and shall take this exemption into account in calculating his bid for this work. The Contractor or Subcontractor shall furnish his suppliers with a completed certificate, in the following prescribed form:

* * * *

State of Connecticut
Department of Administrative Services (DAS) Contractor Prequalification

Update (Bid) Statement

(Statement to be included with the bid)

Connecticut General Statute §4a-100 and Connecticut General Statute §4b-91

Each bid submitted for a contract shall include a copy of a prequalification certificate issued by the Commissioner of Administrative Services. The bid shall also be accompanied by an **update bid statement** in such form as the Commissioner of Administrative Services prescribes. The form for such **update bid statement** shall provide space for information regarding all projects completed by the bidder since the date the bidder's prequalification certificate was issued or renewed, all projects the bidder currently has under contract, including the percentage of work on such projects not completed, the names and qualifications of the personnel who will have supervisory responsibility for the performance of the contract, any significant changes in the bidder's financial position or corporate structure since the date the certificate was issued or renewed, any change in the contractor's qualification status and such other relevant information as the Commissioner of Administrative Services prescribes. Any bid submitted without a copy of the prequalification certificate and an **update bid statement** shall be invalid. Any public agency that accepts a bid submitted without a copy of such prequalification certificate and an **update bid statement**, as required by this section, may become ineligible for the receipt of funds related to such bid.

Name of Project that company is bidding on:		
Project Number:		
Name of Company:		
FEIN:		
Company Address:		
Prequalification Contact:		**Telephone Number:**
Date of Prequalification with the DAS:	**Single Limit:**	**Aggregate Work Capacity (AWC):**
		*** Remaining Aggregate Work Capacity:**

* This amount equals your company's AWC minus the Total **$** Amount of Work Remaining.

Please list all of your company's BONDED PROJECTS (BOTH PUBLIC AND PRIVATE) WHICH WERE 100% COMPLETED SINCE THE DATE YOUR PREQUALIFICATION WAS ISSUED OR RENEWED: (Please add additional page(s) if required)

Name of Project	Owner of Project	Date Project Completed	Total Contract Amount

Please list all of your company's BONDED PROJECTS (BOTH PUBLIC AND PRIVATE) CURRENTLY UNDER CONTRACT:
(Please add additional page(s) if required. Please total the Work Remaining column)

Name of Project	Owner of Project	Total Contract Amount	% Complete	Work Remaining ($)
		Total $ Amount of Work Remaining →		

Please list the names and titles of the personnel who will have supervisory responsibility for the performance of the contract being bid on:
(Please add additional page(s) if required)

Individual Name	Title of Individual

Have there been any changes in your company's financial condition or business organization, which might affect your company's ability to successfully complete this contract?

Yes ☐ No ☐

If yes, please explain:

I certify under penalty of law that all of the information contained in this Update (Bid) Statement is true and accurate to the best of my knowledge as of the date below.

_____ _____

Signature **Date**

It is the responsibility of the Awarding Authority to determine if any of the information provided above will impact the contractor's performance on this project.
The DAS' Contractor Prequalification Program can be reached at (860) 713-5280

STATE OF CONNECTICUT

BY HIS EXCELLENCY

THOMAS J. MESKILL

GOVERNOR

EXECUTIVE ORDER NO. THREE

WHEREAS, sections 4-61d(b) and 4-114a of the 1969 supplement to the general statutes require nondiscrimination clauses in state contracts and subcontracts for construction on public buildings, other public works and goods and services, and

WHEREAS, section 4-61e(c) of the 1969 supplement to the general statutes requires the labor department to encourage and enforce compliance with this policy by both employers and labor unions, and to promote equal employment opportunities, and

WHEREAS, the government of this state recognizes the duty and desirability of its leadership in providing equal employment opportunity, by implementing these laws,

NOW, THEREFORE, I, THOMAS J. MESKILL, Governor of the State of Connecticut, acting by virtue of the authority vested in me under section twelve of article fourth of the constitution of the state, as supplemented by section 3-1 of the general statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The labor commissioner shall be responsible for the administration of this Order and shall adopt such regulations as he deems necessary and appropriate to achieve the purposes of this Order. Upon the promulgation of this Order, the commissioner of finance and control shall issue a directive forthwith to all state agencies, that henceforth all state contracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a provision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be cancelled, terminated or suspended by the labor commissioner for violation of or noncompliance with this Order or state or federal laws concerning nondiscrimination, notwithstanding that the labor commissioner is not a party to such contract or subcontract.

II

Each contractor having a contract containing the provisions prescribed in section 4-114a of the1969 supplement to the general statutes, shall file, and shall cause each of his subcontractors to file, compliance reports with the contracting agency or the labor commissioner, as may be directed such reports shall be filed within such times and shall contain such information as to employment policies and statistics of the contractor and each subcontractor, and shall be in such form as the labor commissioner may prescribe. Bidders or prospective contractors or subcontractors may be required to state whether they have participated in any previous contract subject to the provisions of this Order or any preceding similar Order, and in that event to submit on behalf of themselves and their proposed subcontractors compliance reports prior to or as an initial part of their bid or negotiation of a contract.

III

Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor organization or employment agency as defined in section 31-122 of the general statutes, the compliance report shall identify the said organization or agency and the contracting agency or the labor commissioner may require a compliance report to be filed with the contracting agency or the labor commissioner, as may be directed, by such organization or agency, signed by an authorized officer or agent of such organization or agency, with

supporting information, to the effect that the signer's practices and policies, including but not limited to matters concerning personnel, training, apprenticeship, membership, grievance and representation, and upgrading, do not discriminate on grounds of race, color, re1igious creed, age, sex or national origin, or ancestry of any individual, and that the signer will either affirmatively cooperate in the implementation of the policy and provisions of this Order, or that it consents and agrees that recruitment, employment and the terms and conditions of employment under the proposed contract shall be in accordance with the purposes and provisions of the Order.

IV

The labor commissioner may by regulation exempt certain classes of contracts, subcontracts or purchase orders from the implementation of this Order, for standard commercial supplies or raw materials, for less than specified amounts of money or numbers of workers or for subcontractors below a specified tier. The labor commissioner may also provide by regulation for the exemption of facilities of a contractor which are in all respects separate and distinct from activities of the contractor related to the performance of the state contract, provided only that such exemption will not interfere with or impede the implementation of this Order, and provided further, that in the absence of such an exemption, all facilities shall be covered by the provisions of this Order.

V

Each contracting agency shall be primarily responsible for obtaining compliance with the regulations of the labor commissioner with respect to contracts entered into by such agency or its contractors. All contracting agencies shall comply with the regulations of the labor commissioner in discharging their primary responsibility for securing compliance with the provisions of contracts and otherwise with the terms of this Order and of the regulations of the labor commissioner issued pursuant to this Order. They are directed to cooperate with the labor commissioner and to furnish the labor commissioner such information and assistance as he may require in the performance of his functions under this Order. They are further directed to appoint or designate from among the personnel of each agency, compliance officers, whose duty shall be to seek compliance with the objectives of this Order by conference, conciliation, mediation, or persuasion.

VI

The labor commissioner may investigate the employment practices and procedures of any state contractor or subcontractor and the practices and policies of any labor organization or employment agency hereinabove described, relating to employment under the state contract, as concerns nondiscrimination by such organization or agency as hereinabove described, or the labor commissioner may initiate such investigation by the appropriate contract agency, to determine whether or not the contractual provisions hereinabove specified or statutes of the state respecting them have been violated. Such investigation shall be conducted in accordance with the procedures established by the labor commissioner and the investigating agency shall report to the labor commissioner any action taken or recommended.

VII

The labor commissioner shall receive and investigate or cause to be investigated complaints by employees or prospective employees of a state contractor or subcontractor or members or applicants for membership or apprenticeship or training in a labor organization or employment agency hereinabove described, which allege discrimination contrary to the contractual provisions specified hereinabove or state statutes requiring nondiscrimination in employment opportunity. If this investigation is conducted for the labor commissioner by a contracting agency, that agency shall report to the labor commissioner what action has been taken or is recommended with regard to such complaints

VIII

The labor commissioner shall use his best efforts, directly and through contracting agencies, other interested federal, state and local agencies, contractors and all other available instrumentalities, including the commission on human rights and opportunities, the executive committee on human rights and opportunities, and the apprenticeship

council under its mandate to provide advice and counsel to the labor commissioner in providing equal employment opportunities to all apprentices and to provide training, employment and upgrading opportunities for disadvantaged workers, in accordance with section 31-51(d) of the l969 supplement to the general statutes, to cause any labor organization or any employment agency whose members are engaged in work under government contracts or referring workers or providing or supervising apprenticeship or training for or in the course of work under a state contract or subcontract to cooperate in the implementation of the purposes of this Order. The labor commissioner shall in appropriate cases notify the commission on human rights and opportunities or other appropriate state or federal agencies whenever it has reason to believe that the practices of any such organization or agency violate equal employment opportunity requirements of state or federal law.

IX

The labor commissioner or any agency officer or employee in the executive branch designated by regulation of the labor commissioner may hold such hearings, public of private, as the labor commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

X

(a) The labor commissioner may hold or cause to be held hearings, prior to imposing ordering or recommending the imposition of penalties and sanctions under this Order. No order for disbarment of any contractor from further state contracts shall be made without affording the contractor an opportunity for a hearing. In accordance with such regulations as the labor commissioner may adopt, the commissioner or the appropriate contracting agency may

(1) Publish or cause to be published the names of contractors or labor organizations or employment agencies as hereinabove described which it has concluded have complied or failed to comply with the provisions of this Order or the regulations of the labor commissioner in implementing this Order.

(2) Recommend to the commission on human rights and opportunities that in cases in which there is substantial or material violation or threat thereof of the contractual provision or related state statutes concerned herein, appropriate proceedings be brought to enforce them, including proceedings by the commission on its own motion under chapter 563 of the general statutes and the enjoining, within the limitations of applicable law, of organizations, individuals or groups who prevent directly or indirectly or seek to prevent directly or indirectly compliance with the provisions of this Order.

(3) Recommend that criminal proceedings be brought under chapter 939 of the general statutes.

(4) Cancel, terminate, suspend or cause to be cancelled, terminated, or suspended in accordance with law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the nondiscrimination provisions of the contract. Contracts may be cancelled, terminated, suspended absolutely or their continuance conditioned upon a program for fixture compliance approved by the contracting agency.

(5) Provide that any contracting agency shall refrain from entering into any further contracts or extensions or modifications of existing contracts with any contractor until he has satisfied the labor commissioner that he has established and will carry out personnel and employment policies compliant with this Order.

(6) Under regulations prescribed by the labor commissioner each contracting agency shall make reasonable efforts within a reasonable period of time to secure

compliance with the contract provisions of this Order by methods of conference conciliation, mediation or persuasion, before other proceedings shall be instituted under this Order or before a state contract shall be cancelled or terminated in whole or in part for failure of the contractor or subcontractor to comply with the contract provisions of state statute and this Order.

(b) Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the labor commissioner or pursuant to his regulations shall promptly notify *him* of such action. Whenever the labor commissioner makes a determination under this Order, he shall promptly notify the appropriate contracting agency and other interested federal, state and local agencies of the action recommended. The state and local agency or agencies shall take such action and shall report the results thereof to the labor commissioner within such time as he shall specify.

XI

If the labor commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order, or submits a program, for compliance acceptable to the labor commissioner, or if the labor commissioner so authorizes, to the contracting agency.

XII

Whenever a contracting agency cancels or terminates a contract, or a contractor has been disbarred from, further government contracts because of noncompliance with the contract provisions with regard to nondiscrimination, the labor commissioner or the contracting agency shall rescind such disbarment, upon the satisfaction of the labor commissioner that the contractor has purged himself of such noncompliance and will thenceforth carry out personnel and employment policies of nondiscrimination in compliance with the provision of this order.

XIII

The labor commissioner may delegate to any officer, agency or employee in the executive branch any function or duty of the labor commissioner under this Order except authority to promulgate regulations of a general nature.

XIV

This Executive Order supplements the Executive Order issued on September 28, 1967. All regulations, orders, instructions, designations and other directives issued heretofore in these premises, including those issued by the heads of various departments or agencies under or pursuant to prior order or statute, shall remain in full force and effect, unless and until revoked or superceded by appropriate authority, to the extent that they are not inconsistent with this Order.

This Order shall become effective thirty days after the date of this Order.

Dated at Hartford, Connecticut, this 16th day of June, 1971.

Thomas J. Meskill, GOVERNOR

Filed this ____ day of June, 1971.

SECRETARY OF THE STATE (DEPUTY)

STATE OF CONNECTICUT

BY HIS EXCELLENCY

THOMAS J. MESKILL

GOVERNOR

EXECUTIVE ORDER NO. SEVENTEEN

WHEREAS, Section 31-237 of the General Statutes of Connecticut as amended requires the maintaining of the established free services of the Connecticut State Employment Service to both employers and prospective employees and

WHEREAS, Section 31-5 of the General Statutes of Connecticut requires that no compensation or fee shall be charged or received directly or indirectly for the services of the Connecticut State Employment Service and

WHEREAS, large numbers of our citizens who have served in the Armed Forces of our nation are returning to civilian life in our state and seeking employment in civilian occupations and

WHEREAS, we owe a duty as well as gratitude to these returning veterans including the duty to find suitable employment for them and

WHEREAS, many of our handicapped citizens are fully capable of employment and are entitled to be placed in suitable employment and

WHEREAS, many of the citizens of our state who are unemployed are unaware of the job openings and employment opportunities which do in fact exist in our state and

WHEREAS, notwithstanding the free services of the Connecticut State Employment Service, many of our Connecticut employers do not use its free services or do not avail themselves fully of all of the services offered,

NOW, THEREFORE, I THOMAS J. MESKILL, Governor of the State of Connecticut, acting by virtue of the authority vested in me under the fourth article of the Constitution of the State and in accordance with Section 3-1 of the General Statutes, do hereby ORDER and DIRECT, as follows, by this Executive Order:

I

The Labor Commissioner shall be responsible for the administration of this Order and shall do all acts necessary and appropriate to achieve its purpose. Upon promulgation of this Order, the Commissioner of Finance and Control shall issue a directive forthwith to all state agencies, that henceforth all state contracts and subcontracts for construction on public buildings, other public works and goods and services shall contain a provision rendering such contract or subcontract subject to this Order, and that such contract or subcontract may be cancelled, terminated or suspended by the Labor Commissioner for violation of or noncompliance with this Order, notwithstanding that the Labor Commissioner is not a party to such contract or subcontract.

II

Every contractor and subcontractor having a contract with the State or any of its agencies, boards, commissions, or departments, every individual partnership, corporation, or business entity having business with the state or who or which seeks to do business with the state, and every bidder or prospective bidder who submits a bid or replies to an invitation to bid on any state contract shall list all employment openings with the office of the Connecticut State Employment Service in the area where the work is to be performed or where the services are to be rendered.

III

All state contracts shall contain a clause which shall be a condition of the contract that the contractor and any subcontractor holding a contract directly under the contractor shall list all employment openings with the Connecticut State Employment Service. The Labor Commissioner may allow exceptions to listings of employment openings which the contractor proposes to

fill from within its organizations from employees on the rolls of the contractor on the date of publication of the invitation to bid or the date on which the public announcement was published or promulgated advising of the program concerned.

IV

Each contracting agency of the state shall be primarily responsible for obtaining compliance with this Executive Order. Each contracting agency shall appoint or designate from among its personnel one or more persons who shall be responsible for compliance with the objectives of the Order.

V

The Labor Commissioner shall be and is hereby empowered to insect the books, records, payroll and personnel data of each individual or business entity subject to this Executive Order and may hold hearings or conferences, formal or informal, in pursuance of the duties and responsibilities hereunto delegated to the Labor Commissioner.

VI

The Labor Commissioner or any agency officer or employee in the executive branch designated by regulation of the Labor Commissioner may hold such hearings, public or private, as the Labor Commissioner may deem advisable for compliance, enforcement or educational purposes under this Order.

VII

a. The Labor Commissioner may hold or cause to be held hearings, prior to imposing, ordering, or recommending the imposition of penalties and sanctions under this Order. In accordance herewith, the Commissioner or the appropriate contracting agency may suspend, cancel, terminate, or cause to be suspended, cancelled, or terminated in accordance with law any contract or any portion or portions thereof for failure of the contractor or subcontractor to comply with the listing provisions of the contract. Contracts may be cancelled, terminated, suspended absolutely or their continuance conditioned upon a program for future compliance approved by the contracting agency.

b. Any contracting agency taking any action authorized by this Order, whether on its own motion or as directed by the Labor Commissioner, shall promptly notify him of such action. Whenever the Labor Commissioner makes a determination under this Order, he shall promptly notify the appropriate contracting agency of the action recommended. The agency shall report the results to the Labor Commissioner promptly.

VIII

If the Labor Commissioner shall so direct, contracting agencies shall not enter into contracts with any bidder or prospective contractor unless he has satisfactorily complied with the provisions of this Order.

This Order shall become effective sixty days after the date of this Order.

Dated at Hartford, Connecticut, this 15th day of February, 1973.

Thomas J. Meskill, GOVERNOR

Filed this 15th day of February, 1973.

SECRETARY OF THE STATE (DEPUTY)

CONNECTICUT CLEAN WATER FUND PROJECT SIGN

8’ 0”

State of Connecticut

Ned Lamont, Governor

Department of Energy and Environmental Protection

Katie S. Dykes, Commissioner

Project NAME

Environmental Protection for The City of XXXXXX

$0000 Description XXXX
$0000 State & Federal Grant
$0000 State & Federal Loan

From the
Connecticut DEEP Clean Water Fund

4’ 0”

Color Scheme:
Lettering in black
Background in white
Banner in yellow
Logo as pictured

Provide adequate supports for sign as site conditions may require. Keep sign a proper distance above prevailing grade to permit public viewing.

Revised December 2022

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Clean Water Fund Memorandum (2021-001)

Policy for Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment on Clean Water Fund Projects

I. PURPOSE

To provide municipalities guidance on the federal requirements regarding the inclusion of certain telecommunications and video surveillance services or equipment on Clean Water Fund (CWF) projects.

II. GOVERNING AUTHORITIES

Code of Federal Regulations Section 200.216: Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

III. POLICY

A. The above referenced prohibition became effective on August 13, 2020.

B. Prohibited telecommunications equipment or services covered by this requirement includes:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- Video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

C. CWF projects affected by this prohibition and options for compliance with this requirement.

- The telecommunication prohibition applies to all future CWF construction projects.

- For projects that are in construction as of the date of this memorandum, the telecommunication prohibition only applies to those CWF projects that have been assigned federal funding. DEEP staff will notify the municipalities that are subject to this requirement and offer the following options for compliance:

  a. redesign and install acceptable equipment;
  b. if equipment is already in place, remove and replace it; or
  c. identify the cost of the installed equipment, leave the equipment in place, and that cost is an ineligible cost for CWF participation.

July 28, 2021
Date

Jennifer L. Perry, P.E.
Director, Water Planning & Management
Bureau of Water Protection & Land Reuse

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Clean Water Fund Memorandum (2010-0816)

August 16, 2010

TO: ALL CONNECTICUT MUNICIPALITIES AND ENGINEERING CONSULTANTS

RE: DAVIS BACON REQUIREMENTS FOR CONSTRUCTION CONTRACTS

As of 10/30/2009, all financing agreements that utilize the Clean Water Fund must comply with Davis-Bacon Act (DB) wage requirements. DB wage requirements are federally established rates to be paid to laborers and mechanics on public works projects. Application of the DB requirements extends to all assistance agreements executed on or after October 30, 2009. If a project began construction prior to 10/30/2009, but is financed through an assistance agreement executed on or after 10/30/2009, DB requirements will apply to all construction that occurs on or after 10/30/2009 and through the completion of construction. This requirement is in addition to compliance with Connecticut's Prevailing Wage rates.

All monthly pay requests for funding shall contain a certification from the principal or prime contractor which states at a minimum the following:

1. The project name, location, contract number and pay period.
2. That all of the U.S. Department of Labor Davis-Bacon requirements have been complied with by the undersigned as principal contractor, and by each subcontractor employing mechanics or laborers at the site of the work;
3. That I, the undersigned, pay or supervise the payment of the persons employed by (insert name of construction company), principal contractor;
4. That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under See. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
5. That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract or a subcontract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part;
6. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
7. The undersigned acknowledges that the falsification of any of the above certifications may subject the undersigned to civil or criminal prosecution under Section 1001 of Title l 8 and Section 231 of Title 31 of the United States Code.

It is not necessary to submit the state and federal certified payroll forms with each pay request to DEP provided the above certification has been submitted.

If utility relocation work by private utility companies is required for the project (generally for projects involving separation of storm drainage from sanitary sewers), all utility companies must comply with DB regardless of the funding source. The only exception to this requirement is when 1) there is no state or federal funding for the utility relocation work, and 2) the utility company relocates their utilities before the municipality commences construction of the CWF project.

If you have any questions, please contact George Hicks at 860-424-3752.

Paul E. Stacey, Director
Planning & Standards Division
Bureau of Water Protection & Land Reuse

Attachment: Outline of Davis Bacon Requirements

Outline of the Davis-Bacon Act Requirements

Determine the type of construction (serves as the basis for prevailing wage classification)

- **Residential** -single family houses, townhouses, and apartment buildings up to four stories
- **Building** - sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. Also apartment buildings greater than 4 stories, parking garages, service stations, office buildings, fire stations, etc.
- **Highway** - roads, streets, highways, sidewalks, runways, parking areas, and other paving work not incidental to other construction
- **Heavy** - those projects, generally public works, which cannot be classified as Residential, Building, or Highway Construction

General Requirements

- Obtain Wage Determinations: http://www.wdol.gov Wage Determinations online
- Davis-Bacon Wage Determinations
  - Established by geographic area (usually a county or a group of counties)
  - Published for the 4 types of construction: Residential, Building, Highway, Heavy (classifications may be combined in many areas)
  - May be modified periodically
  - Must be included in bid documents and contract for construction with appropriate Federal labor standards provisions
- Verify prime contractor and all subcontractor eligibility against GSA Debarment List
- On-line access at: http://epls.arnet.gov
- Make record of verification to contract file
- Bid/contract documents must contain:
  - Applicable Davis-Bacon Wage Determination (WD)
  - Federal labor standards clauses

Wage Determination "Lock-In" Rules

- Competitive bidding: Modifications published less than 10 days before bid opening may be disregarded if found there is not sufficient time to notify bidders, and a report is made to contract file
- Lock-in at bid opening provided contract is awarded within 90 days
- Must update wage determination if contract award is more than 90 days after bid opening
- Once a Davis-Bacon wage rate has been "locked," it stays in effect for the duration of the project.

Municipal Responsibilities

- Ensure bid/contract documents contain applicable wage determination and labor clauses (prime and subcontractors)
- Ensure no contracts are awarded to ineligible contractors

- Ensure submission of certified payrolls
- Ensure sole source contracts contain labor standards

- Conduct onsite interviews with laborers and mechanics
  - Minimum once within 2 weeks of initial payroll and once within 2 week of final payroll per contractor
- Spot-check payrolls/related records
  - Minimum once within 2 weeks of initial payroll and once within 2 week of final payroll per contractor
- Periodically review use of apprentices and trainees
- Report potential violations to EPA DB contact and DOL Wages and Hours District Office
- Maintain full documentation
- Maintain records 3 years after completion

Prime Contractor's Responsibilities

- Prepares and submits certified payrolls for its own employees.
- Submits certified payrolls for all subcontractor employees.
- Reviews wage determination and requests additional classifications when needed.
- Provides subcontractors with forms and guidance concerning DB requirements.
- Provides DB Poster and interviewer confidential access to employees on site.
- Instructs lower-tier subcontractors of their responsibilities

Subcontractor's Responsibilities

- Prepares & submits certified payrolls each week for its own employees.
- Instructs any lower-tier subcontractors of responsibilities.
- Reviews wage determination and requests additional classifications if needed.
- Provides DB Poster and interviewer confidential access to employees on-site.

Federal and State Wage Rates Apply

- Contract must contain both Federal and State wage decisions/contract standards
- Employers must pay higher of two rates
- Payrolls must carry Federal statement of compliance (backside of payroll form WH-347) and the State's statement of compliance

Job Site Postings

- Notice to All Employees (WH1321)
- Davis-Bacon wage decision OR Project Wage Rate Sheet
- Protected from elements
- Accessible to all laborers and mechanics
- Easy for contractors and subs to know what rates they must pay
- Easy for laborers and mechanics to see whether they are paid properly
- Easy for the contract administrators reviewing payroll reports

- Should be prepared only after the wage decision has been locked in
- Davis-Bacon wage decision OR Project Wage Rate Sheet
- Should be prepared only after the wage decision has been locked in

Certified Payroll

- Form WH 347
- Compliance statement (w/original signature of corporate official or designee)
- Payrolls required weekly
- Identify first and final payroll
- Prime contractor reviews prior to submission
- Payroll retention is 3 years

Violations of DB

- Misclassification of laborers and mechanics.
- Failure to pay full prevailing wage, including fringe benefits, for all hours worked (including overtime hours).
- Inadequate recordkeeping, such as not counting all hours worked by an individual in two or more classifications during a day.
- Failure to maintain a copy of bona fide apprenticeship program and individual registration documents for apprentices.
- Failure to submit certified weekly payrolls.
- Failure to post the Davis-Bacon poster and applicable wage determination

All alleged violations should be reported to the EPA DB Coordinator and to Department of Labor

ATTACHMENT 1

I. Requirements Under The Water Resources Reform and Development Act of 2014 (WRRDA) For Sub recipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance under the Water Resources Reform and Development Act of 2014 (WRRDA) - with respect to State recipients and sub recipients that are governmental entities. If a sub recipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact **Valerie Marshall (Marshall.valerie@epa.gov), and (617) 918-1674,** of EPA, for guidance. The recipient or sub recipient may also obtain additional guidance from DOL's web site at http://www.dol.gov/whd/

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

Under the Water Resources Reform and Development Act of 2014 (WRRDA) -, DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving. If a sub recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the sub recipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Sub recipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the sub recipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The sub recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the sub recipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the sub recipient.

(ii) If the sub recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the sub recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The sub recipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the sub recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the sub recipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Sub recipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a sub recipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the sub recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the sub recipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The sub recipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the sub recipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF - financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or -FY 2015 Water Resource Reform and Development Act, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not

less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator

concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The sub recipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/index.htm or its successor site.

The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program,

who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or sub contractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and

Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub recipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29

CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing hat the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(3), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB.
Sub recipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the sub recipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The sub recipient shall periodically review contractors and subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and

that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

II. Requirements Under The Water Resource Reform and Development Act of 2014 (WRDA) -) For Sub recipients That Are Not Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance under –FY 2014 Water Resource Reform and Development Act with respect to sub recipients that are not governmental entities. If a sub recipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient for guidance. If a State recipient needs guidance, the recipient may contact **Valerie Marshall (Marshall.valerie@epa.gov), and (617) 918-1674,** EPA Grants Management Office for guidance. The recipient or sub recipient may also obtain additional guidance from DOL's web site at http://www.dol.gov/whd/

Under these terms and conditions, the sub recipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

Under the FY 2015 Water Resource Reform and Development Act -, DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund -. If a sub recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the sub recipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Sub recipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Sub recipient obtains its proposed wage determination, it must submit the wage determination to **INSERT STATE CONTACT NAME, EMAIL, and TELEPHONE NUMBER** for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official.)

(b) Sub recipients shall obtain the wage determination for the locality in which a covered activity

subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the sub recipient shall monitor www.wdol.gov. on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The sub recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the sub recipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the sub recipient.

(ii) If the sub recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the sub recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The sub recipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the sub recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the sub recipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Sub recipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a sub recipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the sub recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the sub recipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The sub recipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the sub recipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF - or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2015 Water Resource Reform and Development Act -, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable

standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The sub recipient(s) shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of

the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/forms/wh347instr.htm or its successor site.

The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of

this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractors registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and

individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29

CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub recipient shall upon the

request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (a)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(c) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(3), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Sub recipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence."

(c). The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the sub recipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The sub recipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

CONNECTICUT DEPARTMENT OF LABOR WAGE RATES

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 26-4192

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: Project Town: Brookfield
State#: FAP#:
Project: Dean and Pocono Roads Sanitary Sewer Extension

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	50.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	46.09	36.29
2) Carpenters, Piledrivermen	42.03	29.19
2a) Diver Tenders	42.03	29.19
2b) Divers Effluent	67.52	29.19
3) Divers	50.49	29.19
03a) Millwrights	43.25	29.13
03b) Carpenter-Welder	42.53	29.19
03c) Carpenter: Working with creosote lumber or acid	43.03	29.19

As of: April 13, 2026

4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	59.7	26.65
4a) Painters: Brush and Roller	39.57	26.50
4b) Painters: Spray	42.57	26.50
4bc) Painters: Spray Helper	40.57	26.50
4c) Painters: Steel Only	41.57	26.50
4d) Painters: Blast	44.57	26.50
4de) Painter: Blast Helper	40.57	26.50
4e) Painters: Tanks, Tower and Swingstage etc.	41.57	26.50
4f) Elevated Tanks (60 feet and above)	48.57	26.50
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	47.4	35.32+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	43.62 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	50.58	36.30
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	37.0	30.47

As of: April 13, 2026

8) Group 1a: Acetylene Burners (Hours worked with a torch)	38.0	30.47
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	37.25	30.47
10) Group 3: Pipelayers	37.5	30.47
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	37.5	30.47
12) Group 5: Toxic waste removal (non-mechanical systems)	39.0	30.47
13) Group 6: Blasters	38.75	30.47
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	40.0	30.47
Group 8: Traffic control signalmen	22.2	30.47
Group 9: Hydraulic Drills	37.75	30.47
Group 10: Toxic Waste Removers A or B With PPE	40.0	30.47
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	39.23	30.47 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	38.26	30.47 + a

As of: April 13, 2026

----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	38.26	30.47 + a
15) Form Erectors	38.59	30.47 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	38.26	30.47 + a
17) Laborers Topside, Cage Tenders, Bellman	38.15	30.47 + a
18) Miners	39.23	30.47 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	45.72	30.47 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	45.52	30.47 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	43.54	30.47 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	46.31	30.47 + a
----TRUCK DRIVERS----(*see note below)		
Block Truck	39.98	33.00 + a

2 Axle	38.66	33.00 + a
Helpers	36.16	33.00 + a
Three Axle Trucks; Two Axle Mixer	38.77	33.00 + a
Three Axle Mixer	38.83	33.00 + a
Four Axle	38.89	33.00 + a
Four Axle Mixer	40.69	33.00 + a
5 Axle	38.89	33.00 + a
5 Axle Mixer	40.69	33.00 + a
Heavy Duty Trailer (40 tons and over)	41.16	33.00 + a
Heavy Duty Trailer (up to 40 tons)	39.89	33.00 + a
Snorkle Truck	39.04	33.00 + a
Swivel Dump and Tack Truck	38.89	33.00 + a
Euclids and Semi Trailer	38.94	33.00 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over), Caisson Drilled Shaft over 14". (Trade License Required)	60.66	30.95 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	55.6	30.95 + a
Group 2: Cranes (100 ton rate capacity and over). (Trade License Required)	60.24	30.95 + a
Group 2a: Cranes (under 100 ton rated capacity), Magni Type-360 Rotating Forklift.	59.2	30.95 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer), HF-1 Forklift, Drills with self contained power units, Micropile up to 14 inches helical pile.	55.17	30.95 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	54.13	30.95 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper), Goldhofer.	53.61	30.95 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	52.78	30.95 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller, Geothermal Drill.	52.78	30.95 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	52.35	30.95 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	51.89	30.95 + a

As of: April 13, 2026

Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine, Rigger Foreman.	51.34	30.95 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	50.74	30.95 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	47.91	30.95 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	47.91	30.95 + a
Group 12: Wellpoint Operator.	47.82	30.95 + a
Group 13: Compressor Battery Operator.	47.04	30.95 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	45.45	30.95 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	44.89	30.95 + a
Group 16: Maintenance Engineer and Articulating End Dump.	43.99	30.95 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	49.95	30.95 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license), Rigger, Signalman.	46.6	30.95 + a
Surveyor: Chief of Party	50.21	30.95 + a

As of: April 13, 2026

Surveyor: Assistant Chief of Party	46.3	30.95 + a
Surveyor: Instrument Man	44.55	30.95 + a
Surveyor: Rodman or Chairman	38.34	30.95 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	59.91	34.00
21) Heavy Equipment Operator	53.92	31.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	50.92	30.84
23) Driver Groundmen	44.93	28.47
23a) Groundman Experienced	32.95	13.99

----OUTSIDE LINE CONSTRUCTION----

24) Driver Groundmen	43.78	28.42
25) Groundmen	32.1	13.95
26) Heavy Equipment Operators	52.53	31.83

As of: April 13, 2026

27) Linemen, Cable Splicers, Dynamite Men	58.37	33.94
28) Material Men, Tractor Trailer Drivers, Equipment Operators	49.61	30.79
29) Technician	56.12	32.85
----COMMUNICATION----		
Sales & Service Technician: To include but not limited to: Installation, Repair, Splicing and Maintenance	52.07	20.62
----DREDGING----		
Class A1: Mechanical Dredge Operator	48.48	17.32+a+b
Class B1: Maintenance Engineer	41.93	16.87+a+b
Class C1: Mate/Welder	38.38	16.62+a+b
Class D: Deckhand	30.86	16.09+a+b

Welders: Rate for craft to which welding is incidental.
Surveyors: Hazardous material removal: $3.00 per hour premium.
*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.
**Note: Hazardous waste premium $3.00 per hour over classified rate.
Truck Drivers: Trainers Premium: $3.00 over wage rate.
Truck Drivers: Night Premium - Mixer Drivers: $2.00 over wage rate.

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

As of: April 13, 2026

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: April 13, 2026

DAVIS-BACON (U.S. DEPARTMENT OF LABOR) WAGE RATES

"General Decision Number: CT20260013 01/23/2026

Superseded General Decision Number: CT20250013

State: Connecticut

Construction Type: Heavy

County: Fairfield County in Connecticut.

HEAVY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/02/2026
1	01/23/2026

* BRCT0001-011 01/05/2026

	Rates	Fringes
BRICKLAYER	$ 46.09	36.29

---

* BRCT0001-012 01/05/2026

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 46.09	36.29

CARP0326-019 05/05/2025

	Rates	Fringes
CARPENTER		
CARPENTER, PILEDRIVER	$ 42.03	29.19
DIVER TENDER	$ 42.03	29.19
DIVER	$ 50.49	29.19

---

* CARP1121-006 01/05/2026

	Rates	Fringes
MILLWRIGHT	$ 45.14	30.24

ELEC0003-004 04/17/2025

Darien, Greenwich, New Canaan, Stamford and the portion of Norwalk lying West of Five Mile River

	Rates	Fringes
ELECTRICIAN	$ 45.00	69.17%+5.50

ELEC0488-006 06/01/2025

Bethel, Bridgeport, Brookfield, Danbury, Easton, Fairfield, Monroe, New Fairfield, Newtown, Norwalk, Redding, Ridgefield, Shelton, Sherman, Stratford, Trumball, Weston, Westport and Wilton Townships

	Rates	Fringes
ELECTRICIAN	$ 47.40	3%+35.32

ENGI0478-001 04/06/2025

	Rates	Fringes
Power equipment operators:		
GROUP 1	$ 58.19	29.80
GROUP 2	$ 57.78	29.80
GROUP 3	$ 56.79	29.80
GROUP 4	$ 51.92	29.80
GROUP 5	$ 50.63	29.80
GROUP 6	$ 50.22	29.80
GROUP 7	$ 49.25	29.80
GROUP 8	$ 49.25	29.80
GROUP 9	$ 48.67	29.80
GROUP 10	$ 45.96	29.80
GROUP 11	$ 45.96	29.80
GROUP 12	$ 45.87	29.80
GROUP 13	$ 47.91	29.80
GROUP 14	$ 45.12	29.80
GROUP 15	$ 44.70	29.80
GROUP 16	$ 43.60	29.80
GROUP 17	$ 43.06	29.80
GROUP 18	$ 42.20	29.80
GROUP 19	$ 53.33	29.80
GROUP 20	$ 52.92	29.80
GROUP 21	$ 51.92	29.80

Hazardous waste premium $3.00 per hour over classified rate.

Crane with boom, including jib, 150 feet - $1.50 extra.
Crane with boom, including jib, 200 feet - $2.50 extra.
Crane with boom, including jib, 250 feet - $5.00 extra.
Crane with boom, including jib, 300 feet - $7.00 extra.
Crane with boom, including jib, 400 feet - $10.00 extra

1) Crane handling or erecting structural steel or stone, hoisting engineer(2 drums or over)
2) Cranes(100 ton rated capacity and over) Bauer Drill/Caisson
3) Cranes(under 100 ton rated capacity)

a. PAID HOLIDAYS: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over)

GROUP 2: Cranes (100 ton capacity & over) Bauer Drill/Caisson

GROUP 3: Cranes (under 100 ton rated capacity)

GROUP 4: Trenching machines, lighter derrick, concrete finishing machine, CMI machine or similar, Koehring Loader (skooper).

GROUP 5: Specialty railroad equipment, asphalt spreader, asphalt reclaiming machine, line grider, concrete pumps, drills with self contained power units, boring machine, post hole digger, auger, pounder, well digger, milling

machine (over 24' mandrel), side boom, combination hoe and loader, directional driller

GROUP 6: Front end loader (3 cu. yds. up to 7 cu. yards), bulldozer (Rough grade dozer) .

GROUP 7: Asphalt roller, concrete saws and cutters (ride on types), Vermeer concrete cutter, stump grinder, scraper, snooper, skidder, milling machine (24"" and under Mandrel).

GROUP 8: Mechanic, grease truck operator, hydoblaster, barrier mover, power stone spreader, welder, work boat under 26 ft. transfer machine.

GROUP 9: Front end loader (under 3 cubic yards), skid steer loader (regardless of attachments), bobcat or similar, forklift, power chipper, landscape equipment (including hydroseeder), Vacuum Exacavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).

GROUP 10: Vibratory hammer,ice machine, diesel & air, hammer, etc.

GROUP 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.

GROUP 12: Wellpoint operator.

GROUP 13: Portable asphalt plant operator, portable concrete plant operator, portable crusher plant operator, portable grout plant operator, portable water filtration plant operator.

GROUP 14: Compressor battery operator.

GROUP 15: Power Safety boat, Vacuum truck, Zim mixer, Sweeper; (Minimum for any job requiring a CDL license) .

GROUP 16: Elevator operator, tow motor operator (solid tire no rough terrain).

GROUP 17: Generator operator, compressor operator, pump operator,welding machine operator; Heater operator.

GROUP 18: Maintenance engineer.

GROUP 19: Front end loader(7 cubic yards or over); work boat 26 ft. and over.

GROUP 20: Excavator over 2 cubic yards; pile driver($3.00 premium when operator
controls hammer).

GROUP 21: Excavator, gradall, master mechanic, hoisting engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power or operaing), rubber tire excavator (drott 1085
similar), grader operator, bulldozer finegrade (slopes shaping, laser or GPS, ect.)

ENGI0478-007 04/06/2025

	Rates	Fringes

POWER EQUIPMENT OPERATOR:

Asphalt Paver	$ 50.63	29.80
Asphalt Roller	$ 49.77	29.80
Asphalt Spreader	$ 50.63	29.80
Backhoe/Excavator 2 cubic yards and over	$ 52.92	29.80
Backhoe/Excavator under 2 cubic yards	$ 51.92	29.80
Bulldozer (Rough Grade Dozer)	$ 50.22	29.80
Bulldozer Fine Grade(includes slopes, shaping, laser or gps)	$ 51.92	29.80
Crane handling or erecting structural steel or stone	$ 58.19	29.80
Cranes (100 ton capacity & over)	$ 57.78	29.80
Cranes (under 100 ton rated capacity)	$ 56.79	29.80
Drills with self contained power units; Directional driller	$ 50.63	29.80
Earth Roller	$ 45.96	29.80
Forklift	$ 48.67	29.80
Front End Loader (3 cubic yards up to 7 cubic yards)	$ 50.22	29.80
Front End Loader (7 cubic yards or over)	$ 53.33	29.80
Front End Loader (under 3 cubic yards)	$ 48.67	29.80
Grader/Blade	$ 51.92	29.80
Maintenance Engineer/Oiler	$ 42.20	29.80
Mechanic	$ 49.25	29.80
Rubber Tire Backhoe/Excavator	$ 51.92	29.80

a. PAID HOLIDAYS: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday.

b. Crane with boom, including jib, 150 feet - $1.50 extra .
Crane with boom, including jib, 200 feet- $2.50 extra.
Crane with boom, including jib, 250 feet - $5.00 extra.
Crane with boom, including jib, 300 feet - $7.00 extra.
Crane with boom, including jib, 400 feet - $10.00 extra.

1) Crane handling or erecting structural steel or stone, hoisting engineer(2 drums or over)
2) Cranes(100 ton rated capacity and over) Bauer Drill/Caisson
3) Cranes(under 100 ton rated capacity)

IRON0015-005 06/02/2025

	Rates	Fringes
IRONWORKER, REINFORCING	$ 45.25	43.62

a. PAID HOLIDAY: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

LABO0146-002 04/06/2025

	Rates	Fringes
Laborers: (TUNNEL CONSTRUCTION)		
CLEANING, CONCRETE AND CAULKING TUNNEL:		
Concrete Workers, Form Movers and Strippers	$ 36.96	28.85
Form Erectors	$ 37.29	28.85
ROCK SHAFT, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:		
Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	$ 36.96	28.85
Laborers Topside, Cage Tenders, Bellman	$ 36.85	28.85
Miners	$ 37.93	28.85
SHIELD DRIVE AND LINER PLATE TUNNELS IN FREE AIR:		
Brakemen and Trackmen	$ 36.96	28.85
Miners, Motormen, Mucking Machine Operators, Nozzlemen, Grout Men, Shaft and Tunnel, Steel and Rodmen, Shield and Erector, Arm Operator, Cable Tenders	$ 37.93	28.85
TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR:		
Blaster	$ 44.42	28.85
Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	$ 44.22	28.85
Change House Attendants, Powder Watchmen, Top on Iron Bolt	$ 42.24	28.85
Mucking Machine Operator	$ 45.01	28.85

a. PAID HOLIDAYS: On tunnel work only: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

LABO0146-003 04/06/2025

	Rates	Fringes
LABORERS		
GROUP 1	$ 35.70	28.85
GROUP 2	$ 35.95	28.85
GROUP 3	$ 36.20	28.85
GROUP 4	$ 38.70	28.85
GROUP 5	$ 37.45	28.85
GROUP 6	$ 37.70	28.85

GROUP 7.....$ 21.42 28.85
GROUP 8:.....$ 36.70 28.85
GROUP 9.....$ 38.70 28.85

LABORERS CLASSIFICATIONS

GROUP 1: Laborers (Unskilled), concrete specialist

GROUP 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators and powdermen.

GROUP 3: Pipelayers, Jackhammer/Pavement breaker (handheld), mason tenders/catch basin builders, asphalt rakers, air track operators, block paver and curb setter

GROUP 4: Asbestos/lead removal

GROUP 5: Blasters

GROUP 6: Toxic waste remover

GROUP 7: Traffic control signalman

GROUP 8: Acetylene burner (Hours worked with a torch)

GROUP 9: Toxic Waste Removers A or B With PPE

(On a site designated as a SuperFund Site by the U.S. Army Corps of Engineers and is deemed a HAZ-MAT site, and applies to employees required to wear OSHA leval A or B even if the PPE is not worn.)

PAIN0011-013 06/01/2021

	Rates	Fringes
PAINTER		
Brush and Roller	$ 36.42	22.90
Spray Only	$ 39.42	22.90
Steel Only	$ 38.42	22.90

TEAM0064-001 04/06/2025

	Rates	Fringes
Truck drivers:		
2 Axle Ready Mix	$ 36.27	32.68
2 Axle	$ 36.16	32.68
3 Axle Ready Mix	$ 36.33	32.68
3 Axle	$ 36.27	32.68
4 Axle Ready Mix	$ 37.19	32.68
4 Axle	$ 36.39	32.68
Heavy Duty Trailer 40 tons and over	$ 38.66	32.68
Heavy Duty Trailer up to 40 tons	$ 37.39	32.68
Snorkle Truck	$ 36.54	32.68
Specialized (Earth moving equipment other than conventional type on-the-road trucks and semi-trailers, including		

Euclids).....$ 36.44 32.68

Hazardous waste removal work receives additional $1.25 per hour.

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

TEAM0064-006 04/06/2025

	Rates	Fringes
TRUCK DRIVER: 4 Axle Truck	$ 36.39	32.68

Hazardous waste removal work receives additional $1.25 per hour.

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

SUCT2002-008 12/16/2008

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 28.62	10.84

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded.

If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

==========

END OF GENERAL DECISION"

PAYROLL CERTIFICATION FORMS

Connecticut Department of Energy and Environmental Protection
Payroll Certification-Davis Bacon Compliance

Project name: _____

Project location: _____

Contract number: _____

Pay period: _____ to _____

I, _____, the undersigned, pay or supervise the payment of the persons employed by_____, prime contractor.

1. All of the U.S. Department of Labor Davis-Bacon requirements have been complied with by the undersigned as principal contractor, and by each subcontractor employing mechanics or laborers at the site of the work.
2. The payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under See. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
3. Each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract or a subcontract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 5;
4. Each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
5. Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with identical wording) indicating that the certified payrolls are accurate and complete.

The undersigned acknowledges that the falsification of any of the above certifications may subject the undersigned to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code

Name: _____ (please type or print).
Title: _____

Signature: _____ Date_____

PROJECT NAME	PROJECT NO. or CONTRACT NO.	PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION		**WEEK ENDING DATE**	**CERTIFYING OFFICIAL's NAME AND TITLE**

I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:

☐ The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.

☐ All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.

☐ The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.

☐ Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.

APPRENTICESHIP PROGRAM NAME	REGISTERED		NAME OF LABOR CLASSIFICATION
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	

☐ Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.

HOURLY CREDIT FOR FRINGE BENEFITS

If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.

NAME OF WORKER	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	TOTAL HOURLY CREDIT
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hrly Credit $	$

☐ All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.

ADDITIONAL REMARKS

SIGNATURE OF CERTIFYING OFFICIAL	DATE	TELEPHONE NUMBER	EMAIL ADDRESS
		(___) ___ -____	

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE), AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY-ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.

U.S. Department of Labor
Wage and Hour Division

Davis-Bacon and Related Acts Weekly Certified Payroll Form

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Unless otherwise noted, the information requested is specific to the named project below.

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division

Rev. January 2025
OMB No.: 1235-0008
Expires: 01/31/2028

☐ SUBMISSION OF FINAL DBRA CERTIFIED PAYROLL FORM ☐ PRIME CONTRACTOR ☐ SUBCONTRACTOR

PROJECT NAME	PROJECT NO. or CONTRACT NO.	CERTIFIED PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION	**WAGE DETERMINATION NO.**	**WEEK ENDING DATE**	**PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS ADDRESS**

(1A)	(1B)	(1C)	(1D)	(1E)	(2)	(3)		(4)		(5)		(6A)	(6B)	(6C)	(7A)	(7B)	(8)				(9)
WORKER ENTRY NO.	WORKER LAST NAME	WORKER FIRST NAME	WORKER MIDDLE INITIAL	WORKER IDENTIFYING NO.	(J) JOURNEYWORKER (RA) REGISTERD APPRENTICE	LABOR CLASSIFICATION		ST = STRAIGHT TIME OT = OVERTIME	(TOP) DAYS OF WORK WEEK (BOTTOM) DATES HOURS WORKED EACH DAY	TOTAL HOURS WORKED FOR WEEK		HOURLY WAGE RATE PAID FOR ST AND OT	TOTAL FRINGE BENEFIT CREDIT	PAYMENT IN LIEU OF FRINGE BENEFITS	GROSS AMT EARNED	GROSS AMT EARNED FOR **ALL WORK**	DEDUCTIONS FOR **ALL WORK**				NET PAY TO WORKER FOR **ALL WORK**
								ST									TAX WITH-HOLDINGS	FICA	OTHER (MUST SPECIFY, SEE INSTRUCTIONS)	TOTAL DEDUCTIONS	
								OT													
								ST													
								OT													
								ST													
								OT													
								ST													
								OT													
								ST													
								OT													
								ST													
								OT													
								ST													
								OT													
								ST													
								OT													

While use of Form WH-347 itself is optional, covered contractors and subcontractors performing work on Federal or federally assisted construction contracts are required by the DBRA regulations and the contract clauses to submit payroll information on a weekly basis. The Copeland Act (40 U.S.C. § 3145) requires contractors and subcontractors performing work on Federal or federally financed construction contracts to, on a weekly basis, "furnish a statement on the wages paid each employee during the prior week." U.S. Department of Labor (DOL) Regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors and subcontractors to submit weekly certified payrolls to the appropriate Federal agency if the agency is a party to the contract (or, if the agency is not such a party, to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the Federal agency). Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with identical wording) indicating that the certified payrolls are accurate and complete, and that each laborer or mechanic has been paid not less than the required Davis-Bacon prevailing wage rate(s) (including any fringe benefits) for the work performed. DOL and contracting agencies receiving this information review the information to determine whether workers have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

PROJECT NAME	PROJECT NO. or CONTRACT NO.	PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION		**WEEK ENDING DATE**	**CERTIFYING OFFICIAL's NAME AND TITLE**

I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:

☐ The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.

☐ All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.

☐ The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.

☐ Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.

APPRENTICESHIP PROGRAM NAME	REGISTERED		NAME OF LABOR CLASSIFICATION
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	

☐ Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.

HOURLY CREDIT FOR FRINGE BENEFITS

If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.

NAME OF WORKER	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	FB NAME / FB TYPE / PLAN NO. / ☐ Funded ☐ Unfunded	TOTAL HOURLY CREDIT
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	$
	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hourly Credit $	Hrly Credit $	$

☐ All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.

ADDITIONAL REMARKS

SIGNATURE OF CERTIFYING OFFICIAL	DATE	TELEPHONE NUMBER	EMAIL ADDRESS
		(___) ___ -____	

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE), AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY-ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.





THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages
CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine
Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007,* where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions,Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the ***contractor's*** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.

- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

NOTICE

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

Inquiries can be directed to 860.263.6790.







CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

Contracting Agency Certification Form

I,_____, acting in my official capacity as _____,
Authorized Representative Title

for _____, located at _____,
Contracting Agency Address

do hereby certify that the total dollar amount of work to be done in connection with

_____, located at _____,
Project name and number Address

shall be $_____, which includes all work, regardless of whether such project contains of one or more contracts.

Contractor Information

Name: _____

Address: _____

Authorized Representative: _____

Approximate Starting Date: _____

Approximate Completion Date: _____

_____ _____
Signature Date

Return to:

Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine *"job classification"* on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- ***ASBESTOS WORKERS***

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- ***ASBESTOS INSULATOR***

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- ***BOILERMAKERS***

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- ***BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS***

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- ***CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS***

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

• If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

• An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- ***ELECTRICIANS***

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- ***ELEVATOR CONSTRUCTORS***

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ****License required by Connecticut General Statutes: R-1,2,5,6.***

- ***FORK LIFT OPERATOR***

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- ***GLAZIERS***

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- ***IRONWORKERS***

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- ***INSULATOR***

• Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- ***LABORERS***

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- ***PAINTERS***

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- ***LEAD PAINT REMOVAL***

• Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

• Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- ***PLUMBERS AND PIPEFITTERS***

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- ***POWER EQUIPMENT OPERATORS***

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- ***ROOFERS***

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- ***SHEETMETAL WORKERS***

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- ***SPRINKLER FITTERS***

Installation, alteration, maintenance and repair of fire protection sprinkler systems. ****License required per Connecticut General Statutes: F-1,2,3,4.***

- ***TILE MARBLE AND TERRAZZO FINISHERS***

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➢ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543.

Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

⇨ Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

INTERIM GUIDANCE FOR MINORITY BUSINESS ENTERPRISE AND WOMEN'S BUSINESS ENTERPRISE REQUIREMENT OF 40 CFR §33.240

I. PURPOSE

This interim guidance is for Regions to assist States, EPA assistance recipients, prime contractors, consultants, minority business owners and women's business owners in complying with EPA's Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) requirements in the Agency's procurement regulations, 40 C.F.R. Part 33. This guidance provides suggestions for carrying out the affirmative steps required by Office of Management and Budget Circular A-102, Attachment O, section 9 and included in EPA procurement regulations. Also included is a description of activities to be undertaken by EPA or delegated States, as well as suggestions for MBE/WBEs to take in pursuing opportunities for work in EPA-funded projects.

II. DEFINITIONS

A. Minority Business Enterprise (MBE) [same as definition to be in final 40 C.F.R. 33.005]: A minority business enterprise is a business which is

1. certified as a minority business enterprise by a State or Federal agency, or
2. an independent business concern which is at least 51 percent owned and controlled (as defined below) by minority group member(s). A minority group member is an individual who is a citizen of the United States and one of the following:
   a. Black American
   b. Hispanic American (with origins from Puerto Rico, Mexico, Cuba, South of Central America)
   c. Native American (American Indian, Eskimo, Aleut, native Hawaiian)
   d. Asian-Pacific American (with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the U.S. Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, Taiwan or the Indian Subcontinent)

B. Women's Business Enterprise (WBE) [same as definition to be in final 40 C.F.R. 33.005]: A women's business enterprise is a business which is

1. certified as such by a State or Federal agency; or
2. an independent business concern which is at least 51 percent owned by a woman or women who also control and operate it. Determination of whether a business is at least 51 percent owned by a woman or women shall be made without regard to community property laws. For example, an otherwise qualified WBE which is 51 percent owned by a married woman in a community property state will not be disqualified because her husband has a 50 percent interest in her share. Similarly, a business which is 51 percent owned by a married man and 49 percent owned by an unmarried woman will not become a qualified WBE by virtue of his wife's 50 percent interest in his share of the business.

C. Ownership and control

1. The minority or woman ownership's interest in the firm must be real, substantial and continuing. Such interest may include:
   a. risk of loss/share of profit commensurate with the proportional ownership; and

b. receipt of the customary incidents of ownership, such as salary and/or intangible benefits.

2. A minority or woman owner must have and exercise the authority to independently control the business. The minority or woman owner need not be continually present to be deemed in control. Characteristics of control may include:
   a. authority to sign bids and contracts,
   b. making decisions in price negotiations,
   c. incurring liabilities for the firm,
   d. making final staffing decisions,
   e. policy-making; and
   f. making general company management decisions.
3. Only those firms performing a useful business function according to custom and practice in the industry are qualified as MBE's or WBE's. A merely as a passive conduit of funds to some other, non-minority firm where such activity is unnecessary to accomplish the project does not constitute a "useful business function according to custom and practice in the industry."

D. Recipient – A party receiving federal financial assistance under an EPA program pursuant to a grant or cooperative agreement.

E. Project – The scope of work from which a cooperative agreement, grant or grant amendment is awarded.

F. Bidder – A party seeking to obtain a contract with a recipient through a competitive, advertise, sealed bid process.

G. Offeror – A party seeking to obtain a contract with a recipient through a negotiated procurement process.

IV. EPA RESPONSIBILITIES

A. Headquarters.
1. The officer in charge of the assistance program (program office) has primary responsibility for implementation of the MBE/WBE program, in cooperation with the Office of Small and Disadvantaged Business Utilization (OSDBU).
2. OSDBU is responsible for serving as the Agency focal point for inquiries on the MBE/WBE program, providing explanation of the program and guidance to MBEs and WBEs interested in working on EPA funded projects.

B. Regional Responsibilities
1. Provide guidance and advice to recipients as requested.
2. Maintain lists* of those MBE and WBE firms which have participated in EPA funded projects. The Region may also add MBEs and WBEs requesting to be included on source lists. Such lists are for information purposes only, and shall carry a clear and prominent statement that the firms listed are neither endorsed nor guaranteed by EPA as bona fide, MBE//WBEs. It is not necessary to be on any list in order to qualify as a bona fide MBE/WBE.
3. Monitor recipients for compliance with MBE/WBE requirements and for determining levels of MBE/WBE participation.

*Lists are available for review at the offices of the Owner, Engineer and DEP.

V. RECIPIENT RESPONSIBILITIES

A. The recipient shall take affirmative steps to contract with MBEs and WBEs and ensure that its contractors and consultants take affirmative steps to contract with MBEs and WBEs during all phases of work funded or to be funded under an EPA assistance agreement. The recipient's affirmative steps as defined in EPA procurement regulations are the following:

1. When feasible, dividing the total work to be contracted into smaller tasks in the solicitation documents to permit MBE/WBE participation.
2. Including qualified MBEs and WBEs on solicitation lists by drawing from the source lists of EPA Regional Offices and appropriate minority/women's business associations and agencies.
3. Assuring that MBEs and WBEs are solicited whenever they are potential sources of services and supplies, for example, by:
    a. Holding pre-bid conferences, with interested MBEs and WBEs in attendance when possible, to highlight the requirements of this program to prospective bidders,
    b. Including this MBE//WBE interim guidance in request for proposals (RFP) and invitations for bids (IFB),
    c. Publishing announcements of MBE/WBE opportunities for wok in EPA funded projects,
    d. Developing a source list of MBE/WBEs and providing its list to prospective bidders/offerors.
        1. The recipient may wish to engage an MBE/WBE liaison to compile the list.
        2. The recipient may wish to use available lists such as those of the EPA Regional Office, adjacent municipalities, appropriate minority/women associations and agencies, and available industry associations. Names of these agencies with address and phone number should also be included on the recipient source list.
    e. Providing necessary and appropriate liaison services between MBE/WBEs and prospective bidders/offerors. (Liaison services should not be delegated to consultants where a potential for conflict of interest exists).
4. When project requirements permit, establishing delivery schedules which encourage participation of MBE/WBEs.
5. Using the services and assistance of the Small Business Administration (SBA), the Minority Business Development Agency (MBDA), and other federal, State and local agencies when appropriate.

B. Unless otherwise provided in the specifications, compliance with the MBE/WBE requirements in the regulations is a matter of bidder/offeror responsibility.

C. The recipient is responsible for monitoring work in progress to insure that MBE and WBE subcontractors and joint ventures are actually participating in the performance of the subcontract or joint venture contract and to insure that the consultant/contractor is fulfilling its obligations with respect to MBE/WBE requirements under the contract.

D. As part of the documentation required under 40 C.F.R. 33.250, the recipient shall maintain and update records of MBE/WBE participation and supply data to the Region or delegated State when requested. Such records may include:

1. name of MBE/WBEs being utilized;
2. work designated to be performed by MBE/WBE;
3. dollar value of that work;
4. portion of project being performed by MBEs and WBEs

VI. BIDDER AND OFFEROR RESPONSIBILITIES

A. Affirmative Steps: Activities during preparation of bids and offers. Bidders/offerors shall take affirmative steps in compliance with the regulations, prior to submission of bids or closing date for recipient of initial offers, to encourage participation in projects by MBEs and WBEs. Such efforts include:

1. When feasible, segmenting total work requirements to permit maximum MBE/WBE participation.
2. Assuring that MBEs and WBEs are solicited whenever they are potential sources of goods or services. This step may include:
   a. Sending letters or making other personal contacts with MBEs and WBEs (e.g., those whose names appear on lists prepared by EPA or the recipient and other MBE/WBEs known to the bidder offeror). MBEs and WBEs should be contacted when other potential subcontractors are contacted, within reasonable time prior to bid submission or closing date for receipt of initial offers. Those letters or other contacts should communicate the following:
      1. Specific description of the work to be subcontracted,
      2. How and where to obtain a copy of plans and specifications or other detailed information needed to prepare a detailed price quotation,
      3. date the quotation is due to the bidder/offeror,
      4. name, address, and phone number of the person in the bidder/offeror's firm whom the prospective MBE/WBE subcontractor should contract for additional information.
   b. Sending letters or making other personal contacts with local, State, federal and private agencies and MBE/WBE associations relevant to the project. Such contacts should provide the same information provided in the direct contacts to MBE and WBE firms.
3. Where feasible, establishing delivery schedules which will encourage participation by MBEs and WBEs.

B. Bidders/offerors must demonstrate compliance with MBE/WBE requirements in order to be deemed responsible. Demonstration of compliance may include the following information, however the recipient may specify other methods of demonstrating compliance:

1. Names, addresses and phone numbers of MBE/WBEs expected to perform work;
2. Work to be performed by the MBE and WBEs;
3. Aggregate dollar amount of work to be performed by MBEs and WBEs, showing aggregate to MBEs and aggregate to WBEs separately;
4. Description of contacts to MBE and WBE organizations, agencies and associations which service MBEs/WBEs, including names of organizations, agencies and associations and dates of contacts;
5. Description of contacts to MBEs and WBEs, including number of contacts, fields, (i.e., equipment or material supplier, excavators,

transport services, electrical subcontractors, plumbers, etc.) and date of contacts.

C. Successful bidders/offerors should take reasonable affirmative steps to subcontract with MBEs and WBEs whenever additional subcontracting opportunities arise during the performance of the contract.

VII. MBE AND WBE RESPONSIBILITIES

MBEs and WBEs are responsible for promoting themselves and taking the initiative to obtain contracts and subcontracts, and for encouraging joint venture arrangements. MBEs/WBEs interested in working on EPA funded projects are strongly encouraged to take the following steps:

A. Submit information to take the recipients to identify status as a MBE/WBE.

B. Become certified as MBE/WBE under available State or federal agency procedures.

C. Contact federal, State, and local MBE/WBE liaison offices to obtain information on potential jobs.

D. Provide capability statements to State agencies, recipients, consulting engineers, and contractors stating type(s) of work performed by the firm, size of job that the firm could handle, bonding information, and nay special skills.

E. Make every effort to establish contacts and relationships with contractors for potential future business, including attending pre-bid conferences and subscribing to industry and trade journals.

F. Contact EPA Regional offices or appropriate State offices to obtain information on planned EPA-funded projects.

G. Respond promptly to solicitation requests.

VIII. REMEDIES FOR NONCOMPLIANCE

A. Protests. A bidder/offeror for EPA funded work or MBE/WBE with an adversely affected direct financial interest may file a bid protest with the recipient pursuant to EPA procurement regulations (40 C.F.R. 33.1106 et. seq.). These procedures are available to protest alleged violation of federal MBE/WBE requirements and may not be used to enforce local or State MBE/WBE requirements.

B. Upon a finding by EPA that a recipient, bidder/offeror, consultant, contractor or subcontractor has not complied with the MBE/WBE requirements of EPA regulations, EPA my invoke any and all sanctions and remedies specified in EPA regulations.

IX. STATE OR LOCAL LAW

Nothing in this program prevents a State or recipient from applying more stringent MBE/WBE requirements or procurement obligations which pertain to bid responsiveness or percentage of MBE and WBE participation.

EPA GUIDANCE FOR UTILIZATION OF S/M/WBE IN PROCUREMENT UNDER ASSISTANCE AGREEMENTS

CHAPTER 8

COUNTING MBE/WBE PARTICIPATION

1. **Calculating MBE/WBE Participation**. For purposes of reporting, the following is the approach EPA will use in calculating MBE/WBE participation.

a. Credit for MBE/WBE participation under these policies shall be granted for MBEs/WBEs performing a useful business function according to custom and practice in the industry. No credit will accrue for an MBE/WBE acting merely as a passive conduit of funds to some other, non-minority firm. However, an MBE or WBE may further subcontract a portion of the work to SBEs provided that such further subcontracting is in accordance with this Guidance and that the majority of work is being performed by the MBE or WBE having the contract. MBE/WBE participation will not be counted when the MBE or WBE subcontracts back to the prime contractor.

b. Objectives for MBE/WBE participation shall be calculated as a percentage of total eligible contract/procurement costs.

c. Credit for MBE/WBE project-related work that is not eligible for EPA assistance may be included in the calculation of MBE/WBE participation.

d. Joint ventures shall be credited towards the recipient's percentage of MBE/WBE participation by crediting the MBE/WBE portion of the dollar amount of the joint venture. Where the MBE's/WBE's risk of loss, control or management responsibilities are not commensurate with the share of profit, the Regional Administrator or designee may direct an adjustment in the percentage of participation. In the case of a joint venture, which includes an MBE/WBE, credit will be calculated proportionately towards their respective objective.

e. Supplier is defined as follows: A supplier is a business which acts as a distributor of materials or equipment, and which provides a commercially useful function when such activity is traditional in the industry manufacturing the material or equipment supplied. Suppliers will receive 25% credit for providing supplies and receive 100% for manufacturing or fabrication of supply items. Haulers will receive 100% credit if they provide the material that is hauled. Commercially useful function will normally include:

(1) Providing technical assistance to the purchaser prior to the purchase, during installation and after the supplies or equipment are placed in service;

(2) Manufacturing or being first tier below manufacturer of the supplies or equipment supplied;

(3) Providing functions other than just accepting and referring request for supplies or equipment to another party for direct shipment to a contractor.

2. **MBE/WBE as a prime contractor.** How is MBE/WBE participation counted if a prime contractor is an MBE or WBE and awards subcontracts to other MBEs, WBEs or non MBEs/WBEs?

When reporting its accomplishments, EPA is attempting to measure the amount of overall MBE/WBE participation in the program. We are measuring the number of MBE/WBE firms participating in the program. We only count the total number of dollars awarded to every MBE or WBE firm. Our assumption is that all MBE/WBE firms awarded contract dollars under EPA's grant programs benefit to that extent from the fair share policy. Therefore, the counting of MBE/WBE dollar amounts under a particular prime contract will result in a total that is no more that 100 percent of the value of the contract. For example, if an MBE firm is awarded a prime contract and then subcontracts 30 percent to another MBE firm, the total number of dollars awarded would remain at the 100% level. This would also remain true, if the prime contractor awarded a subcontract to a non MBE/WBE. The percentage of award being placed with a non MBE/WBE has no bearing on the total amount being reported unless such percentage exceeds the 49 percent level. If a minority or women-owned prime contractor awards more than 49 percent to a non MBE/WBE, no dollars will be reported for either.

3. **Questions on calculating MBE/WBE participation**. Should a recipient or contractor have any questions on calculating MBE/WBE participation, they should contact their appropriate State agency, or the EPA Regional SDBU Coordinator.

4. **MBE/WBE brokers**. Recipients may not count expenditures to MBEs or WBEs that act as a broker in a transaction. A broker is a firm that does not, itself, perform, manage or supervise the work of its contract or subcontract in a manner consistent with the normal business practices for contractors or subcontractors in its line of business. An MBE or WBE will also be considered a broker if it subcontracts more than 49 percent of the work. The MBE or WBE contractor may correct this presumption by demonstrating that the greater percentage of subcontracting that it is doing is consistent with normal practices for contractors or subcontractors in its line of business and that it will actively perform, manage and supervise the work of its contract.

5. **Central Purchasing/Procurement Centers**. Recipients must verify procurement dollars for MBE/WBE firms received from central purchasing/procurement centers and develop a tracking system for these Federal dollars.

Contract Language Required

Pursuant to Public Acts 88-351 and 89-253

(a) For the purposes of this section, “minority business enterprise” means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, of assets of which is owned by a person or persons: (1) Who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise and (3) who are members of a minority, as such term is defined in subsection (a) of Conn. Gen. Stat. § 32-9n; and “good faith” means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. “Good faith efforts” shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.

For the purpose of this Section, “Commission” means the Commission on Human Rights and Opportunities.

(b) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut. The contractor further agrees to take affirmative action to insure that applicants with job related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, mental retardation, or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved; (2 the contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an “affirmative action-equal opportunity employer” in accordance with regulations adopted by the commission; (3) the contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the commission advising the labor union or worker’s representative of the contractor’s commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the contractor agrees to comply with each provision of this section and Conn. Gen. Stat. §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to Conn. Gen. Stat. §§ 46a-56, as amended by Section 5 of Public Act 89-253, 46a-68e and 46a-68f; (5) the contractor agrees to provide the commission on human rights and opportunities with such information requested by the commission, and permit access to pertinent books,

records and accounts, concerning the employment practices and procedures of the contractor as related to the provisions of this section and section 46a-56. If the contract is a public works contract, the contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

(c) Determination of the contractor's good faith efforts shall include but shall not be limited to the following factors: the contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.

(e) The contractor shall include the provisions of subsection (b) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Conn. Gen. Stat. § 46a-56, as amended by Section 5 of Public Act 89-253; provided if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

(f) The contractor agrees to comply with the regulations referred to in this section as they exist on the date of this contract and as they may be adopted or amended from time to time during the term of this contract and any amendments thereto.

Eff. 7/1/89

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Clean Water Fund Memorandum (2019-003)

Disadvantaged Business Enterprise (DBE) Subcontractor Participation on Clean Water Fund (CWF) Projects for Construction Projects

I. PURPOSE

The municipality, through its prime contractor must make specified good faith efforts to attain the DBE goals as specified in this document in Section III. This is an administrative condition of the U.S. Environmental Protection Agency (EPA) Grant which funds CWF projects.

This memorandum supersedes the **Clean Water Fund Memorandum (2016-003)**

II. GOVERNING STATUTE OR REGULATION

General Compliance (Federal), 40 CFR, Part 33: The municipality, through its prime contractor must comply with the requirements of EPA's Program for Utilization of DBEs.

III. EPA REQUIREMENTS

The following clause shall be included in all construction contract documents and amendments for goods and services to be funded under the CWF:

The requirement for DBE subcontractor participation, expressed as a percentage of the total eligible contract amount, shall be a minimum of 8.0 percent with the following makeup:

Minority Business Enterprise (MBE): 3.0 percent
Woman Business Enterprise (WBE): 5.0 percent

Failure to meet or exceed the required percentage or submit acceptable documentation of the six good faith efforts may render a bid non-responsive and may cause the bid to be rejected.

IV. THE SIX GOOD FAITH EFFORTS AS SPECIFICALLY DEFINED BY EPA

The Six Good Faith Efforts are required methods employed by all Connecticut Department of Energy and Environmental Protection (DEEP) CWF recipients to ensure that all DBEs have the opportunity to compete for procurements funded by DEEP financial assistance dollars. The prime contractor is expected to employ the six good faith efforts throughout the entire project to insure that the DBE percentages are maintained or exceeded in the event that one DBE subcontractor needs to be substituted for another.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.

2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

5. Use the services and assistance of the Small Business Administration (SBA) (Federal) and the Minority Business Development Agency of the Department of Commerce.

6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The prime contractor's certification as a DBE has no effect on this requirement. Therefore, if the prime contractor is a DBE, the Six Good Faith Efforts defined above must be employed in the procurement of subcontracts to be secured to achieve the MBE 3.0% and WBE 5.0% participation.

V. CERTIFICATION

A DBE must be certified at the time that the subcontract for their services is executed. A business that is pending new certification, recertification, or whose certification has expired **cannot** be counted toward the goals.

In the case where a subcontractor DBE is certified as both a MBE and a WBE (a woman who is also a member of a minority class):

1. The prime contractor may count the entire value of the subcontract as either a MBE or a WBE.

2. The prime contractor may choose to split the subcontract between the MBE and the WBE categories to fulfill both goals. If the prime contractor chooses this route:
   a. They must indicate the dollars to be apportioned to the categories either on the face of the copy of the fully executed subcontract submitted to the Connecticut Department of Energy and Environmental Protection (DEEP) or by some other written method.
   b. The certification submitted to DEEP must indicate that the principal of the subcontractor is both a woman and a minority.
   c. For a certification that only identifies the subcontractor as a DBE, additional documentation is required as proof of dual status. In the case of Connecticut Department of Transportation (CTDOT), the detailed information page within their online database suffices as proof.

VI. ACCEPTABLE CERTIFICATION OPTIONS

1. **Connecticut Department of Administrative Services (DAS)** - DEEP will continue to accept DAS certification until such time as other State entities are identified whose certification processes meet the EPA criteria. DAS will only certify Connecticut based firms that meet the criteria under Connecticut General Statute 4a-60g.

2. **CTDOT** - Companies that desire to do business with CTDOT as well as the DEEP should seek CTDOT certification which will be accepted by the DEEP. DBE firms are advised that the certification process can take 90 days to complete. CTDOT will certify both in state as well as out of state firms.

3. **EPA** - In the event an entity cannot be certified by CTDOT as a DBE, that entity should seek certification with EPA. Such entities must provide EPA with evidence from CTDOT denying certification.

4. **SBA** - Certification is available to companies under the Woman Owned Small Business (WOSB) program and the SBA 8(a) Business Development Program (www.sba.gov/8abd/) which has a net worth ceiling of $250,000 for initial applicants.

5. **Other states certification** - Prime contractors may utilize certification from other states. Such certification must specify the DBE designation. Where there is no DBE certification option within a state, the instance must be presented to the DEEP Financial Administrator assigned to the project for consideration on a per case basis.

VII. DBE COMPLIANCE PROCESS

1. Within fourteen (14) calendar days after bid opening the prime contractor (apparent low bidder) shall complete and submit two copies of the DEEP Subcontractor Verification Form along with the DBE certification for each subcontractor to the municipality. The municipality must then submit one copy of these documents to DEEP as part of the authorization to award request.

2. Once DEEP authorizes the municipality to award the contract, the prime contractor is required to submit two copies of the executed DBE subcontracts to the municipality who submits one copy to the DEEP Financial Administrator.

3. No payment requests will be processed by DEEP until the executed copies of the subcontracts and the DBE certifications are on file in the DEEP office.

4. Should the prime contractor not meet the goals, documentation of good faith efforts will be required to be submitted to the DEEP Municipal Facilities Wastewater Engineer for consideration that the good faith effort was extensive enough to warrant the acceptance of a lower goal for the specific contract in question.

5. In the event that a DBE subcontractor is substituted for another during the project, two copies of the executed subcontract along with the corresponding DBE certification for the substitute are submitted to the municipality who forwards one copy of each to the DEEP Financial Administrator.

6. If additional construction costs are approved by DEEP, the prime contractor employs the good faith efforts defined above to meet the goals for the new total eligible contract amount.

VIII. DAS PREQUALIFICATION CERTIFICATION FOR DBE SUBCONTRACTORS

At time that the prime contractor submits copies of the executed DBE subcontracts to the municipality, two copies of the current DAS Prequalification Certificate for each DBE subcontractor whose subcontract value is equal to or greater than $500,000 must also be submitted. In turn, the municipality is required to submit one copy of each DBE Prequalification Certification to the DEEP Financial Administrator. Suppliers of material or products who do not do installation or construction work are not subject to the DAS Construction Contractor prequalification requirement.

IX. SUBMISSION OF THIS FORM

This form is to be signed by the contractor or the contractor's authorized representative. The form is then submitted to the municipality's representative for signature. The municipality includes the form as part of the authorization to award request to DEEP.

I hereby verify that I have read and understand the DBE requirements in this memorandum and will procure subcontracts whose percentages will meet or exceed the minimums listed above.

Contract Name _____

Name of Prime Contractor _____
Name and Title of Authorized Officer _____
Authorized Signature _____ **Date** _____

Town Official and Title _____
Authorized Signature _____ **Date** _____

X. DEFINITIONS

CGS: Connecticut General Statutes

CTDOT: Connecticut Department of Transportation

CWF: Clean Water Fund

DAS: Connecticut Department of Administrative Services

DBE: Disadvantaged Business Enterprise

DEEP: Connecticut Department of Energy and Environmental Protection

EPA: Environmental Protection Agency (Federal)

MBE: Minority Business Enterprise

SBA: Small Business Administration (Federal)

WBE: Woman Business Enterprise

WOSB: Woman Owned Small Business (Federal program - SBA)

June 19, 2019
Date

Denise Ruzicka, Director
Water Planning and Management Division
Bureau of Water Protection & Land Reuse

Minority Business Enterprise / Women's Business Enterprise

Subcontractor Verification Form

Note to General Contractor: You are required to complete this form for each MBE or WBE subcontractor to be employed in the completion of this contract, and submit an original of each completed form, along with a copy of the subcontractor's current, valid MBE / WBE certification, to the Owner within 14 days of bid opening. Failure to submit this form and the MBE / WBE certification within 14 days of bid opening may render your bid non-responsive and result in the rejection of your bid.

Name of Subcontractor: _____

Address: _____

Contact Person: _____

Phone Number: _____-_____-_____ Is subcontractor MBE or WBE ? (circle one)

Type of Work to be performed _____

Estimated dollar amount of subcontract: $ _____

Percent of total contract _____%

Please attach a current, valid copy of the subcontractor's MBE or WBE certification form to this document

The completion and submission of this form does not constitute a contractual agreement between the general contractor and the named subcontractor, but is solely for documenting proposed compliance with MBE/WBE participation under DEP's Clean Water Fund. Should another subcontractor be substituted in place of the firm named above, both the Owner and the Department of Environmental Protection (Water Management Bureau, 79 Elm Street, Hartford 06106-5127) must be notified in writing within three (3) business days of the change, and a copy of this form must be completed for the replacement subcontractor. The MBE / WBE percentages shall be maintained or exceeded in the event of one subcontractor being substituted for another.

Name of Contract: _____

Name of General Contractor: _____

Authorized Signature of General Contractor: _____ Date: ____/____/____

EPA United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	○ YES	⊙ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt**	**Currently DBE Certified?**

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	**Date**

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Memorandum

To: All Connecticut Municipalities, Water Pollution Control Facilities, and Consultants

Date: May 28, 2015

Re: Revised American Iron and Steel Memorandum

The Department of Energy and Environmental Protection's (DEEP) Municipal Water Pollution Control Section has updated the American Iron and Steel (AIS) memorandum that was distributed on May 19, 2014.

On June 10, 2014, the Water Resources Reform and Development Act of 2014 (WRRDA) was signed into law by President Obama, which amended the Federal Water Pollution Control Act (FWPCA). The FWPCA section 608 extended the AIS provision that was originally scheduled to expire on September 30, 2014.

This means that AIS is now a **permanent** project requirement for all Connecticut Clean Water Fund (CWF) projects.

The effective date for the newly codified AIS provision is the date of enactment of the WRRDA, or June 10, 2014.

A recent Environmental Protection Agency (EPA) memorandum dated September 18, 2014 indicates that EPA intends to interpret the WRRDA language for the AIS requirement in the same manner as described in an earlier EPA guidance memo dated March 20, 2014. Therefore, the March 20, 2014 EPA memorandum shall still serve as the final EPA AIS guidance on how to apply the AIS requirement, and it is attached to the revised CWF memo.

The final memorandum is now available on our website at http://www.ct.gov/dep/cwp.

Sincerely,

George V. Hicks, P.E.
Supervising Sanitary Engineer
Bureau of Water Protection & Land Reuse

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Revised Clean Water Fund Memorandum (2014-001a)

TO: All Connecticut Municipalities and Consultants

RE: Implementation of American Iron and Steel provisions on Connecticut Clean Water Fund Projects

I. PURPOSE

To provide clarification on the applicability of American Iron and Steel (AIS) provisions to construction projects funded by the Connecticut Clean Water Fund (CWF).

II. GOVERNING FEDERAL PUBLIC LAW

Section 436 of Public Law (P.L.) 113-76, Consolidated Appropriations Act, 2014.

III. APPLICABILITY

All Connecticut CWF projects must use "iron and steel products" (Section III.A) that are "produced in the United States" for construction projects. The final Environmental Protection Agency (EPA) AIS guidance memorandum dated March 20, 2014 ("final EPA AIS guidance") on how to apply the AIS requirement is attached.

This memorandum summarizes the final EPA AIS guidance, and describes how it relates specifically to Connecticut CWF projects. Section III.C details what is required for a CWF project that is subject to the AIS provisions. Any definitions provided by the final EPA AIS guidance are included in Section IV.

Section 436 of P.L. 113-76 excludes products (Section III.B) to the AIS requirement, as well as a waiver request process to exclude products or the entire project from AIS requirements (Section III.D).

A. Applicable Iron and Steel Products

1. The AIS requirement applies to all of the following products:
   a. Lined or unlined pipes and fittings;
   b. Manholes covers and other "municipal castings";
   c. Hydrants;
   d. Tanks;
   e. Flanges;
   f. Pipe clamps and restraints;
   g. Valves;
   h. "Structural steel";
   i. Reinforced precast concrete; or
   j. "Construction materials".

   Refer to Section IV for further clarification of items b, h, and j.

2. Each project item listed in Section III.A.1 and is considered to be "primarily iron or steel", or comprised of greater than 50% iron or "steel" as measured by cost, becomes subject to the AIS requirement.
   a. The cost used to determine AIS applicability shall be based on the material costs, and shall include the cost to pour and cast iron and/or steel components.
   b. The cost used to determine AIS applicability shall not include assembly cost.

3. Unlike the products listed in Section III.A.1.a – h and j, all reinforced precast concrete used in applicable products is subject to the AIS requirement, no matter how much iron or steel comprises the reinforced precast concrete. The reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. The casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

4. "Construction materials" are any products that become permanently incorporated into the project, even if those products may be considered temporary in most instances. For example, any iron or steel sheeting or piles that are not removed after construction is completed are considered to be "construction materials" subject to the AIS requirement.

B. Excluded Products

1. The AIS requirement does <u>not</u> apply to any mechanical and/or electrical components, equipment and systems. Mechanical and electrical components, equipment and systems are not considered construction materials.

2. The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials, and are therefore NOT subject to the AIS requirement:
   a. Pumps;
   b. Motors;
   c. Gear reducers;
   d. Drives (including variable frequency drives (VFDs));
   e. Electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators);
   f. Mixers;
   g. Gates;
   h. Motorized screens (such as traveling screens);
   i. Blowers/aeration equipment;
   j. Compressors;
   k. Meters, sensors, controls and switches;
   l. Supervisory control and data acquisition (SCADA);
   m. Membrane bioreactor systems;
   n. Membrane filtration systems;
   o. Filters, clarifiers and clarifier mechanisms;
   p. Rakes, grinders;
   q. Disinfection systems;
   r. Presses (including belt presses);
   s. Conveyors, cranes;
   t. HVAC (excluding ductwork), water heaters, heat exchangers;
   u. Generators;

v. Cabinetry and housings (such as electrical boxes/enclosures);
w. Lighting fixtures;
x. Electrical conduit;
y. Emergency life systems;
z. Metal office furniture, shelving;
aa. Laboratory equipment, analytical instrumentation; and
bb. Dewatering equipment.

3. Raw materials such as iron ore, limestone, and iron/steel scrap are not covered by the AIS requirement. If any raw materials are being applied as a coating, the raw materials are similarly not covered.

C. AIS Requirements

1. For each item that meets the criteria indicated in Sections III.A, the iron and steel products contained in that item must be "produced in the United States (US)".
   a. All manufacturing processes must take place in the US, with the exception of metallurgical processes involving the refinement of steel additives.
   b. Manufacturing processes covered by the AIS requirement include: melting, refining, forming, rolling, drawing, refining, finishing, fabricating, coating.
   c. In the case of reinforced precast concrete, the casting of the concrete must also occur in the US. The cement and other raw materials used in the concrete production may come from non-US sources.
   d. Each domestic iron and steel product must remain in the US for the entire manufacturing process; otherwise, it will be considered foreign source material.
   e. Non-iron or steel components of an iron and steel product may come from non-US sources.

2. The construction contract language contained in **Appendix 4 of the attached final EPA AIS guidance** must be included in the CWF contract documents in order to obtain CWF approval of the engineering plans and specifications.

3. Certification for AIS compliance
   a. Certification must be provided for all items in Section III.A.
   b. Types of Certification
      i. Step certification process: Each handler (supplier, fabricator, manufacturer, processor, etc) of the iron and steel products certifies that their step in the process was domestically performed.
      ii. Final manufacturer certification: Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US.
   c. AIS compliance certification must be provided on company letterhead, in the format provided by **Appendix 5 of the attached final EPA AIS guidance**.
   d. These certifications shall be collected and maintained by the municipality, and must be available upon request by either the EPA or the DEEP.

D. Waiver Request Process

1. A waiver from the AIS requirement may be requested for a CWF project if at least one of the following conditions is sufficiently demonstrated:
   a. The AIS requirement will increase the cost of the overall project by more than 25 percent, as demonstrated by the inclusion of a bid alternate and backup calculations;

b. The iron and steel products are not produced in the United States in sufficient and "reasonably available quantities" and of "satisfactory quality", as demonstrated by soliciting proposals from at least three manufacturers; or
c. The AIS requirement is inconsistent with the public interest.

2. Waiver Request Format
   a. The waiver request must include a table with responses to the "Information Checklist for Waiver Request" in **Appendix 1 of the attached final EPA AIS guidance**.
   b. Evaluation of the waiver request shall include the criteria in the "HQ Review Checklist for Waiver Request" in **Appendix 2 of the attached final EPA AIS guidance.**
   c. Waiver requests shall be submitted to the Connecticut Department of Energy and Environmental Protection (DEEP) for initial screening.
   d. If the DEEP determines that a waiver to the AIS requirement has been sufficiently demonstrated, the DEEP will forward the waiver request to the EPA.

3. Final Waiver Determination
   a. The waiver request shall be made available on the EPA website and the DEEP CWF webpage.
   b. The EPA shall allow for informal public input for at least 15 days prior to making a determination.

IV. DEFINITIONS

AIS: American Iron and Steel

Assistant recipients: A borrower or grantee that receives funding from a State CWSRF program. In the case of Connecticut CWF projects, "assistance recipients" are the municipalities, as defined below.

CGS: Connecticut General Statutes

Construction materials: Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the applicable project, not including mechanical and/or electrical components, equipment and systems.

Some construction materials may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

CWF: Connecticut Clean Water Fund

CWSRF: Clean Water State Revolving Fund

DEEP: Connecticut Department of Energy and Environmental Protection

Electrical equipment: Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

EPA: Federal Environmental Protection Agency

FWPCA: Federal Water Pollution Control Act

Final EPA AIS Guidance: This refers to the attached EPA Memorandum entitled "Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014" dated March 20, 2014.

HVAC: Heating, ventilation, and air conditioning

Municipality: Any "municipality" eligible for the CWF, as defined in Section 22a-475 of the CGS. The municipalities are the "assistance recipients" for the purposes of the AIS requirement.

Iron and Steel Products: The term "iron and steel products" means the following products are made of "primarily iron or steel": lined or unlined pipes and fittings, manholes covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

Mechanical equipment: Mechanical equipment is typically that which has motorized parts and/or is powered by a motor.

Municipal castings: Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

- Access Hatches;
- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;
- Construction Covers and Frames;
- Curb and Corner Guards;
- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;
- Inlets;
- Junction Boxes;
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;
- Meter Boxes;
- Service Boxes;
- Steel Hinged Hatches, Square and Rectangular;
- Steel Riser Rings;

- Trash receptacles;
- Tree Grates;
- Tree Guards;
- Trench Grates; and
- Valve Boxes, Covers and Risers.

Primarily Iron or Steel: To be considered "primarily iron or steel", the product must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

P.L.: Public Law

Production in the US: For the purposes of the AIS requirement, "production in the US" of the iron or steel used in an applicable product requires that all manufacturing processes must take place in the US, except metallurgical processes involving refinement of steel additives.

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

SCADA: Supervisory control and data acquisition

Steel: An alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel includes carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels.

Step Certification: A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that their step in the process was domestically performed.

Structural steel: Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes. Some structural steel may overlap with what is also considered "construction materials" (see definition above).

RCSA: Regulations of the Connecticut State Agencies

US: United States

VFDs: Variable frequency drives

WRRDA: Water Resources Reform and Development Act of 2014

5/28/2015
Date

George V. Hicks, P.E.
Supervising Sanitary Engineer
Bureau of Water Protection & Land Reuse

Attachment: EPA Memorandum: "Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014" dated March 20, 2014.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests				
• Does the waiver request include the following information?				
— Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests				
• Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested?				
— Supplier information or other documentation indicating availability/delivery date for materials				
— Project schedule				
— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include:				
— Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State				
— Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States				
— Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the _____ (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Department of Revenue Services
State of Connecticut
25 Sigourney St Ste 2
Hartford CT 06106-5032

(Rev. 02/14)

CERT-124

Purchases of Tangible Personal Property Incorporated Into or Consumed in Water Pollution Control Facilities

General Purpose: The purchaser uses this certificate to claim exemption from sales and use taxes under Conn. Gen. Stat. §12-412(21). The exemption is for purchases of tangible personal property acquired for incorporation into or used and consumed in the operation of facilities for the treatment of industrial waste before the discharge of industrial waste into any waters of the state or into any sewerage system emptying into the waters, the primary purpose of which is the reduction, control, or elimination of water pollution, certified as approved for the purpose by the Commissioner of the Department of Energy and Environmental Protection. The Commissioner may certify to a portion of the tangible personal property acquired for incorporation into the facilities to the extent that the portion has as its primary purpose the reduction, control, or elimination of water pollution.

This certificate may also be used to certify that for purposes of the municipal property tax exemption under Conn. Gen. Stat. §12-81(51), the tangible personal property has been approved for incorporation into or used and consumed in the operation of water pollution abatement facilities. For information on either of these provisions, see **Policy Statement 2014(1)**, *Tax Exemptions for Certain Water Pollution Control Equipment*.

Statutory Authority: Conn. Gen. Stat. §§12-412(21) and 12-81(51).

Purchases of Items Not Listed in PS 2014(1): The purchaser must obtain and attach to this certificate written approval from the Commissioner of the Department of Energy and Environmental Protection indicating that an item of tangible personal property is approved for use in a water pollution control facility. For information on how to obtain written approval from the Department of Energy and Environmental Protection (DEEP), see **PS 2014(1)**.

Instructions for the Purchaser: An owner or officer of a business that purchases tangible personal property to be incorporated into or consumed in the operation of facilities for the treatment of industrial waste before the discharge of industrial waste into any waters of the state or into any sewerage system emptying into the waters, the primary purpose of which is the reduction, control, or elimination of water pollution, certified as approved for such purpose by the Commissioner of the Department of Energy and Environmental Protection issues and signs this certificate. To qualify for the exemption from sales and use taxes under Conn. Gen. Stat. §12-412(21), the purchaser must present this certificate to the retailer at the time of purchase of the qualifying tangible personal property.

To obtain the municipal property tax exemption under Conn. Gen. Stat. §12-81(51) which may be available for qualifying structures or equipment, the taxpayer must file a properly completed copy of this certificate with the assessor of the municipality in which the structures or equipment are located after confirming that municipality's procedures for qualifying for the exemption.

Instructions for the Seller: Acceptance of this certificate, when properly completed, shall relieve the seller from the burden of proving the sale of tangible personal property is not subject to sales and use taxes when the tangible personal property will be used or consumed in the operation of facilities for the treatment of industrial waste before the discharge of industrial waste into any waters of the state or into any sewerage system emptying into any waters, the primary purpose of which is the reduction, control, or elimination of water pollution, and is certified as approved for the purpose by the Commissioner of the Department of Energy and Environmental Protection.

The certificate is valid only if taken in good faith from a person who is an owner or officer of a business that will use tangible personal property being purchased as provided in Conn. Gen. Stat. §12-412(21). For example, the good faith of the seller will be questioned if the seller knows of facts that suggest the purchaser will not use the tangible personal property for water pollution abatement or that the tangible personal property cannot be used for that purpose, or that the tangible personal property has not been approved by DEEP. This certificate together with proof that the tangible personal property is approved for use or consumption in water pollution abatement, and bills or invoices to the purchaser, must be maintained by the seller for at least six years from the date on which the items were purchased. The bills, invoices, or records covering purchases made under this certificate must be appropriately marked to indicate an exempt purchase has occurred. The words "Exempt Under CERT-124" satisfy the requirement.

This certificate may be used for individual exempt purchases, in which event the box marked "Certificate for One Purchase Only" must be checked. This certificate may also be used for a continuing line of exempt purchases, in which event the box marked "Blanket Certificate" must be checked. A blanket certificate remains in effect for three years unless the purchaser revokes it in writing before the period expires.

For More Information: Call Department of Revenue Services during business hours, Monday through Friday:

- **800-382-9463** (Connecticut calls outside the Greater Hartford calling area only); **or**
- **860-297-5962** (from anywhere).

TTY, TDD, and Text Telephone users **only** may transmit anytime by calling 860-297-4911.

Taxpayer Service Center: The Taxpayer Service Center (***TSC***) allows taxpayers to electronically file, pay, and manage state tax responsibilities. To make electronic transactions or administer your tax account online, visit **www.ct.gov/TSC** and select *Business*.

Purchaser's name:	Purchaser's Connecticut Tax Registration Number *
Purchaser's address:	Purchaser's Federal Employer Identification Number (FEIN)
Seller's name:	Seller's Connecticut Tax Registration Number *
Seller's address:	Seller's FEIN

* If the purchaser or seller does not have a Connecticut Tax Registration Number, explain the circumstance: _____

Identify the duration of the certificate: ❒ Blanket certificate ❒ Certificate for one purchase only

Identify the type(s) of tangible personal property: ❒ Water pollution equipment ❒ Supplies/consumables

Itemized description of items purchased (For the municipal property tax exemption include date acquired, date installed, and purchase price. These items must also be included on the *Declaration of Personal Property* that you file with your Town Assessor's office.): _____

Declaration by Purchaser

The item(s) described above are tangible personal property to be used or consumed by a business in the operation of facilities for the treatment of industrial waste before the discharge of industrial waste into any waters of the state or into any sewerage system emptying into the waters, the primary purpose of which is the reduction, control, or elimination of water pollution, certified as approved for the purpose by the Commissioner of the Department of Energy and Environmental Protection.

In accordance with Conn. Gen. Stat. §12-412(21), the purchase of these item(s) is exempt from sales and use taxes.

In accordance with Conn. Gen. Stat. §12-81(51), these items may be exempt from municipal property tax. Describe the items above and include on the *Declaration of Personal Property* that you file with your Town Assessor's office.

Declaration: I declare under penalty of law that I have examined this return or document (including any accompanying schedules and statements) and, to the best of my knowledge and belief, it is true, complete, and correct. I understand the penalty for willfully delivering a false return or document to DRS is a fine of not more than $5,000, or imprisonment for not more than five years, or both.

_____
Name of purchaser

BY:

_____ _____
Authorized signature of owner or officer Date

_____
Title

©2026 CDM Smith
All Rights Reserved

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3.
4. Contractor’s use of site and premises.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and Drawing conventions.
8. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: Dean and Pocono Roads Sanitary Sewer Extension

1. Project Location: Brookfield, CT.

B. Owner: Town of Brookfield, CT Water Pollution Control Authority

1. Owner's Representative: Nelson Malwitz, Chair, Brookfield Water Pollution Control Authority

C. Engineer: CDM Smith Inc.

1. Engineer's Representative: to be determined at start of construction.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and includes construction of a sanitary sewer extension by one of two alternatives. The Bid Form is broken into two PARTS to cover the two alternatives. The work includes, but is not limited to, one of the following:

1. For PART 1- Gravity Sanitary Sewer Extension and Pump Station - Construction of approximately 8,800 linear feet of new gravity sanitary sewer including manholes, sewer service connection stubs and appurtenant items, 3,100 linear feet of new force main, a new wastewater pumping station including below grade wet well and valve chamber, generator and electrical/control cabinet, soil handling including regulated soils, site work, paving, restoration, traffic management and other Work indicated in the Contract Documents.
2. For PART 2 – Low-Pressure Sanitary Sewer Extension - Construction of approximately 9,200 linear feet of new low-pressure sanitary sewer including valves and manholes, sewer service connection stubs and appurtenant items, providing (but not installing) 90 grinder pumps, soil handling including regulated soils, site work, paving, restoration, traffic management and other Work indicated in the Contract Documents.
3. Contractor may choose to propose on PART 1, or PART 2, or both PART 1 and PART 2. OWNER may elect to award either PART 1 or PART 2.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Limits on Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits on Use of Site: Confine construction operations to public rights of way and easements noted on the Drawings or otherwise negotiated by Owner.
2. Driveways, Walkways and Entrances: Keep driveways and entrances serving residences and other premises adjacent to the work area clear and available to occupants and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

    a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Engineer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.8 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:30 a.m. to 7:30 p.m., Monday through Friday, unless otherwise indicated, in compliance with the Town’s Noise Ordinance. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: Saturday work may be permitted on occasion, subject to approval by Engineer and Owner. Sunday work will not be permitted.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:

1. Notify Engineer not less than ten days in advance of proposed utility interruptions.
2. Obtain Engineer's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Engineer not less than two days in advance of proposed disruptive operations.
2. Obtain Engineer's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

H. Time-of-Year Work Restriction: Due to the potential presence of the endangered species, site clearing and grubbing operation timing is restricted. Refer to Appendix C for additional information.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.10 MISCELLANEOUS PROVISIONS

A. Comply with all applicable permits, State of Connecticut, and Town of Brookfield requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011000

©2026 CDM Smith
All Rights Reserved

SECTION 012001 - PRICE AND PAYMENT

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Bid Form includes Items in the Base Bid, PART 1 (Gravity) and PART 2 (Low-Pressure). Common Item numbering has been used across PART 1 and PART 2, as well as the additive alternate item, with any non-applicable items for each Part omitted. **Item numbers listed in this Section, below, correspond to the Bid Item for the PART 1 (1.x) or PART 2 (2.x) designation**, unless otherwise noted.

1.1 SEWER PIPE AND APPURTENANCES (Items 1.1a through 1.1g and 2.1a through 2.1e)

A. Measurement

1. Sewer and force main pipe of the type, size, and depth specified on the Bid Form (Items 1a through 1c and 1g) will be measured in place on a linear foot basis. Measurement for payment does not signify that the pipe is accepted.
2. Measurement of pipe for length will be along the horizontal centerline of the pipe with no deduction for fittings and will be to the center of manholes. Measurement for depth will be from the original ground surface, as determined by the Engineer, to the invert of the pipe. Measurement will be to the nearest tenth of a foot.
3. Service laterals (Items 1d) will be measured along the horizontal centerline of the pipe from either the face of the wye branch, or from the centerline of the chimney to the end of the pipe as laid.
4. Lateral wye branch connections and low-pressure laterals including lateral connection kits (Items 1e) will be measured as the number actually installed and accepted in the locations designated by the Engineer.
5. Chimneys (Items 1f) will be measured in vertical feet from the centerline of the sewer to the centerline of the service bell, as shown on the Drawings, but will not be less than 3 feet for each chimney.

B. Payment

1. Payment for furnishing and installing sewer and force main pipe will be made for the respective quantities as determined above at the unit price bid under Items 1a thru 1g on the Bid Form. This price and payment shall be full compensation for saw cutting, removing and disposing of existing pavement or sidewalk, trench excavation (except rock and boulder excavation); temporary trench support, including driving and removing sheeting and bracing; dewatering including applicable Connecticut DEEP dewatering and stormwater permits, removal, handling and disposal of excess excavated material (except regulated soils); backfilling and compaction (with native material or material imported under Item 10 when required), in-place field compaction testing, loaming and seeding or sodding, installing impervious dams, filter fabric, restoring the trench surface to grade,

trench protection including daily backfilling unless temporary steel plating is specifically permitted, all restoration required within the trench limits including replacement of disturbed curbing and sidewalk, protection or temporary removal and resetting of existing utilities including catch basins, pipes, conduits, duct banks, and electric poles, furnishing and installing pipe foundation bedding and initial backfill material (screened gravel or sand as specified), furnishing, laying, jointing, cleaning, and testing the pipe, joining including welded or restrained joints, mechanical joints where required, fittings; and all incidental work, environmental protection, and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.

2. Payment for furnishing and installing service connections will be made for the quantity as determined above at the unit price bid for Item 1d in the Bid Form. This price and payment shall be full compensation for, in addition to work items outlined above for sewer pipe Items 1a through 1g, furnishing and installing the service connection pipe together with all fittings required, capping and bracing open ends, furnishing and installing a wooden marker at the end of pipe, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
3. Payment for furnishing and installing wye branches and cleanouts with curb boxes, and/or low-pressure lateral connection kits with ball and check valves and curb boxes will be made for the quantity as determined above at the unit price bid for each under Items 1e in the Bid Form, which price and payment shall be full compensation for the additional cost over and above that of sewer pipe, in addition to work items outlined above for sewer pipe Items 1a through 1g, for furnishing and installing the fittings, plugs or caps, coupling to the sewer pipe including cutting if necessary, tees and vertical pipe extensions, curb boxes, bedding and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form. Payment under Items 1e shall include wye branches or connection kits installed for vacant lots, when directed by the Engineer.
4. Payment for furnishing and installing vertical chimneys will be made for the quantity in vertical feet as determined above at the unit price bid for Item 1f in the Bid Form. This price and payment shall be full compensation for furnishing and installing the pipe, fittings, sonotube and stone, end stopper, PVC/DI adapters and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
5. Payment will be made for pipe only when it is installed in the ground, and no so-called proportional payment shall be made for pipe on the site but not yet installed.
6. As specified in the Agreement, a percentage of the payment due for furnishing and installing pipeline may be retained on the partial payment requests until the pipeline is tested as specified herein.

1.2 PRECAST CONCRETE SEWER MANHOLES AND STRUCTURES (Items 1.2a through 1.2d and 2.2a through 2.2b)

A. Measurement

1. Measurement for payment of precast concrete sewer manholes and appurtenances (Items 1.2a through 1.2b) will be measured in vertical feet from the invert of the lowest pipe in the manhole to the top of the manhole frame as indicated on the Bid Form.
2. Internal drop manhole connections (Item 1.2c) will be measured in vertical feet from the upper invert of the drop to the lower invert of the drop, as shown on the Drawings, but will not be less than 3 feet for each drop connection.

3. Air Release Valve Manholes and Flushing Manholes (Items 1.2d, 2.2a and 2.2b) will be measured on a unit basis as the number actually installed and accepted in the locations designated by the Engineer.

B. Payment

1. Payment for furnishing and installing concrete sewer manholes will be made for the quantity as above determined at the unit price bid for Items 1.2a through 1.2b in the Bid Form. This price and payment shall be full compensation for saw cutting, removing and disposing of existing pavement or sidewalk, all excavation (excluding rock and boulder); temporary excavation support including furnishing, installing, and removing sheeting and bracing; dewatering including applicable Connecticut DEEP dewatering and stormwater permits, removal, handling and disposal of excess excavated material (except regulated soils); bedding, backfilling and compaction (with native material or material imported under Item 10 when required), in-place field compaction testing; furnishing and installing precast concrete manhole bases and sections; pipe connections; manhole rungs; frames and covers as specified including cover imprinting; intermediate landings where required; testing; furnishing and installing foundation/subbase material; all forms, reinforcing, concrete and masonry materials; bricks, concrete grade rings, brick channels and shelves; flexible pipe repair couplings; all restoration including replacement of disturbed curbing and sidewalk; protection or temporary removal and resetting of existing utilities including catch basins, pipes, conduits, duct banks, and electric poles; environmental protection; and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.
2. Payment for furnishing and installing internal drop manhole connections will be made for the quantity in vertical feet as determined above at the price per vertical foot bid for Item 1.2c in the Bid Form. This price and payment shall be full compensation for furnishing and installing the fabricated bowls, PVC drop pipe, tees, all necessary fittings and braces, anchoring into manhole wall, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
3. Payment for furnishing and installing Air Release Valve Manholes and Flushing Manholes will be made for the quantity as above determined at the unit price bid for Items 1.2d, 2.2a and 2.2b in the Bid Form. This price and payment shall be full compensation for furnishing and installing the precast concrete sewer manhole structures (as described for Items 1.2a and 1.2b above) as well as all piping, fittings, valves, bracing, anchoring and pipe supports, and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.

1.3 FURNISH PACKAGED SEWAGE GRINDER PUMPING UNITS (Items 1.3a, 2.3a and 2.3b).

A. Measurement

1. Measurement for furnishing packaged sewage grinder pumping units (Items 3a and 3b) will be the actual number of packaged sewage grinder pumping units furnished and delivered to the site.

B. Payment

1. Payment will be on a lump sum basis for each packaged sewage grinder pumping unit furnished and delivered to the site or to the specific location designated by the OWNER. Installation of units is not included in the scope of work. Payment will be made for the actual quantity as determined above at the unit prices in the Bid Form.

1.4 SUBMERSIBLE PUMPING STATION (Items 1.4a and 1.4b)

A. Measurement

1. Measurement for payment for furnishing and installing the submersible pumping station (Item 1.4a) shall be on a lump sum basis.

2. Measurement for installation of electric service by utility company (Item 1.4b) shall be reimbursement of the actual amount invoiced from the utility company, with no markup.

B. Payment

1. Payment for furnishing and installing the submersible pumping stations will be made at the lump sum price bid under Item 1.4a in the Bid Form, which price and payment shall be full compensation for furnishing all labor, equipment and materials required to construct the completely equipped submersible pumping station as shown on the Drawings and specified herein. Payment shall include site preparation, clearing and grubbing, installation of geotechnical instrumentation and monitoring, excavation (except rock and boulder), sheeting and bracing, dewatering including applicable Connecticut DEEP dewatering and stormwater permits, protection of existing utilities, filter fabric on the excavation subgrade, removal, handling and disposal of excess excavated material (except regulated soils), furnishing, placing, compacting and grading bedding and backfill material (with native excavated material, structural fill, or select common fill as required), backfilling and grading to the final elevations shown on the Drawings and as directed by the Engineer, furnishing and installing the precast concrete wet well, valve vault structure, fittings and appurtenances, reinforced concrete foundation pad including steel reinforcing, precast concrete electrical superstructure, all electrical work, instrumentation, water service connections and appurtenant items, underground electrical conduit, emergency generator with diesel fuel tank and all other appurtenances as specified, motors, pumps, pump frames, braces and lifting mechanisms including hoists, all related piping, valves, fittings, vents, conduits, wiring, float switches, pump controls, control panel, alarm system, miscellaneous concrete, furnishing and installing yard hydrant, furnishing spare parts, shop testing, field testing as required, providing manufacturer's representative services, providing protection from flotation, connecting force main and sewers at the pumping station, steel bollards, loaming and seeding, trees and plantings, crushed stone, driveway and site paving, concrete pads and walkways, grading, plantings, site restoration, coordination with electric company, and all work or equipment required for or incidental to the satisfactory completion of this item that is not paid for under other items in the Bid Form. Contractor shall obtain and pay for local Town of Brookfield building permit as applicable for the pump station.

2. Payment for Item 1.4b shall be direct full reimbursement for the actual invoiced cost by the electric company for installation of the new electric service to the pump station site. Contractor shall coordinate installation as part of Item 4a.

1.5 TEST PITS (Items 1.5 and 2.5)

A. Measurement

1. Test pits (Items 5) when ordered by the Engineer to determine utility locations or for other purposes will be measured in cubic yards in accordance with the following established volume rates:

Test Pit Depth	Cu. Yds per vert. Ft.
0 to 8 ft	1.5
Over 8 ft	2.0

B. Payment

1. Payment for test pits will be made for the quantity as determined above at the unit price bid for Item 5 in the Bid Form. This price and payment shall be full compensation for saw cutting, removing and disposing existing pavement, excavation (including hand excavation), exposing and obtaining both top and bottom elevations of existing utilities and/or structures, backfilling, compaction, restoring trench surface to grade, temporary pavement and all incidental work required to complete the test pits for which separate payment is not provided under other items in the Bid Form.

1.6 DRAIN PIPE REPLACEMENTS (Items 1.6a, 1.6b, 2.6a and 2.6b)

A. Measurement

1. Drain pipe replacements (Item 6) will be measured in linear feet between the cut ends of the existing pipe where ordered by the Engineer. Replacements may be ordered by the Engineer to address conflicts with new sewers and/or laterals. Pipes will be replaced with approved similar/like materials, PVC drain pipe, or as directed by the Engineer. Approved couplings/adaptors and/or concrete collars shall be used to connect new pipe to existing pipe, subject to approval of the Engineer. No compensation will be made for replacement of lines damaged or broken by the Contractor's operations.

B. Payment

1. Payment for the drain pipe replacements, when ordered by the Engineer, will be made for the quantity as determined above at the unit price bid for Item 6 in the Bid Form, which price and payment shall be full compensation for saw cutting existing pavement, excavation, temporary trench support, cutting the existing drain pipe, replacing the pipe with similar/like materials or PVC drain pipe and appropriate couplings or adaptors to the existing drain, backfilling and compaction, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.

1.7 ROCK AND BOULDER EXCAVATION (Items 1.7 and 2.7)

A. Measurement

1. When rock is encountered, the material shall be uncovered and the Engineer notified. The Engineer will then take cross sections of the rock surface. If the Contractor fails to uncover the ledge, notify the Engineer and allow ample time for cross sectioning the undisturbed material, the Contractor shall have no right-of-claim to any classification other than that allowed by the Engineer. Removal of old concrete foundations, if any, shall be classified as rock.

2. Measurement of rock excavation in pipe trenches will extend to the limits as follows:

Depth from Ground Surface to Invert of Pipe	Pay Width (Nominal Pipe Diameter)	
	0 to 24-in	over 24-in
0 to 12-ft	5-ft-0-in	D + 3-ft-0-in
12-ft to 16-ft	7-ft-0-in	D + 5-ft-0-in
16-ft to 24-ft	8-ft-0-in	D + 5-ft-0-in

   a. Measured widths for depths over 24-ft shall be determined case-by-case consistent with the foregoing chart.
   b. Payment depth for rock which is encountered in a trench shall be no less than three feet when removal can be accomplished only by drilling and blasting or by use of jack (air or hydraulic) hammers.
   c. Payment for rock removed, using the same or equal equipment as utilized for normal trench excavation, shall be limited to the actual depth removed within the limits established by the contract documents.

3. Measurement for depth shall be from the top of the rock formation to the normal depth of the pipe as shown on the Drawings.
4. The pay limit for rock and boulder removal for manholes and structures shall commence one foot outside the widest dimension of the structure or shall be the maximum connecting trench width, whichever is greater. No allowance will be made for overbreakage.
5. Boulders and concrete structures exceeding 1 cu yd in volume when encountered in excavation will be measured for payment. Removal of boulders of whatever size will not be paid for when encountered in borrow areas.
6. The quantity of rock and boulder excavation to be paid for shall be the number of cubic yards of rock or boulders measured in place within the limits herein specified.

B. Payment

1. Payment for rock and boulder excavation will be made for the quantities as determined above at the unit price established for Item 7 in the Bid Form. This price and payment shall be full compensation for excavation and disposal of rock and boulder as specified, backfilling and providing suitable materials for any deficiency of trench backfill and all work incidental thereto, for which payment is not provided under other items in the Bid Form.

1.8 EARTH EXCAVATION AND REFILL BELOW NORMAL GRADE (Item 1.8 and 2.8)

A. Measurement

1. Measurement of earth excavation and refill below normal grade (Items 8) will extend only downward from the dimensions defining normal grade on the Drawings to a depth determined by the Engineer and for a width as defined above for rock excavation or as approved by the Engineer. Normal grade is defined as the bottom of the pipe trench/ undisturbed earth in the sewer pipe trench detail.
2. If the trench bottom is below normal grade through error by the Contractor or if improper drainage softens the subgrade and additional excavation in the trench is required before laying the pipe, such removal and replacement of material will not be measured for payment.
3. No allowance will be made for shrinkage or compaction of gravel in place. Measurement by truck count will not be permitted.
4. Furnishing and placing screened gravel or other approved foundation material in accordance with the Specifications to replace excavation below normal grade is included in this work and will not be measured for payment under Item 10.

B. Payment

1. Payment for earth excavation and refill below normal grade will be made for the quantity as above determined at the price per cubic yard bid for Items 8 in the Bid Form which price and payment shall be full compensation for excavation and disposal of all materials below normal grade, furnishing, placing and compacting screened gravel and all other work incidental thereto for which separate payment is not provided under other items in the Bid Form.

2. No payment will be made under Items 10 for refill below normal grade.

1.9 TRANSPORTATION AND DISPOSAL OF REGULATED SOILS (Items 1.9a through 1.9d and 2.9a through 2.9d).

A. Measurement

1. Measurement of materials being transported from the site to a permitted soil reclamation/reuse/recycling facility, in-state or out-of-state landfill, non-hazardous RCRA Subtitle D landfill, or hazardous RCRA Subtitle C landfill shall be per ton measured by scale at the receiving facility (certified weight slips) to the nearest 0.1-ton.

Estimates of soil quantity in Bid Form are based on the Engineer's interpretation of the available soil characterization data. Quantity of soil at each Bid Item may vary in the field. Payment will be made for the actual quantity as determined above at the unit prices in the Bid Form.

B. Payment

1. Payment for handling, transportation and disposal of soils suitable for reuse at a soil reclamation/reuse/recycling facility will be made at the unit price bid for Items 9a on the Bid Form. Price and payment shall include all costs for health and safety provisions, disposal facility testing; submittals; soil handling, stockpiling, loading, transporting and disposal at a soil reclamation/reuse/recycling facility; coordinating with the Owner's LEP; preparing waste profiles and non-hazardous manifests; providing required documentation (letters to and from facilities); and other incidental work to remove excavated soils and materials from the site. These costs shall include all Work required by the disposal facility to accept the material including Work to reduce the size and volume of the debris and screening.
2. Payment for handling, transportation and disposal of regulated soils at an in-state or out-of-state landfill will be made at the unit price bid for Items 9b on the Bid Form. The landfill may be lined or unlined. Price and payment shall include all costs for health and safety provisions, disposal facility testing; submittals; soil handling, stockpiling, loading, transporting and disposal at an in-state or out-of-state landfill; coordinating with the Owner's LEP; preparing waste profiles and non-hazardous manifests; providing required documentation (letters to and from facilities); and other incidental work to remove excavated soils and materials from the site. These costs shall include all Work required by the disposal facility to accept the material including Work to reduce the size and volume of the debris and screening.
3. Payment for handling, transportation and disposal of regulated soils at a non-hazardous RCRA Subtitle D landfill will be made at the unit price bid for Item 9c on the Bid Form. Price and payment shall include all costs for health and safety provisions, disposal facility testing; submittals; soil handling, stockpiling, loading, transporting and reuse at a non-hazardous RCRA Subtitle D landfill; coordinating with the Owner's LEP; preparing waste profiles and non-hazardous manifests; providing required documentation (letters to and from facilities); and other incidental work to remove excavated soils and materials from the site. These costs shall include all Work required by the disposal facility to accept the material including Work to reduce the size and volume of the debris and screening.
4. Payment for handling, transportation and disposal of hazardous soils at a RCRA Subtitle C landfill will be made at the unit price bid for Item 9d on the Bid Form. Price and payment shall include all costs for health and safety provisions, disposal facility testing; submittals; soil handling, stockpiling, loading, transporting and disposal at a RCRA Subtitle C landfill; coordinating with the Owner's LEP; preparing waste profiles and hazardous manifests; providing required documentation (letters to and from facilities); and other incidental work to remove excavated soils and materials from the site. These costs shall include all Work required by the disposal facility to accept the material including Work to reduce the size and volume of the debris and screening.
5. No separate payment will be made for on-site handling, re-handling, screening and segregation of materials and soils by hand or mechanical means, reuse, filling, construction vehicle wheel wash, management, stockpiling, emission control measures, equipment, police details, dust monitoring, dust control, surveying, or other associated items.

1.10 GRANULAR FILL MATERIALS (Items 1.10a through 1.10d and 2.10a through 2.10d)

A. Measurement

1. Common fill and Select Common Fill (Items 10a and 10b), when its use is required and approved and when furnished, placed, and compacted for trench backfill (where native material does not meet specified requirements) and miscellaneous uses, will be measured in cubic yards at actual in-place dimensions as determined by the Engineer. When used in trenches, the payment limits shall not exceed the trench widths defined for rock. No allowance will be made for loss from consolidation of material. Truck measurement will not be permitted. No additional payment will be made under this item for use of excavated material and any surplus material generated from the construction of this project.
2. Screened gravel (Items 10c) used in conjunction with utility and drain crossings and at other locations when its use is ordered by the Engineer will be measured in cubic yards at actual in-place dimensions as determined by the Engineer. When used in trenches the payment limits shall not exceed the trench widths defined for rock. No allowance will be made for loss from consolidation of material. Truck measurement will not be permitted.
3. Processed Aggregate (Item 10d), when its use is approved and when furnished, placed and compacted for pavement subbase, and for miscellaneous uses will be measured in cubic yards at actual in-place dimensions as determined by the Engineer. When used for pavement subbase, the widths for payment shall not exceed those defined for initial trench pavement. No allowance will be made for loss from consolidation of material. Truck measurement will not be permitted. Excavated material which is used as pavement subbase will not be measured for payment.

B. Payment

1. Payment for furnishing and placing common fill, select common fill, screened gravel, and processed aggregate will be made for the quantities determined above at the respective prices bid for Items 10a through 10d in the Bid Form. This price and payment shall be full compensation for performing laboratory testing as specified, furnishing, hauling, placing, compacting the material, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
2. Payment for screened gravel or sand used in pipe bedding and encasement of pipe will be included with the respective pipe items.
3. Payment for screened gravel used in subbase for manholes will be included under manhole items.
4. Payment for common fill materials to refill rock and boulder excavation will be included under the rock and boulder excavation items.
5. No payment will be made under Items 10 for refill material to replace any deficiency of imported backfill material.

1.11 PAVEMENT REPLACEMENT (Items 1.11a and 2.11a, and Additive Alternate Item 11b)

A. Measurement

1. Measurement for trench-width, 4-in thick hot mix asphalt (HMA) bituminous pavement (Items 11a) will be in square yards as actually placed, but not exceeding the limits shown on the Detail sheets in the Drawings.
2. Measurement for permanent pavement restoration (Alternate Item 11b), if authorized, including milling and overlay of the entire road width, will be in square yards as actually placed at the total pavement thickness of 2 inches.
3. Measurements shall be horizontally centered along the center of the pipe.

B. Payment

1. Payment for 4-in thick HMA bituminous initial trench-width pavement complete in place and approved by the Engineer, will be made for the quantity determined above at the unit price bid for Items 11a in the Bid Form. This price and payment shall be full compensation for a second cutting of the entire trench after completion of pipe installation and backfilling, cleaning and priming the edges of the existing pavement with tack coat, cleaning and preparing the surface of the aggregate base, furnishing, placing (on a weekly basis at a minimum), and maintaining the initial pavement for a period of 6 months after Substantial Completion, including removing and repaving areas where the trench has settled more than 1.5 inches, applying temporary pavement markings where required, including labor, materials, and all else incidental thereto for which payment is not provided under other items in the Bid Form.
2. Payment for permanent pavement restoration, milling and overlay of the entire road, will be made for the quantity as above determined at the unit price bid for Alternate Item 11b in the Bid Form, milling the road surface to a minimum depth of 2 inches; priming the edges of pavement and tack coat; furnishing, placing and compacting HMA courses, and applying bitumen tack coat, hot poured rubberized asphalt sealer; infra-red pavement repairs; resetting all castings as needed to match finished grade; applying permanent pavement thermoplastic markings; and performing all finishing work and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
3. Payment under Items 11a and 11b shall include all costs of furnishing, storing and applying water or calcium chloride as required for dust control.
4. If the thickness of pavement or subbase ordered placed by the Engineer is greater than that specified, payment will be prorated on the basis of the thickness of material actually ordered placed. No payment will be made for any additional pavement or sub-base not specifically ordered in writing by the Engineer.

1.12 TRAFFIC MANAGEMENT (Items 1.12 and 2.12)

A. Measurement

1. Measurement for all work required to coordinate traffic control systems, and to comply with the traffic management plans (Items 12), shall be on a lump sum basis.

B. Payment

1. Payment of the lump sum price bid for traffic management (Items 12) shall be full compensation for all labor, materials, equipment and incidentals required to prepare, submit, revise and implement Traffic Management Plans are specified; furnish, install, maintain and remove all temporary traffic management and control devices, including signs, barrels, lights, barriers, and boards as shown on the Drawings and as specified herein, complying with all requirements of the Town, coordinate with Work by Others, and all incidental work for which separate payment is not provided under other items in the Bid Form.

1.13 MISCELLANEOUS WORK AND CLEANUP (Item 1.13 and 2.13)

A. Measurement

1. Miscellaneous work and cleanup shall be measured on a lump sum basis.

B. Payment

1. Payment of the lump sum price bid in the Bid Form for Item 13 Miscellaneous Work and Cleanup, shall be full compensation for furnishing all labor, materials, and equipment required to do all related work of this Contract as specified, or as shown on the Drawings including providing all erosion and sedimentation controls, temporary facilities, site cleanup and restoration, compliance with regulations and permits, and any other miscellaneous work not specifically included for payment under any other item in the Bid Form, but obviously necessary to complete the Contract including miscellaneous work specified in section 017300 “Execution.” Partial payments shall be based on the breakdown of the schedule of values.

1.14 REIMBURSABLE EXPENSES – TRAFFIC CONTROL OFFICERS (Items 1.14 and 2.14), GROUNDWATER TESTING AND TREATMENT (Items 1.15 and 2.15), AND PUMP STATION PROGRAMMING AND INTEGRATION (Item 1.16)

A. Measurement and Payment

1. Measurement and Payment for Reimbursable Expenses associated with Police or Traffic Control Officers (Items 14) will be based on the actual amount invoiced from the police department or traffic control agency, with no markup. This item is intended to include direct reimbursement of actual traffic control personnel costs only; contractor’s incidental labor required to schedule and coordinate with traffic control agencies is not reimbursable and shall be included in the other applicable bid items. At Project closeout, credit unused amounts remaining in the Allowance for Reimbursable Expenses allowance to Owner by Change Order.

2. Measurement and Payment for Reimbursable Expenses associated with Groundwater Testing and Treatment (Item 15), if required, will be made under this Item if contaminated groundwater is encountered and is deemed to require treatment based on groundwater sampling and analysis and/or based on the requirements of the applicable Connecticut DEEP groundwater remediation permits.

Measurement and payment for all labor, materials, and equipment related to pre-construction groundwater sampling and analysis; preparing, filing and obtaining all required construction stormwater and dewatering permits from the Connecticut DEEP; the design, furnishing, installing, operation and removal of dewatering system and dewatering treatment system for suspended solids removal and pH adjustment; permit fees; and all costs, labor, materials, and equipment incidental thereto shall be included in Item Nos. 1, 2, and 4 of the Bid Form and will not be considered for payment under this Allowance.

Claims for project delay based on the need and/or scope of the additional dewatering contaminated groundwater treatment per Bid Item No. 15 will not be considered for payment.

Payment for treatment of groundwater dewatering system discharge for parameters other than suspended solids or pH will be made based on actual costs as determined by treatment system subcontractor/vendor invoices and/or other substantiated documentation of expenses. All documentation shall be subject to the approval of the Engineer. Price and payment shall be full compensation for furnishing all labor, materials, and equipment required to complete the Work as specified including designing, furnishing, installing, operating, maintaining and removing the required temporary portable groundwater treatment system; furnishing and installing all associated piping, valves and appurtenances not required for suspended solids removal or pH adjustment; sampling and laboratory testing to comply with Connecticut DEP permit(s); disposing of spent carbon or other treatment system materials; furnishing replacement treatment materials; disposal of collected product; system cleaning, decontamination and removal; and all costs, labor, materials, and equipment incidental thereto for which separate payment is not provided under other items.

3. Measurement and Payment for Reimbursable Expenses associated with Pump Station Programming and Integration (Item 1.16) will be based on the actual amount invoiced from the BWPCA's system integrator, with no markup. This item is intended to include direct reimbursement of actual pump station control system programming and integration with BWPCA's remote monitoring systems. including the first-year's subscription fee to Mission Communications LLC. Contractor's incidental labor required to schedule and coordinate with system integrator is not reimbursable and shall be included in the other applicable bid items. At Project closeout, credit unused amounts remaining in the Allowance for Reimbursable Expenses allowance to Owner by Change Order.

1.15 MOBILIZATION (Item 1.17 and 2.17)

A. Measurement

1. Measurement for payment of mobilization costs shall be on a lump sum basis but the cost shall not exceed 5 percent of the Base Bid Price, excluding this item.

B. Payment

1. Payment of the lump sum price bid in the Bid Form for Item 17 shall be full compensation for all costs associated with initiating the Contract, exclusive of the cost of materials. Payment shall include compensation for all insurance, bonds, site preparation, and in general the costs associated with establishing the work on site to assure that it is proceeding in a continuous manner.

1.16 EXTRA WORK

A. Extra work, if any, will be performed in accordance with Article 11 of the General Conditions and will be paid for in accordance with the provisions of Article 13 of the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012001

©2026 CDM Smith
All Rights Reserved

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:
   1. Section 013100 “Project Management and Coordination” for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Engineer will issue Field Orders authorizing minor changes in the Work, not involving adjustment to the Contract Price or the Contract Time, on EJCDC Form C-942 or other form acceptable to Owner.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Price or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

   1. Requests For Proposal (RFP) issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request 20 days, when not otherwise specified, after receipt of RFP, submit a quotation estimating adjustments to the Contract Price and the Contract Time necessary to execute the change.

      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.
      d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Quotation Form: Use forms acceptable to Engineer.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Price and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Paragraph 7.06 of the General Conditions if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Engineer.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Change Order Request, Engineer will issue a Change Order for signatures of Owner and Contractor on EJCDC Form C-941 or other form acceptable to Owner, subject to approval of CT DEEP.

1.6 WORK CHANGE DIRECTIVE

A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C-940 or other form acceptable to Owner. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Price or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

©2026 CDM Smith
All Rights Reserved

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012600

©2026 CDM Smith
All Rights Reserved

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request for Information. Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and in prominent location inbuilt facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with Project coordinator, who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    e. Indicate required installation sequences.
    f. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
2. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
3. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture locations.

c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
d. Location of pull boxes and junction boxes, dimensioned from column center lines.

4. Review: Engineer will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Engineer determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Engineer will so inform Contractor, who shall make suitable modifications and resubmit.
5. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Mechanical, Structural, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Engineer to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format:

a. Same digital data software program, version, and operating system as original Drawings.
b. DWG, operating in Microsoft Windows operating system.

2. File Submittal Format: Submit or post coordination drawing files using PDF format.
3. Engineer will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

a. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
b. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Engineer.

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Engineer will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Engineer.
5. Engineer's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716.

1. Attachments shall be electronic files in PDF format.

D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Engineer's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Engineer.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Engineer's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Engineer's Digital Data Files: Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Engineer.

a. Subcontractors and other parties granted access by Contractor to Engineer's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Engineer.

B. PDF Document Preparation: Where PDFs are required to be submitted to Engineer, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.

B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Procedures for processing field decisions and Change Orders.
h. Procedures for RFIs.
i. Procedures for testing and inspecting.
j. Procedures for processing Applications for Payment.
k. Distribution of the Contract Documents.
l. Submittal procedures.
m. Sustainable design requirements.
n. Preparation of Record Documents.
o. Use of the premises.
p. Work restrictions.
q. Working hours.
r. Owner's occupancy requirements.
s. Responsibility for temporary facilities and controls.
t. Procedures for moisture and mold control.
u. Procedures for disruptions and shutdowns.
v. Construction waste management and recycling.
w. Parking availability.
x. Office, work, and storage areas.
y. Equipment deliveries and priorities.
z. First aid.
aa. Security.

bb. Progress cleaning.
cc. List of major subcontractors and suppliers.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
4. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
5. Agenda: Discuss items of significance that could affect meeting sustainable design requirements, including the following:

    a. Sustainable design Project checklist.
    b. General requirements for sustainable design-related procurement and documentation.
    c. Project closeout requirements and sustainable design certification procedures.
    d. Role of sustainable design coordinator.
    e. Construction waste management.
    f. Construction operations and sustainable design requirements and restrictions.

6. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

    a. Contract Documents.
    b. Options.
    c. Related RFIs.
    d. Related Change Orders.
    e. Purchases.
    f. Deliveries.
    g. Submittals.
    h. Sustainable design requirements.
    i. Review of mockups.
    j. Possible conflicts.
    k. Compatibility requirements.
    l. Time schedules.
    m. Weather limitations.
    n. Manufacturer's written instructions.
    o. Warranty requirements.
    p. Compatibility of materials.
    q. Acceptability of substrates.

r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Engineer, but no later than 30 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of Record Documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Submittal of written warranties.
d. Requirements for completing sustainable design documentation.
e. Requirements for preparing operations and maintenance data.
f. Requirements for delivery of material samples, attic stock, and spare parts.
g. Requirements for demonstration and training.
h. Preparation of Contractor's punch list.
i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
j. Submittal procedures.
k. Coordination of separate contracts.
l. Owner's partial occupancy requirements.
m. Installation of Owner's furniture, fixtures, and equipment.
n. Responsibility for removing temporary facilities and controls.
o. Final cleaning.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress and Coordination Meetings: Conduct progress and coordination meetings at minimum monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site use.
        8) Temporary facilities and controls.
        9) Progress cleaning.
        10) Quality and work standards.
        11) Status of correction of deficient items.
        12) Field observations.
        13) Status of RFIs.
        14) Status of Proposal Requests.
        15) Pending changes.
        16) Status of Change Orders.
        17) Pending claims and disputes.
        18) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

©2026 CDM Smith
All Rights Reserved

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

©2026 CDM Smith
All Rights Reserved

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

B. Related Requirements:

1. Section 014000 “Quality Requirements” for schedule of tests and inspections.
2. Conditions of the Contract for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.
3. Two paper copies, of sufficient size to display entire period or schedule, as required.

B. Startup construction schedule.

1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, latest allowable start date, latest allowable finish date, status (where critical) and total float and free float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at weekly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Engineer's request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing and work hour restrictions.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.
12. Submit at this conference a preliminary network defining the planned operation during the first 60 calendar days after the Notice to Proceed.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Program Description

1. A Critical Path Method (CPM) construction schedule shall be used to control the Work and to provide a basis for determining job progress. The construction schedule shall be prepared and maintained by the Contractor. All work shall be done in accordance with the established CPM schedule. The Contractor and all subcontractors shall cooperate fully in developing the construction schedule and in executing the work in accordance with the CPM schedule.
2. The construction schedule shall consist of a computerized CPM network (diagram of activities) presented in a time-scaled graphic (print-out) with reports, as specified herein.
3. Alternatively, a detailed bar chart schedule may be used provided that all critical path items and schedule constraints are incorporated and displayed.

B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project for current Windows operating system.

2. Alternatively, a program such as Microsoft Excel may be used provided that all activities are displayed in sufficient detail to show planned items of work at minimum of weekly time intervals.

C. Qualifications:

1. The Contractor shall have the capability of preparing and utilizing the specified CPM schedule, or engage the services of a specialized scheduling professional to do so. Within seven days of the award of contract, provide a résumé or qualifications statement for the individual within the Contractor's organization, or the outside consultant, who is being proposed as the responsible party for development and maintenance of the CPM schedule. The résumé or qualifications statement shall demonstrate that the proposed responsible party has successfully developed and maintained CPM schedules for at least three construction projects of the same size or greater than this project. The proposed responsible party for the CPM schedule is subject to approval by the Engineer and Owner. If the proposed responsible party for the CPM schedule is not approved by the Engineer and/or Owner, Contractor shall resubmit a more-appropriate candidate for approval.

D. Time Frame: Extend schedule from date established for commencement of the Work to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

E. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
2. Activities to facilitate the Work: Indicate start and completion dates for the following as applicable:

    a. Securing of approvals and permits required for performance of the Work.
    b. Temporary facilities.
    c. Construction of mock-ups, prototypes and samples.
    d. Owner interfaces and furnishing of items.
    e. Interfaces with Separate Contracts.
    f. Regulatory agency approvals.
    g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.

b. Limitations of continued occupancies.
c. Uninterruptible services.
d. Partial occupancy before Substantial Completion.
e. Use-of-premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

a. Subcontract awards.
b. Submittals.
c. Purchases.
d. Mockups.
e. Fabrication.
f. Sample testing.
g. Deliveries.
h. Installation.
i. Tests and inspections.
j. Adjusting.
k. Curing.
l. Building flush-out.
m. Startup and placement into final use and operation.
n. Commissioning.

7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

a. Structural completion.
b. Temporary enclosure and space conditioning.
c. Permanent space enclosure.
d. Completion of mechanical installation.
e. Completion of electrical installation.
f. Substantial Completion.

G. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

H. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Conditions of the Contract for cost reporting and payment procedures.

I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.

3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

J. Acceptability

1. Submit the CPM schedule submittals, as specified, and resubmit as needed, until they are in compliance with Contract requirements.
2. The Engineer's review of the Contractor's construction schedule submittals will only be for conformance with the Contract requirements – including but not limited to contract time and work sequences specified in the contract documents. The Engineer's review of the schedule shall not include the Contractor's means and methods of construction or safety. The Engineer's concurrence, acceptance, or approval of the Contractor's schedule submittals will not relieve the Contractor from responsibility for complying with the Contract Scope, Contract Time or any other contract requirement. Any indication of concurrence, acceptance, or approval of the Contractor's schedule will only indicate a general conformance with the Contract Requirements.
3. Engineer's review of the Contractor's construction schedule submittals shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has in writing called Engineer's attention to such deviations at the time of submission and Engineer has given written concurrence to the specific deviations, nor shall any concurrence by the Engineer relieve Contractor from responsibility for errors and omissions in the submittals. Concurrence of the CPM Activity Network by the Engineer is advisory only and shall not relieve the Contractor of responsibility for accomplishing the Work within the Contract completion date(s).
4. Concurrence, acceptance, or approval of the Contractor's CPM schedule by the Engineer in no way makes the Engineer an insurer of the CPM schedule's success, nor liable for time or cost overruns resulting therefrom.
5. Failure to include any element of work required for the performance of this Contract will not excuse the Contractor from completing all Work required within the Contract completion date(s), notwithstanding the review of the network by the Engineer.
6. CPM schedules that contain activities with negative float, or which extend beyond the contract completion date, will not be acceptable.
7. Except where earlier completions are specified, CPM schedules which show completion of all work prior to the contract completion date may be indicated; however, in no event shall they constitute a basis for claim for delay by the Contractor.

K. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity. Activities shall not be considered to be complete until they are in fact 100 percent complete.
4. Submit a narrative report based on the CPM schedule evaluation, in a format agreed upon by the Contractor and the Engineer. The report shall include a description of the progress

during the previous period in terms of completed activities, an explanation of each activity which is showing a delay, a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or proposed.

L. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

M. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the currently approved CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.

N. Distribution: Distribute copies of approved schedule to Engineer Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within 30 days of date established for the Notice of Award.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice of Award.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 CPM SCHEDULE REQUIREMENTS

A. Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for commencement of the Work.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

a. Preparation and processing of submittals.
b. Mobilization and demobilization.
c. Purchase of materials.
d. Delivery.
e. Fabrication.
f. Utility interruptions.

g. Installation.
h. Work by Owner that may affect or be affected by Contractor's activities.
i. Testing and inspection.
j. Commissioning.
k. Punch list and Final Completion.
l. Activities occurring following Final Completion.
m. Maintenance of existing facilities.
n. Contract milestones.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

    a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
    b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.11 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Work Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.

2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013200

©2026 CDM Smith
All Rights Reserved

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.
5. Preconstruction video recordings.
6. Periodic construction video recordings.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
3. Section 311000 "Site Clearing" for photographic documentation before site clearing operations commence.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within three days of taking photographs.

1. Submit photos on CD-ROM or thumb-drive. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Engineer.
d. Name of Contractor.

e. Date photograph was taken.
f. Description of location, vantage point, and direction.
g. Unique sequential identifier keyed to accompanying key plan.

C. Printed photographs: Submit one set of prints of each photographic view within seven days of taking photographs.

1. Format: 8-by-10-inch smooth-surface matte prints on single-weight, paper; enclosed back to back in clear plastic sleeves punched for three-ring binder. Include copy of key plan indicating each photograph's location and direction. Provide one binder for each set of prints.
2. Identification: On back of each print, label with the following information:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Engineer.
d. Name of Contractor.
e. Date photograph was taken if not date stamped by camera.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
g. Unique sequential identifier keyed to accompanying key plan.

D. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings on CD-ROM or thumb drive. Include copy of key plan indicating each video's location and direction.
2. Identification: With each submittal, provide the following information in file metadata tag:

a. Name of Project.
b. Name and address of photographer.
c. Name of Engineer.
d. Name of Contractor.
e. Date video recording was recorded.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

3. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy duty, three-ring vinyl covered binders. Provide label on front and spine. Include a cover sheet with label information. Include name of Project and date of video recording on each page.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged as an experienced photographer of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode. Provide supplemental lighting in low light levels or backlit conditions.

C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

D. Metadata: Record accurate date and time and GPS location data from camera.

E. File Names: Name media files with date, Project area and sequential numbering suffix.

F. Usage Rights

1. Obtain and transfer copyright usage rights from photographer and videographer to Owner for unlimited reproduction of photographic and videographic documentation.

1.6 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs with maximum depth of field and in focus.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Preconstruction Photographs: Before commencement of the Work take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.

1. Flag excavation areas and construction limits before taking construction photographs.
2. Take a minimum of 100 photographs to show existing conditions including a minimum of 10 on each street and work area before starting the Work.

3. Take a minimum of 20 photographs of existing buildings either on or adjoining property where work will occur to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underground utilities.

2. Underslab services.
3. Piping.
4. Electrical conduit.
5. Waterproofing and weather-resistant barriers.

E. Periodic Construction Photographs: Take 20 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take a minimum of 100 photographs after date of Substantial Completion for submission as Project Record Documents. Engineer will inform photographer of desired vantage points, but a minimum of 10 are required on each street and work area.

G. Additional Photographs: Engineer may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:

a. Special events planned at Project site.
b. Immediate follow-up when on-site events result in construction damage or losses.
c. Photographs shall be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
d. Substantial Completion of a major phase or component of the Work.
e. Extra record photographs at time of final acceptance.
f. Owner's request for special publicity photographs.

1.7 CONSTRUCTION VIDEO RECORDINGS

A. Video Recording Photographer: Engage a qualified videographer with not less than three years' experience to record construction video recordings.

B. Narration: Describe scenes on video recording by audio narration by microphone while or dubbing audio narration off-site after video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.
2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.

C. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.

D. Preconstruction Video Recording: Before starting construction, record video recording of Project site and surrounding properties from different vantage points, as directed by Engineer.

1. Flag excavation areas and construction limits before recording construction video recordings.
2. Show existing conditions adjacent to Project site before starting the Work.
3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of construction.
4. Show protection efforts by Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013233

©2026 CDM Smith
All Rights Reserved

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Conditions of the Contract for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
9. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with

requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Mass Submittals: Six or more submittals or items in one day or 20 or more submittals or items in one week.

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Engineer's final release or approval.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Numbering System: Utilize the following example submittal identification numbering system to identify submittals and as file names for PDF submissions:

1. First Identifier - Alphabet Character: D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.
2. Second Identifier - Next 6 or 8 Digits: Applicable Specification Section Number. Do not mix submittals from different specification sections into a single submittal.

3. Third Identifier - Next Three Digits: Sequential number of each separate item or drawing submitted under each Specification Section, in chronological order submitted, starting at 001.
4. Fourth Identifier - Last Alphabet Character: A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc.
5. EXAMPLE: D-033000.13-008-B.

    a. D = Shop Drawing.
    b. 03 30 00.13 = Section; use only 6 digits for sections that do not include 8 digits.
    c. 008 = the eighth different submittal under this Section.
    d. B = the second submission (first resubmission) of that particular shop drawing.

B. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Engineer.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

C. Options: Identify options requiring selection by Engineer.

D. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

E. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Paper submittals are only required for Manuals, or other items specifically requested by Engineer to be in paper form.

4. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using Contractor's transmittal form.

F. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email/Electronic Submittal: Prepare submittals as PDF package and transmit to Engineer by sending via email or through mutually agreeable electronic submittal platform. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

    a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 30 days for initial review of each submittal (and 45 days for multi-discipline reviews). Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 30 days for initial review of each submittal.
4. Insert list of submittals requiring sequential review in first subparagraph below, or delete

and identify submittals in Sections where they are specified. Structural, HVAC, plumbing, and electrical components are examples of the Work that often require sequential review.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.
4. Repetitive Reviews: Shop drawings, O&M manuals, and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at the Contractor's expense. Reimburse the Owner for all costs invoiced by Engineer for the third and subsequent reviews.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.
b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Engineer's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Contractor’s Certification: Each shop drawing, working drawing, product data, and sample shall have affixed to it the following Certification Statement:

a. "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements. "

3. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
4. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
6. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
7. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 PROPOSED PRODUCT LIST

A. Within 30 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.10 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor Responsible for:

1. Determination and verification of materials including manufacturer’s catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.
9. Other requirements enumerated in Contract Documents.

C. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.11 ENGINEER'S REVIEW

A. Do not make mass submittals to Engineer. If mass submittals are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review mass submittals based on priority determined by Engineer after consultation with Owner and Contractor

B. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.

C. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Engineer will discard submittals received from sources other than Contractor.

G. Submittals not required by the Contract Documents will be returned by Engineer without action.

H. Shop drawings will be returned to the Contractor with one of the following codes.

1. "APPROVED" - This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
2. "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
3. "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. The resubmittal is to address all comments, omissions and non-conforming items that were noted. An additional box is checked to indicate whether the resubmission is for the complete package, or for parts of the package. If no box is checked, a complete resubmittal shall be provided. Review code may designate if a partial or full submittal is required. If full submittal is required, a complete resubmittal package addressing all comments shall be provided. If a partial submittal is designated, resubmittal shall only include information pertaining to those items noted in review comments requiring clarification and any portions of submittal impacted as a result of the response. Resubmittal is to be received by the Engineer within 30 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
4. "REJECTED" - This code is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
5. "RECEIPT ACKNOWLEDGED (Not subject to Engineer's Approval)" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's approval. This code is generally used with submittals involving the Contractor’s means and methods of construction work plans, and health and safety plans.

1.12 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

©2026 CDM Smith
All Rights Reserved

SECTION 013529 – SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes the following:

1. Site specific health and safety procedures, including a detailed accident prevention plan are required due to the potentially hazardous conditions at this site. These procedures shall be described in a Safety, Health and Emergency Response Plan (SHERP) prepared by the Contractor.
2. The SHERP shall be submitted to the Engineer and be reviewed by the Engineer before any Work at the site can be initiated. The Contractor is responsible for the Contractor's workers and subcontractors' health and safety. Implement, maintain and enforce the SHERP procedures at the appropriate time prior to and during all phases of the Work.

    a. Utilize the services of a health and safety professional designated the Health and Safety Manager (HSM) to develop and implement the SHERP, including the air monitoring program, conduct initial site-specific training and provide support for all health and safety activities as needed, including the upgrading or downgrading of the level of personnel protection.
    b. In addition, a Site Safety and Health Officer (SSHO) shall assist and represent the HSM in the continued implementation and enforcement of the SHERP. The SSHO shall be assigned to the site on a full-time basis and shall be either the Contractor's employee or a subcontractor who reports to the Contractor and the HSM in matters pertaining to site safety and health.

B. Pre-characterization data indicates soil at select locations is impacted with Volatile Organic Compounds (VOCs), Extractable Total Petroleum Hydrocarbons (ETPH), and Polycyclic Aromatic Hydrocarbons (PAHs). Analytical soil results are included in Appendix B.

C. Contaminated equipment must be decontaminated in accordance with the procedures specified in the Safety, Health, and Emergency Response Plan (SHERP) and Section 026110 "Excavation and Management of Soils."

D. Provide workers with personal protective equipment (PPE) as necessary to comply with the Safety, Health and Emergency Response Plan (SHERP).

E. Related Requirements:

1. Section 013300 “Submittal Procedures” for procedures related to submittals.
2. Section 026110 “Excavation and Management of Soils” for site specific project requirements for contaminated soils.
3. Section 028100 “Transportation and Disposal of Excavated and Contaminated Material” for site specific project requirements for transportation of contaminated materials

1.3 DEFINITIONS

A. Health and Safety Manager (HSM): The employee assigned to develop the SHERP and assume full responsibility for the health and safety program. The HSM shall meet the qualifications of a Certified Industrial Hygienist or a Certified Safety Professional as defined below.

B. Safety, Health and Emergency Response Plan (SHERP): The plan shall establish and detail the procedures necessary for protecting workers from potential hazards encountered during the implementation of the work. The SHERP shall apply to all subcontractors working at the site and include provisions for site visitors.

C. Site Safety and Health Officer (SSHO): The employee assigned to the site on a full-time basis for the duration of the project with functional responsibility for implementation of the SHERP.

D. Monitoring: Indicates the use of field instrumentation to provide information regarding the levels of organic vapors which are being released during remedial action. Monitoring shall be conducted to evaluate employee exposures to toxic materials.

E. Physician: A licensed physician with experience in the practice of occupational medicine.

1.4 ACTION SUBMITTALS

A. Submit, in accordance with Section 013300 “Submittal Procedures”, and within 14 days after issuance of Notice to Proceed, the following:

1. Safety, Health and Emergency Response Plan.

a. Six copies of the site specific SHERP shall be submitted to the Engineer and must be approved prior to commencement of any on-site work.

1.5 INFORMATIONAL SUBMITTALS

A. Prior to development of the SHERP, submit the name, company name (if different from Contractor), address, telephone number, and resume (including education and work experience) of the Health Safety Manager (HSM) and Site Safety and Health Officer (SSHO) meeting the minimum qualifications defined in Article 1.6 of this Section.

1.6 INDUSTRIAL HYGIENIST, SITE SAFETY AND HEALTH OFFICER

A. Designate an individual as Heath Safety Manager (HSM). The HSM shall be a Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene (ABIH) or a Certified Safety Professional shall develop and implement the SHERP, conducting initial site-specific training, providing continued support for all health and safety activities as needed, including upgrading or downgrading of the level of personnel protection as necessary for the duration of the work.

B. The qualifications of the HSM shall include:

1. A minimum of five years working experience in the chemical or hazardous waste disposal industry.
2. Working knowledge of Federal and State occupational safety and health regulations.
3. Demonstrable expertise in air monitoring techniques and in the development of personal protective equipment programs for working in potentially toxic atmospheres.
4. Working knowledge of Federal and State occupational safety and health regulations.

C. In addition, designate an individual as the Site Safety and Health Officer (SSHO) who shall assist and represent the HSM in the continuous daily implementation and enforcement of the SHERP. The SSHO shall be assigned to the site on a full-time basis and shall report to the Contractor and the HSM in matters pertaining to site safety and health. The SSHO shall be responsible for preparing and maintaining daily SHERP site logs and reports.

1. The qualifications of the SSHO shall include:

a. A minimum of 2 years working experience at hazardous materials or waste sites where Level C personal protective equipment is required.
b. A Working knowledge of Federal and State safety and health regulations.
c. Specialized training in personal and respiratory protective equipment program implementation and in the proper use of air monitoring instruments and air sampling methods and procedures.
d. Current certification in first aid and cardio pulmonary resuscitation (CPR) by a recognized approved organization such as the American Red Cross.
e. In addition to 40-hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER)training, annual 8-hour OSHA HAZWOPER refresher training, and medical monitoring, the SSHO shall also possess the 8-hour OSHA HAZWOPER Supervisor training

1.7 FIELD CONDITIONS

A. Site Background:

1. Contaminated soil exists at select locations along the Pine Meadow Sewer Extension corridor. The pre-characterization results show soil impacted with VOCs, ETPH, and PAHs.
2. Analytical results are provided as a data table included in Appendix B.

1.8 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. Provide a specific SHERP consistent with the requirements of the following:

1. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926
2. United States Environmental Protection Agency (USEPA) Standards and Regulations contained in Title 40 Parts
   National Institute for Occupational Safety and Health (NIOSH)/OSHA/United States Coast Guard (USCG)/EPA Occupational Safety and Health Guidance Manual for Hazardous Site Activities

B. SHERP: Provide, but not necessarily be limited to, the following components as required by OSHA 29 CFR 1910.120(i)(2):

1. Names of key personnel and alternates responsible for site safety and health (responsibilities and chain of command).
2. Safety and health hazard assessment and risk analysis for each site task and operation (Accident Prevention Plan).
3. Site Description and Evaluation.
4. Education and Training.
5. Personnel Protective Equipment.
6. Medical Surveillance.
7. Air Monitoring.
8. Standard Operating Procedures, Engineering Controls and Work Practices.
9. Site Control Measures (Work Zones, Communications and Security).
10. Personnel Hygiene and Decontamination.
11. Equipment Decontamination and Record Keeping.
12. Emergency Equipment and First Aid Requirements.
13. Emergency Response Plan and Contingency Procedures.
14. Heat/Cold Stress Monitoring.
15. Logs, Reports and Record Keeping.

C. Determination of the appropriate level of worker safety equipment and procedures shall be made by the Contractor as a result of initial site survey review of existing data and a continued safety and health monitoring program performed by the SSHO and approved by the Engineer, in accordance with the requirements specified herein. Existing data indicate that all work can be performed in Level D with contingency procedures to move to Level C protection.

D. Should any unforeseen or site-specific safety related factor, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such to the attention of the Engineer both verbally and in writing as quickly as possible, for resolution. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment.

E. The SHERP developed by the Contractor shall include provisions for work related to initial site preparation prior to implementation of the facilities described in this Contract. It shall be the responsibility of the Contractor to conduct whatever testing and monitoring is deemed necessary to assure a safe operation during the initial site preparation work.

F. Any temporary facilities or special construction procedures required to construct the Support and Contamination Reduction Zones shall be the responsibility of the Contractor and shall be delineated in the SHERP.

G. Communications

1. As necessary based on cell phone service, provide portable two-way radio or portable vehicle telephone communication at the site and emergency numbers, including police, fire, ambulance, hospital and Owner, shall be prominently posted near the radio or telephone.

H. Security

1. Unauthorized access to work areas shall be restricted. Specific components of this security operation are as follows:

a. Vehicular access to all fenced areas shall be restricted to authorized vehicles only.
b. Maintain a log of security incidents.
c. Require visitors having access to all fenced areas to sign-in and sign-out and shall keep a record of all site access.
d. All approved visitors shall be briefed on safety and security and escorted by the Contractor SSHO throughout their visit.

1.9 TRAINING

A. Certify that all personnel assigned to or regularly entering the site for the purpose of performing or supervising work, for health, safety, security, or administrative purposes, for maintenance, or for any other site-related function, have received appropriate safety training in accordance with 29 CFR 1910.120. Training for personnel shall consist of a minimum of 40 hours off-site and 3 days on-site experience. In addition, supervisory personnel shall have a minimum of 8 hours additional specialized training on managing hazardous waste operations. Documentation of all such training shall be submitted to the Engineer before any employees will be allowed in the contaminated area.

B. Certify that all personnel assigned to or regularly entering the site for the purpose of performing or supervising work, for health, safety, security, or administrative purposes, for maintenance, or for any other site-related function, have received appropriate safety training in accordance with the SHERP. Documentation of all such training shall be submitted to the Engineer before any employees will be allowed to perform work at the site.

C. Additionally, guarantee that, personnel not successfully completing the required training are not permitted to enter the site to perform work.

1.10 MEDICAL SURVEILLANCE

A. The services of an occupational physician shall be utilized to provide at least minimum medical examinations and surveillance as specified herein. The name of the physician, evidence of examination and written certification of fitness for work and ability all personnel shall be provided to the Engineer prior to assigning these personnel to the site. All personnel involved in

this project shall be provided with medical surveillance within 30 days prior to commencing work and within 30 days after the conclusion of the work.

B. If the SHERP identifies the need for a medical surveillance program, the Contractor shall provide the physician with site-specific information and the physician must provide the Contractor with a written medical opinion.

1. Additional clinical tests may be included at the discretion of the attending occupational physician performing the physical examination.
2. Periodic surveillance examinations shall be performed:

a. Annually for all employees participating in medical surveillance program.
b. Periodic surveillance examinations shall be as specified above for medical surveillance except that the requirement for a chest x-ray and stress test shall be at the discretion of the attending occupational physician performing the physical examination.

3. In addition, a non-scheduled medical examination shall be conducted under the following circumstances:

a. After acute exposure to any toxic or hazardous material.
b. At the discretion of the Contractor's HSM/SSHO or the consulting occupational physician, when an employee has been exposed to dangerous levels of toxic or hazardous materials.
c. At the discretion of the Contractor's HSM/SSHO or the consulting occupational physician, and at the request of an employee with demonstrated symptoms of exposure to toxic or hazardous materials.
d. Non-scheduled medical examinations shall include all items specified above for Periodic Surveillance Examinations, except that the chest x-rays and stress test shall be at the discretion of the attending physician performing the physical examination.

4. Maintain all medical surveillance records in accordance with 29 CFR 1910.20 and make these records available to the Engineer or other regulatory agencies as required.
5. These records shall be maintained for a period of 30 years. One copy of all records shall be turned over to the Owner as specified in Section 017839 “Project Record Documents.”

1.11 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

A. Develop contingency plans including evacuation procedures and routes to places of refuge or safe distances from the danger area, for the following potential emergencies: chemical exposure, personal injury, potential or actual fire or explosion, environmental accident (spill or release) and discovery of radioactive material. In the event of any emergency associated with remedial action, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and institute whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.

B. Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result.

C. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangements shall be provided in the SHERP. In addition, provide the following equipment:

1. At least one first aid kit shall be provided and maintained fully stocked at a first aid station which is in close proximity to the work, but not inside a hazardous work area. First aid kit locations shall be specially marked and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions.
2. Have at least one certified First Aid Technician on the site at any time there is work being performed. This person may perform other duties but must be immediately available to render first aid when needed. Certification shall be by the American Red Cross or other approved agency and shall be submitted to the Engineer.
3. 2A-10 B:C type dry chemical fire extinguishers shall be provided at the site office.

1.12 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

A. Develop an emergency response and contingency plan for on-site and off-site emergencies, as specified in OSHA 29 CFR 1910.120(l), which shall address at a minimum:

1. Pre-emergency planning.
2. Personnel roles, lines of authority, training and communication.
3. Emergency recognition and prevention.
4. Safe distances and places of refuge.
5. Site security and control.
6. Evacuation routes and procedures.
7. Decontamination.
8. Emergency medical treatment and first aid.
9. Emergency alerting and response procedures.
10. Critique of response and follow-up.
11. Personal Protection Equipment (PPE) and emergency equipment.

B. In the event of any emergency associated with Response Action, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and institute whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.

C. Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result and that the patients clothing and skin might be contaminated.

D. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangements shall be posted at the site. The posted list shall include the following minimum points:

1. Contractor physician name, address and telephone number.
2. Ambulance service and fire department telephone numbers.
3. Procedure for prompt notification of Engineer.

E. In the event that an accident for some other safety related incident occurs during the course of the project, the Engineer shall be telephoned immediately and receive a written notification within 24 hours. The report shall include the following items:

1. Name, organization, telephone number, and location of the Contractor.
2. Name and title of the person(s) reporting.
3. Date and time of accident/incident.
4. Location of accident/incident, including site location and facility name.
5. Brief summary of accident/incident giving pertinent details including type of operation ongoing at time of accident.
6. Cause of accident/incident, if known.
7. Casualties (fatalities, disabling injuries).
8. Details of any existing chemical hazard or contamination.
9. Estimated property damage, if applicable.
10. Nature of damage; effect on contract schedule.
11. Action taken by Contractor to ensure safety and security.
12. Other damage or injuries sustained (public or private).

1.13 PERSONAL PROTECTIVE EQUIPMENT

A. Provide all on-site personnel with appropriate personal safety equipment and protective clothing and ensure that all safety equipment and protective clothing is kept clean and well maintained. The Contractor's HSM shall establish upgrade/downgrade "action levels" from the specified minimum levels of protection based upon air monitoring results and direct contact potential. Protocols formally changing the level of protection and the communication network for doing so shall be described in the SHERP. Any changes to the minimum level of protection shall be approved by the SSHO and the Engineer.

1. All prescription eyeglasses in use on the site shall be safety glasses.
2. Footwear used on site shall be steel-toed, steel shank safety shoes or boots, with chemical resistant soles.
3. All on-site personnel shall wear a hard hat when engaging in construction or drilling activities.
4. Personal protective equipment and clothing including work clothing and safety boots shall be properly disposed of or decontaminated at the completion of the work day as necessary.
5. Level D shall be the minimum level of protection set for all primary operations, unless an upgrade is required in accordance with the provisions set forth in the Air Monitoring program.

1.14 PERSONAL HYGIENE AND DECONTAMINATION

A. All on-site personnel performing or supervising remedial work within a hazardous work area or exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids shall observe and adhere to the personnel hygiene-related provisions of this paragraph. A detailed description of personnel decontamination protocols to be followed by site workers shall be submitted as part of the SHERP. Personnel found to be disregarding the personal hygiene-related provisions of the SHERP shall be barred from the site. In addition, the following conditions and procedures shall be followed:

1. Provide and require use by personnel of:

    a. Storage and disposal containers for used disposable outerwear.
    b. Hand washing facilities.
    c. A facility for changing into and out of and storing work clothing separate from street clothing.
    d. A designated lunch and/or break area.
    e. A smoking area.

B. Disposable outerwear shall not be reused, and when removed, shall be placed inside disposal containers provided for this purpose located in the Contamination Reduction Zone.

C. Eating and drinking shall be prohibited except in a designated Contractor provided lunch or break area.

D. All outerwear shall be removed prior to entering the lunch area or smoking area and prior to cleansing hands.

E. Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the lunch area.

F. Use of tobacco products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.

1.15 EQUIPMENT DECONTAMINATION

A. All vehicles and equipment used in used in contact with contaminated soil shall be decontaminated prior to leaving the site. The procedures for decontamination of vehicles and equipment shall be outlined in the SHERP. Monitoring all vehicle decontamination prior to exiting the site.

B. The following EPA Standard Operating Procedures (SOP), as amended, for field application shall be used to wash or decontaminate all equipment that comes in contact with contaminated ground water.

1. Cleaning Procedures for Stainless Steel or Metal Sampling Equipment Used for the Collection of Samples for Trace Organic Compounds and/or Metals Analyses, subsection B-4, Appendix B, Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. Environmental Protection Agency, Region IV, Environmental Services Division, Athens, Georgia, April 1, 1986.

    a. Wash equipment thoroughly with a phosphate free, laboratory grade detergent and steam clean using a brush to remove any particle matter or surface film.
    b. Rinse equipment thoroughly with steam cleaner.
    c. Rinse equipment thoroughly with deionized water.
    d. Rinse equipment thoroughly with pesticide grade isopropyl alcohol and allow to air dry. If not enough time is available to air dry, rinse with organic-free water.
    e. Wrap equipment completely with aluminum foil to prevent contamination during storage, if necessary.

C. All water used for decontamination, excluding deionized water shall be potable, meeting standards for public potable water supply.

D. Whenever handling decontaminated ("clean") equipment, disposable latex gloves shall be worn. Gloves shall be discarded once used, or at a minimum, between boreholes. Whenever handling or rinsing with isopropyl alcohol, personnel shall wear eye protection, gloves, and neoprene laboratory aprons.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013529

©2026 CDM Smith
All Rights Reserved

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance

with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."

H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Engineer regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Engineer for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel and Delegated-Designer.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

E. Reports: Prepare and submit certified written reports and documents as specified.

F. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 30 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner’s quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include Work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Design Professional Qualifications: A professional engineer / registered architect who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Design / engineering services are defined as those

performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329**,** and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect, demonstrate, repair and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods. Contractor responsibilities include the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Promptly correct unsatisfactory conditions noted by Engineer's preliminary review, to the satisfaction of the Engineer, before completion of final mockup.
5. Approval of mockups by the Engineer does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 “Allowances,” as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including

service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor’s Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payments.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Engineer.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

©2026 CDM Smith
All Rights Reserved

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.

25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).

70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).
73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org .
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.

114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.
118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.

160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.
162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.
165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.
174. SMA - Screen Manufacturers Association; www.smainfo.org.
175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
176. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
179. SPRI - Single Ply Roofing Industry; www.spri.org.
180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
183. STI - Steel Tank Institute; www.steeltank.com.
184. SWI - Steel Window Institute; www.steelwindows.com.
185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
191. TMS - The Masonry Society; www.masonrysociety.org.
192. TPI - Truss Plate Institute; www.tpinst.org.
193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
194. TRI - Tile Roofing Institute; www.tileroofing.org.
195. UL - Underwriters Laboratories Inc.; http://www.ul.com.
196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
197. USAV - USA Volleyball; www.usavolleyball.org.
198. USGBC - U.S. Green Building Council; www.usgbc.org.
199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
200. WA - Wallcoverings Association; www.wallcoverings.org
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.

205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
207. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.

2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.

6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CT DEEP or CTDEEP or DEEP – Connecticut Department of Energy and Environmental Protection
2. CT DOT or CTDOT or DOT – Connecticut Department of Transportation
3. CSBC – Connecticut State Building Code

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

©2026 CDM Smith
All Rights Reserved

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's public works forces, Engineer, testing agencies, and authorities having jurisdiction.

B. Water Service: Pay water-service use charges for water used by all entities for construction operations.

C. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

F. Dust Control Plan: Submit coordination drawing and narrative that indicates the dust control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. Waste-handling procedures.
3. Other dust-control measures.

G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:

1. Methods used to meet the goals and requirements of the Owner.
2. Concrete cutting method(s) to be used.
3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
6. Indicate locations of sensitive areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.5 QUALITY ASSURANCE

A. Temporary facilities shall comply with all applicable state and local ordinances, codes and regulations.

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

D. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails, with galvanized barbed-wire top strand.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

C. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Engineer from manufacturer's standard colors.

D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

E. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Engineer’s Field Office: Of sufficient size, but minimum 12-feet by 20-feet, to accommodate needs of Owner, Engineer, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections for duration of project. Keep office clean and orderly. Furnish and equip offices as follows:

1. Field office trailer shall have at least one office, one conference room, one closet, one sink, and two exterior doors.
2. Engineer's field office shall be weather-tight construction with floor, walls, and ceiling completely insulated. Each room shall have at least one operating window. Each window shall have a venetian blind and full insect screen. Furnish two sets of keys for each exterior door. Provide fully insulated skirting on all sides of the field office trailer. Provide steps, platforms, handrails, and boot scrapers for each exterior door.
3. Field office trailer shall be Mobile Mini, ModSpace, Williams Scotsman, or equal. Converted storage or box containers will not be acceptable.
4. Furnishings:

    a. Provide the following furnishings for the Engineer's temporary field office for the duration of the project. All furnishings shall be in very good condition and subject to approval of the Engineer.

        1) Two 60-inch by 30-inch desks with file drawer and 5 drawers, all lockable.
        2) Upholstered swivel type chair with arms for each desk.
        3) One 30-inch by 84-inch conference table.
        4) Eight armless side chairs (stacking type).
        5) One 48-inch by 24-inch folding table.
        6) One file cabinet, 4 drawer, legal size, Hon No. HN-315C, or equal.
        7) Four wastebaskets.
        8) One rolling plan storage rack, 10-stick capacity.
        9) One lockable storage cabinet, 72-inch high, 36-inch wide, and 18-inch deep.
        10) One steel bookcase unit, 4 shelves high, Hon No. HN-S48 ABC, or equal.
        11) One digital telephone answering machine.
        12) 24 painted steel coat hangers.
        13) One electric bottled water dispenser with hot and cold outlets and refrigerator unit. Adequate water bottles shall be provided (and paid for by the Contractor) until Final Completion.
        14) One wall-mounted first aid kit, McMaster-Carr 9501T1 or equal.
        15) Two smoke detectors, with batteries.
        16) Two dry erase boards, aluminum frame, 36-inch by 60-inch, markers and eraser, Quartet Model No. TS-S 535 or equal.
        17) One 1000-watt minimum 1.4-cu.ft. microwave oven.
        18) One 6-cf refrigerator.
        19) Commercial duty cross-cut shredder with basket, designed for 3 to 5 users, Fellowes Powershred SB-125i, or equal.
        20) One first aid kit, OSHA (1910.151.b) and ANSI (Z308.1-2003) compliant, suitable for ten people.

5. Equipment:

    a. Provide the following equipment for the Engineer's temporary field office for the duration of the project. All equipment shall be new.

        1) A multifunction Photocopier, printer, and scanner.

    b. With 50-sheet auto-feeder, capable of copying and printing
    c. Letter-sized, legal-sized, and 11-inch by 17-inch documents.

d. Contractor to provide paper and ink cartridges, as required, for the duration of the project.

1) Answering machine with digital recorder.
2) Digital Camera: provide one new digital camera for the Engineer's use for the project duration. Camera shall be a major brand name (e.g., Minolta, Cannon, Olympic, Pentax, etc. – subject to the Engineer's approval) and shall have an automatic date function, 3 Mega pixel or greater, 3x optical zoom or better, and at least one GB of memory (on board or supplemental memory card). The camera shall come complete with carrying case, storage card, rechargeable batteries, battery charger, flash memory reader, USB cables and all necessary software. After completion of project the camera will become the property of the Owner**.**
3) Four 8-outlet surge protectors with six-foot cord and minimum 1800-joule energy rating or greater; as manufactured by Belkin, or equal.
4) One 12-cup coffeemaker with timer, by Krups, or equal.

6. Services:

a. Provide the following services for the duration of the project. Services shall include all costs for installation, use, maintenance, and removal of all products, services and equipment billed by each provider for each service specified herein.
b. Field office shall have complete and fully functional electrical, plumbing, and HVAC systems. Provide at least two smoke detectors hard-wired into the electrical system. Perform all scheduled and unscheduled maintenance for all systems and as directed by the Engineer.
c. Electrical System: Provide connection to temporary electric service. Comply with the electrical requirements of the furnished office trailer. Provide main circuit panel, sufficient GFCI outlets and lighting in each room, exterior lights at each exterior door, and proper grounding of entire electrical system.
d. Plumbing system: Connect to existing potable water supply. Provide hot water heater and hot and cold water to each fixture. Connect waste pipes to existing a waste holding tank. Heat trace and insulate exterior piping to prevent freezing.
e. HVAC System: Provide central heating and air conditioning system with programmable thermostat. System shall be capable of maintaining an interior temperature of 70 degrees F when the exterior temperature is 0 degrees F and an interior temperature of 75 degrees F when exterior temperature is 100 degrees F.
f. Bottled water service: Provide bottled water service complete with dispenser with hot- and cold-water taps and regular bottle and cup replenishment as directed by the Engineer.
g. Janitorial service: Provide janitorial services (at least weekly) that include dusting, sweeping, vacuuming, mopping, disinfection, and trash removal.
h. Sanitary service: Provide regular pumping of waste holding tank as needed.
i. Communications:

1) Install one telephone lines in the Engineer's field office for the Engineer's exclusive use. Line shall be voice grade with caller ID and call-waiting features.
2) Provide a high-speed DSL data line or T1 cable line with internet access for the duration of the project.

3) Provide one air card for the Engineer's use for the duration of the project (through Final Completion, with unlimited data plans.

j. Pay all costs for installation, maintenance, and removal of the telephone and internet service and instruments, including cellular phone service. The monthly cost of all calls made and received by the Engineer, including toll and long-distance calls, shall be paid for by the Contractor for the duration of the project.

7. Supplies: Provide the following supplies for the duration of the project: copy paper, toner, paper towels, soap, light bulbs, and other consumables as required by the Engineer.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction and marked for intended location and application.

C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work. Engineer's trailer shall be set up and ready for occupancy within 30 days of the Notice to Proceed. Refer to paragraph 3.6 herein for information on space to be provided by Owner.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use within 30 days of the Notice to Proceed and prior to Commencement of Work at the site. Do not remove until approved by Engineer or are replaced by authorized use of completed permanent facilities.

3.3 ENGINEER'S OFFICE

A. Engineer's trailer shall be set up and ready for occupancy within 30 days of the Notice to Proceed and prior to commencement of Work at the site. All systems, furnishings, equipment, and services specified herein shall be furnished, installed, and completely operational for the field office to be considered established.

1. Provide regular office cleaning services for the duration of the project.
2. Provide supplies including, but not limited to restroom supplies (toilet tissue paper, paper towel, and soap), as well as light bulbs, air conditioner filters, etc.
3. Provide office supplies for printers etc.
4. Supply all fuel for heating and pay all utility bills.

B. Install field office plumb and level.

C. Engineer's trailer shall be removed, and the site shall be cleaned up and restored before Final Completion of the project.

3.4 CONTRACTOR'S FIELD OFFICE

A. Provide a temporary field office(s) for the Contractor's use for the duration of the project. An authorized representative of the Contractor shall be present at all times while the Work is in progress. Instructions received at the Contractors field office from the Engineer shall be considered delivered to the Contractor.

B. Locate field office(s) in accordance with approved shop drawings and as directed by the Owner.

C. Establish and occupy field office within 30 days of the Notice to Proceed, unless otherwise approved by the Engineer or Owner.

3.5 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service, if approved by Owner.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully. Connect waste pipes to a waste holding tank as no sanitary sewer service will be available during construction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: If approved, connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Final Completion, restore these facilities to condition existing before initial use.

E. Sanitary Facilities: Provide a minimum of one temporary portable chemical toilet exclusively for Engineer’s use.

F. Provide wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

G. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

H. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
2. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

I. Temporary Light and Power: Provide by Contractor, including 220 Volt service for welding, complete with wiring, lamps and similar equipment as required to adequately light all work areas and with sufficient power capacity to meet the project needs. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.

J. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

K. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.

L. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

M. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment and one land-based telephone line(s) for each field office.

1. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Contractor's emergency after-hours telephone number.
e. Engineer's office.
f. .
g. Engineers' offices.
h. Owner's office.
i. Principal subcontractors' field and home offices.

N. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Engineer and Owner.

3.6 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Utilize designated area within existing building for temporary field offices.
3. Maintain support facilities until Engineer schedules Final Completion inspection. Remove just before Final Completion.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas accordance with Section 312000 "Earthwork."

3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 321216 "Asphalt Paving."

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Provide temporary offsite parking areas for construction personnel.

F. Storage and Staging: Provide temporary offsite area for storage and staging needs.

1. Owner to provide limited area for excavated soil stockpiling and management at town-owned property at 100 Pocono Road. The area available will be confirmed at the start of construction, but Contractor can assume that the space will be adequate for both Engineer's and Contractor's field offices and some excavated soil management, provided that excavated soils are tested and handled on a continuing basis, including removal of excess soil from the site at least weekly. Contractor responsible for additional storage and staging areas beyond what is available at that property.

G. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings or other Sections. Signs shall be constructed of A-A Ext – APA grade plywood, 1-in thick. Posts and braces shall be of pressure treated lumber.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

I. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.7 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of authorities having jurisdiction requirements specified in Section 311000 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to Drawings and requirements of \ authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

H. Site Enclosure Fence: Before construction operations begin , furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

I. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

3.8 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.

2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Engineer.
    c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.9 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Clear snow and ice from all drives, walks and stairs to maintain safe vehicle and pedestrian access to the site and facilities as directed by the Engineer.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Final Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Final Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. Just prior to Final Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

©2026 CDM Smith
All Rights Reserved

SECTION 015526 - TRAFFIC CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating traffic operations on Project including, but not limited to, the following:

1. Traffic control and protective devices, as required to expedite vehicular traffic flow during construction
2. Providing access to all buildings including business and parking areas at all times.
3. Maintaining a minimum of one 11-ft lane of traffic, in one direction, at all times, unless road closure or detour is specifically approved by the Authority Having Jurisdiction.
4. Providing police details at certain times in order to maintain safe traffic control within the project area.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for staging areas and parking.

C. All traffic control shall be in accordance with the Federal Highway Administration’s Manual on Uniform Traffic Control Devices (MUTCD), the Contract Drawings and these specifications. Where reference is made to the MUTCD, the revision in effect at the time of bid opening shall apply.

1.3 ACTION SUBMITTALS

A. Traffic Control Plan:

1. Plan shall be prepared by a Traffic Engineer licensed in State of Connecticut. Detail all temporary changes in traffic control equipment, street or road closures, detours, etc. Plan shall be subject to the approval of the Town of Brookfield Police Department for all work areas
2. The Owner reserves the right to request modifications of the plan throughout the course of the Contract. When necessary, update the plan and forward changes to the Owner and Engineer for approval.
3. At least 15 days prior to mobilization at the site or any work commencing within the right of way, submit a detailed traffic management plan to the Owner and Engineer for review, outlining plans for traffic controls during construction. Include:

a. Locations and estimated duration of detours and traffic controls and signage to be employed.
b. Design and material of signs.
c. Consideration of appropriate traffic interruptions during rush hour time periods on all roads.
d. Assume all work will be performed during normal working hours unless prior notice is received from the Owner and Engineer with restrictions noted in Section 011000 "Summary."
e. Phased plans showing the setup, number and width of open lanes, and schedule.

4. No work shall commence without prior approval of the Traffic Control Plan by the Town of Brookfield and Police Department, as applicable,

1.4 HAUL ROUTES

A. Consult with the Owner to establish public thoroughfares that will be used as haul routes and site access.

PART 2 - PRODUCTS

2.1 TRAFFIC SIGNALS AND SIGNS

A. Provide and operate traffic control and directional signals required to direct and maintain an orderly flow of traffic in all areas under the Contractor's control or affected by the Contractor's operations.

B. Material, reflectivity and dimensions of signage shall meet CTDOT requirements.

C. Provide traffic control and directional signs, mounted on barricades or standard posts at the following locations, as directed by the Traffic Control Plan and/or the Engineer:

1. Each change of direction of a roadway and each crossroads.
2. Detours.
3. Parking areas.
4. For businesses within detour routes.
5. As specified on the Drawings.

C. Existing permanent traffic control signing and devices, including guardrails, shall not be removed unless called for on the Drawings or without the prior consent of the Owner and the Engineer.

D. Detours around construction will be subjected to the approval of the Owner and the Engineer. Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, expedite construction operations and periods when traffic is being detoured will be strictly controlled by the Owner.

F. Provide signs promoting access to impacted businesses during construction.

PART 3 - EXECUTION

3.1 REQUIREMENTS

A. Notify all property owners at least 48 hours in advance of any work that will interfere with access to their residence or place of business.

B. No detour will be allowed without prior approval of the Engineer and Owner. Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic. Expedite construction operations while traffic is detoured. Periods when traffic is being detoured will be strictly controlled by the Owner.

C. Coordinate with the Town of Brookfield to maintain access at all times at each site for emergency vehicles and school buses.

D. No road shall be closed to traffic without the prior consent of the Town of Brookfield and the Engineer.

E. Traffic control, including but not restricted to signing and devices, shall be provided for all work in the right of way by the Contractor in accordance with State standards.

F. Maintain a minimum of one 11-feet lane of traffic, in one direction, at all times.

G. Normal working hours are defined as 7AM to 5PM on weekdays. No work shall occur on Sundays or holidays observed by the locality personnel. Work on Saturdays may be allowed if deemed necessary with prior approval of the Owner and Engineer.

H. Take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. Be fully responsible for damage or injuries whether or not Police protection has been provided.

I. After completion of the project, remove all traffic control devices, signage and support systems and patch the disturbed area to match existing as closely as possible and to the satisfaction of the Engineer.

3.2 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Department of Public Works operations, or construction operations.

B. Monitor parking of construction personnel's private vehicles, maintain free vehicular access to and through parking areas and prohibit parking on or adjacent to access roads or in non-designated areas.

3.3 POLICING

A. When, in the opinion of the Owner, Engineer, or the Town of Brookfield Police Department, public safety or convenience requires the services of police, the Engineer or Owner may direct the Contractor to provide policing to direct traffic within the location of work under this Contract.

B. When so directed, make all arrangements in obtaining the necessary policing manpower.

C. Contact the Owner to determine the need for and number of Police details. All police details must be coordinated with the Owner prior to the Contractor arranging for the necessary police details. If Police Officers are unavailable to cover the traffic control needs, certified flaggers may be permitted.

1. The cost for police or flagger time shall be reimbursable via the applicable Allowance item.

D. The intent is to ensure public safety by police direction of traffic. Police are not to serve as watchmen to protect the Contractor's equipment and materials, or to warn pedestrians of such hazards as open trenches.

E. Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for protection of persons and property under the terms of the Contract.

F. Cancellation of any scheduled police detail due to inclement weather or any other reason is the responsibility of the Contractor. Contractor is responsible to establish proper notification requirements with police department and for payment of police details not cancelled or cancelled without proper notice, with no reimbursement by the Owner.

END OF SECTION 015526

©2026 CDM Smith
All Rights Reserved

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 “Summary” for Contractor requirements related to Owner-furnished products.
2. Section 014200 "References" for applicable industry standards for products specified.
3. Section 017700 “Closeout Procedures” for submitting warranties.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycle contract materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in PART 2 “Comparable Products” Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in PART 2 "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Paragraph 7.06 of the General Conditions for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Resolution of Compatibility Disputes between Multiple Contractors:

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

1.5 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection for wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.

5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

    a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product that complies with requirements.

    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer that complies with requirements.

a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Paragraph 7.06 of the General Conditions for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Engineer's sample," provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Paragraph 7.06 of the General Conditions for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.

1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following

conditions are not satisfied, Engineer may return requests without action, except to record noncompliance the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

B. Engineer’s Action on Comparable Products Submittal: If necessary, Engineer will request additional information or documentation for evaluation, as specified in Section 013300 “Submittal Procedures.”

1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
2. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Engineer of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

©2026 CDM Smith
All Rights Reserved

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Coordination of Owner’s portion of the Work.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Compliance with applicable permits and regulations.

B. Related Requirements:

1. Section 011000 "Summary" for coordination and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 PREINSTALLATION MEETINGS

A. Layout Conference: Conduct conference at Project site.

1. Prior to establishing layout of new perimeter of structures, review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Engineer of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:

a. Contractor's superintendent.
b. Professional surveyor responsible for performing Project surveying and layout.
c. Professional surveyor responsible for performing site survey serving as basis for Project design.

2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
3. Review requirements for including layouts on Shop Drawings and other submittals.
4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor.

B. Certified Surveys: Submit two copies signed by land surveyor.

C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.5 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit 10 copies as well as electronic files showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Professional Engineer Qualifications: Refer to Section 014000 "Quality Requirements."

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraphs, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer in accordance to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Engineer promptly.

B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Conduct construction operations in a way that minimizes disturbance to all above and below grade utilities. Provide support and protection of existing utilities during construction.

F. Sequence the Work and allow adequate clearances to accommodate movement of construction items onsite and placement in permanent locations.

G. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

H. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

J. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Engineer. Fit exposed connections together to form hairline joints.

K. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." and Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.8 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period Repair to like-new condition.

C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 COMPLIANCE WITH APPLICABLE PERMITS AND REGULATIONS

A. Comply with permits applicable to the project and requirements of authorities having jurisdiction including but not limited to the Town of Brookfield, CT DEEP, and CT DOT. In addition to permits noted in other Sections, the following requirements apply to the project:

1. Parts of the project site are located within or in proximity to **State Endangered, Threatened, or Special Concern species habitat as identified by the Connecticut Natural Diversity Database (NDDB), including the Eastern Box Turtle and Wood Turtle.** Information on protection measures required by CT DEEP is included in Appendix C. Contractor shall comply with all protection measures and prepare a plan for compliance with CT DEEP requirements for review and approval by Engineer.

2. Approval of the Town of Brookfield Inland Wetlands Commission will be required prior to construction. The Contractor shall cooperate fully during the permitting and approval process by providing information on detailed construction plans in proximity to wetlands, and shall comply with any conditions imposed by the Inland Wetlands Commission.

END OF SECTION 017300

©2026 CDM Smith
All Rights Reserved

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous construction waste.
2. Recycling nonhazardous construction waste.
3. Disposing of nonhazardous construction waste.

B. Related Requirements:

1. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.

B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. . Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
3. Handling and Transportation Procedures: Include method that will be used for separating

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.3 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

3.4 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner’s property.

C. Burning: Do not burn waste materials.

D. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

END OF SECTION 017419

©2026 CDM Smith
All Rights Reserved

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:

1. Conditions of the Contract for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Engineer’s use prior to Engineer’s inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's “punch list”), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Conditions of the Contract.
2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, space or structure name.
2. Organize items applying to each space by major element, including categories for equipment, structures and site items.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Engineer.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in the following format:

    a. MS Excel Electronic File. Engineer will return annotated file, or
    b. PDF Electronic File. Engineer will return annotated file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Engineer or by email to Engineer.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural

weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
i. Remove labels that are not permanent.
j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
l. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
m. Clean strainers.
n. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 “Execution” before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

©2026 CDM Smith
All Rights Reserved

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Engineer will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Engineer or by email to Engineer. Enable reviewer comments on draft submittals.
2. Submit three paper copies. Engineer will return two copies.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Engineer will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Engineer will return copy with comments.

1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Engineer.
7. Name and contact information for Commissioning Authority.
8. Names and contact information for major consultants to the Engineer that designed the systems contained in the manuals.
9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:

1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.

9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format,

identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017823

©2026 CDM Smith
All Rights Reserved

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordinating Project Record Documents covering the Work of multiple contracts.
2. Conditions of the Contract for maintaining and exhibiting project record documents as a prerequisite for progress payments.
3. Section 017300 "Execution" for final property survey.
4. Section 017700 "Closeout Procedures" for general closeout procedures.
5. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set of marked-up record prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal:

1) Submit one paper-copy set of marked-up record prints.
2) Submit PDF electronic files of scanned record prints and one set of file prints.
3) Submit Record Digital Data Files and one set of plots.
4) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit three paper-copy sets of marked-up record prints.
2) Submit PDF electronic files of scanned Record Prints and three sets of file prints.
3) Submit Record Digital Data Files and three sets of Record Digital Data File plots.
4) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files and three paper copies of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories and one paper copy of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories and one paper copy of each submittal.

E. Reports: Submit written report weekly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.

e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Work Change Directive.
k. Changes made following Engineer's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Same digital data software program, version, and operating system as for the original Contract Drawings.
2. Format: DWG Microsoft Windows operating system.
3. Format: Annotated PDF electronic file with comment function enabled.
4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
5. Refer instances of uncertainty to Engineer for resolution.
6. Engineer will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

a. See Section 013100 "Project Management and Coordination" for requirements related to use of Engineer's digital data files.
b. Engineer will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Engineer.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

B. Format: Submit Record Specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours. As a prerequisite for monthly progress payments, exhibit the updated record documents for review by Owner and Engineer for accuracy and completeness.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017839

©2026 CDM Smith
All Rights Reserved

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For instructor and videographer.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Engineer.
d. Name of Contractor.
e. Date of video recording.

2. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

B. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Engineer.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Systems and equipment operation manuals.
c. Systems and equipment maintenance manuals.
d. Product maintenance manuals.
e. Project Record Documents.
f. Identification systems.
g. Warranties and bonds.
h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

    a. Diagnostic instructions.
    b. Test and inspection procedures.

7. Maintenance: Include the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Procedures for routine cleaning.
    e. Procedures for preventive maintenance.
    f. Procedures for routine maintenance.
    g. Instruction on use of special tools.

8. Repairs: Include the following:

    a. Diagnosis instructions.
    b. Repair instructions.
    c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    d. Instructions for identifying parts and components.
    e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Engineer will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Engineer, with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.

1. Submit video recordings on thumb drive.
2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. Email address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training sessions in segments not to exceed 15 minutes.

    a. Produce segments to present a single significant piece of equipment per segment.
    b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017900

©2026 CDM Smith
All Rights Reserved

SECTION 026110 - EXCAVATION AND MANAGEMENT OF SOILS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section provides for the management of soil generated during construction. The Work of this Contract involves the excavation of Uncontaminated Soil and Regulated Soil based on generator site knowledge and initial soil data collected in the project area. Within the project work area, furnish all labor, materials, tools, equipment, incidentals, and laboratory testing services necessary for:

1. Excavating, handling, screening, tracking, temporary stockpiling, sampling and analysis, and managing of excavated soil during construction of the sanitary sewer pump station, sewer main, and service laterals.
2. Soil characterization to meet selected disposal facility testing requirements.

B. In preparation of the contract Drawings and Specifications, soil sampling and laboratory analysis has been conducted at locations within the project area. The locations of the borings are shown on the Drawings and the analytical results have been summarized in Appendix B. The full set of laboratory data reports are available from the Engineer upon request. If there is a discrepancy between the summary of laboratory results and the full sets of laboratory reports, the laboratory reports shall take precedence.

C. Pre-characterization data indicates that soil at select locations is impacted with Volatile Organic Compounds (VOCs), metals, Extractable Total Petroleum Hydrocarbons (ETPH), and Semi-volatile Organic Compounds (SVOCs). Analytical soil results are summarized in Appendix B -Table B-1 and the environmental soil boring locations are shown on Figure B-1.

D. Groundwater sampling has not been conducted; however, it is anticipated that groundwater will be encountered during construction and the Contractor will be responsible for obtaining any permits necessary for the discharge of dewatering waters.

E. Utilize the services of an independent state-certified analytical testing laboratory to perform laboratory analysis and reporting for environmental samples collected for the work of this Section.

F. Utilize the services of an Environmental Professional (EP) to perform the work of this Section.

G. The Contractor will be responsible for securing appropriate receiving facilities for all material requiring off-site disposal per Section 028100 “Transportation and Disposal of Excavated

Material." Contractor will perform the additional sampling and analysis required by their selected receiving facilities.

H. The Contactor shall comply as necessary with requirements of the Connecticut Department of Energy and Environmental Protection (CT DEEP) Bureau of Materials Management and Compliance Assurance, Engineering and Enforcement Division - *General Permit for Contaminated Soil and/or Sediment Management – Staging and Transfer (CT DEEP Staging and Transfer General Permit)* dated September 2013 (as amended or updated).

I. Related Requirements:
1. Section 013529 "Safety, Health, and Emergency Response Plan Requirements" for the Safety, Health, and Emergency Response Plan (SHERP).
2. Section 015526 "Traffic Control" for traffic control.
3. Section 028100 "Transportation and Disposal of Excavated Material" for site specific project requirements for transport and off-site disposal of excavated materials.
4. Section 312000 "Earthwork" for requirements for material reuse within the Project area.
5. Section 312319 "Dewatering" for controlling surface and groundwater and disposing of water during construction.
6. Section 312500 "Erosion and Sedimentation Controls" for temporary of erosion and sedimentation control measures.

1.3 DEFINITIONS

A. Clean Fill: as defined in Section 22a-209-1 of the Regulations of Connecticut State Agencies (RCSA) means natural soil; rock, brick, ceramics, concrete, and asphalt paving fragments which are virtually inert; and polluted soil which is below the applicable CT DEEP Remediation Standard Regulations (RSR) pollutant mobility criteria and direct exposure criteria.

B. Contaminated Groundwater: Groundwater with contaminant concentrations above the applicable regulatory or permit limits or groundwater with visual or olfactory evidence of environmental impact.

C. Contaminated Soil: Treated or untreated excavated soil affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding CT DEEP RSR criteria. If contaminated soil is encountered that triggers discovery and notification to CT DEEP, Engineer/Owner will make the required notifications.

D. CT DEEP: Connecticut Department of Energy & Environmental Protection

E. Environmental Professional (EP): An environmental professional who specializes in soil and groundwater investigations to conduct site investigations and/or remedial actions at hazardous waste sites and holds a valid license issued by the State Board of Examiners of Environmental Professionals pursuant to CGS 22a-133v.

1. Contractor's LEP: An LEP retained by the Contractor and who supervises all aspects of Contractor soil and groundwater sampling, testing, and management; Contractor health and safety plans; and preparation of draft waste shipping documentation. Contractor's LEP will serve as LEP-of-record for oil and hazardous material releases caused by the Contractor.

2. LEP-of-Record: The LEP engaged by the Owner who will perform LEP-of-Record services and regulatory interaction/coordination for the project. The LEP-of-Record is responsible for the preparation of any CT DEEP regulatory submittals on behalf of the Owner.

F. Excess Soil: Excavated soil that cannot be reused onsite as backfill and requires offsite disposal. Collectively surplus soil, unsuitable soil, contaminated soil, and uncontaminated soil may be excess soil.

G. General Permit for Contaminated Soil and/or Sediment Management (CT DEEP Staging and Transfer General Permit) dated September 2013 (as amended or updated) as the state permit regulating handling and storage of soils onsite.

H. Hazardous Soil: Soil that is classified as a hazardous waste (40 CFR 261). Soil is classified as hazardous waste if it exhibits a hazardous waste characteristic or if it contains Resource Conservation and Recovery Act (RCRA) listed hazardous constituents above Connecticut's RCRA "Contained-In" Policy, dated May 2002 (as amended).

I. Polluted Soil: means soil affected by a release of a substance at a concentration above the laboratory reporting limit for such substance, as defined in RCSA 22a-133k-1(a)(65).

J. Regulated Soil: Includes Polluted Soil, Contaminated Soil, and Hazardous Soil.

K. Soil: As used in this Section, soil includes natural soil, natural sediment, and rock, brick, ceramics, concrete, asphalt paving fragments, and other miscellaneous debris and solid waste contained in the excavated soil.

L. Solid Waste: Includes all excavated material not classified as Soil.

M. SPLP and/or TCLP Material: Soil, through synthetic precipitation leaching procedure (SPLP) and/or toxic characteristic leaching procedure (TCLP) analysis, which exceeds the toxicity characteristic regulatory limit established for any one or more RCRA metals set forth in Table 1 of 40 CFR 261.24.

N. SPLP /TCLP Treatment: Soil treatment to stabilize leachable metals in soil identified as SPLP or TCLP Material. Material shall be stabilized to render TCLP and SPLP concentrations less than the RCRA regulatory limit prior to excavation or off-site disposal.

O. Uncontaminated Groundwater: Groundwater that does not contain site-related contaminants of concern.

P. Uncontaminated Soil: Excavated soil that is not impacted based on visual and olfactory observations during soil screening and/or is not contaminated or polluted.

Q. Unsuitable Soil: Excavated soil that has geotechnical characteristics unsuitable for use as backfill material.

1.4 PRE-CONSTRUCTION MEETINGS

A. Pre-Construction Conference: Conduct conference at Project site.

1. Review boring logs (Appendix A), environmental sampling data (Appendix B), and other available subsurface information from the project site.
2. Review existing utilities and subsurface conditions.
3. Review coordination for interruption, shutoff, capping, and continuation of utility services.
4. Review proposed excavations.
5. Review proposed decontamination requirements.
6. Review proposed equipment.

1.5 ACTION SUBMITTALS

A. Environmental Professional qualifications. Submit the name, company name (if different from Contractor), address, email, telephone number, and resume of the EP meeting the minimum qualifications defined in Article 1.7 of this Section.

B. Analytical Testing Laboratory qualifications. Submit the laboratory name, address, email and telephone number, qualifications, and certifications of the laboratory meeting the minimum qualifications defined in Article 1.7 of this Section.

C. Soil Management Plan: Submit to Engineer within a minimum of 30 calendar days before soil excavation activities commence.

1. Prepare a Soil Management Plan. The plan should be prepared and signed by the Contractor's Environmental Professional and shall describe detailed procedures that the Contractor plans to follow regarding management of all soil and at a minimum, the plan shall include the following components:

    a. Schedule of activities and anticipated volume of excavated material generation for various activities
    b. Soil stockpile area best management practices, controls, and location(s)
    c. Soil characterization for disposal facility acceptance including sampling frequency, sample collection method (boring, test pit, stockpile), sample type (grab/discrete, composite), sample locations, and depth intervals, etc.
    d. Potential opportunities for on-site soil reuse
    e. Drum storage area location(s)
    f. Plans/drawings indicating location to be used for various activities (e.g., storage/stockpile areas, staging areas, loading areas, etc.)
    g. Soil handling and segregation procedures
    h. Soil loading location and method
    i. Site operating log to track soil origin, quantity, storage location, and final disposition
    j. Erosion control measures
    k. Dust control measures
    l. Stormwater control measures
    m. Emergency and preparedness procedures
    n. Transportation routes
    o. Proposed transporters and disposal facilities
    p. Site security

q. If TCLP soil is encountered in the project area based on future sampling, include a TCLP soil treatment plan and procedures for treatment and post-treatment confirmatory sampling.

2. Propose how different materials will be segregated, managed, and stockpiled separately to avoid co-mingling.
3. Provide a method to load Regulated Soil into the transporting vehicle. A roll-off container may also be used if permitted by local authorities but shall be removed from the Work site daily.
4. No work shall be performed related to excavation and handling of Regulated Soil until the Soil Management Plan is submitted to and approved by the Engineer.
5. Maintain the Soil Management Plan on site and keep it current with soil management activities including loading for transportation and actual site conditions.
6. Inform all on-site workers and Subcontractors of all site safety rules, known or potential hazards, and emergency response procedures.

D. Submit copy of draft permit application(s) and registrations to Engineer for review 30 days before submittal to agency.

E. Submit Site Operating Log weekly including the following:

1. Soil screening logs
2. Soil tracking sheets including origin and quantity of each stockpile and date received in the staging or temporary storage area
3. Date soils are transported from the temporary storage area to offsite facility

F. Submit analytical data by email to Engineer within 48 hours of receipt from laboratory. Analytical data shall be kept confidential and distributed to the Engineer and Owner only.

G. Submit summary tables with comparison to CT DEEP RSR criteria and selected disposal facility criteria and original laboratory reports within one week of completed laboratory analysis.

H. Submit copy of final permit applications, registrations, and approvals.

I. Submit copies of all letters and correspondence with local, state, and federal regulatory agencies.

1.6 QUALITY ASSURANCE

A. Owner site health and safety protocols, the requirements governing Hazardous Material Health and Safety, and all other applicable Federal, State, and local laws, codes and ordinances which govern or regulate hazardous wastes shall apply to the work of this Section.

B. Connecticut Department of Energy & Environmental Protection (CT DEEP)

1. Regulations of Connecticut State Agencies (RCSA), Sections 22a-430-1 through 22a-430-7.
2. Hazardous Waste Management Regulations, RCSA Sections 22a-449(c)-100 through 22a-449(c)-119.

3. Solid Waste Management Regulations, RCSA Sections 22a-209-1 through 22a-209-17.
4. Release Based Cleanup Regulations (RBCR), RCSA Sections 22a-134tt-1 through 22a-134tt-app12.
5. Remediation Standard Regulations (RSRs), RCSA Sections 22a-133k-1 through 22a-133k-3.
6. Release Reporting Regulations, RCSA Sections 22a-450-1 through 22-450-6.
7. General Pretreatment Permit for Significant Industrial User, Dewatering, and Remediation Discharges (SIU GP) (Permit ID: CTSIU0000 and CTDRW000).
8. NPDES General Permit for the Discharge of Dewatering and Remediation Wastewaters (Permit ID: CTDRGP000).
9. NPDES General Permit for the Discharge of Stormwater from Construction Activities (Permit ID: CTR10000).
10. General Permit for Contaminated Soil and/or Sediment Management (CT DEEP Staging and Transfer General Permit) (DEP-SW-GP-001).
11. Application for Emergency or Temporary Authorization to Discharge to Groundwater to Remediate Pollution (DEEP-REM-GWP-APP-600).
12. Use of Polluted Soil and Reuse of Treated Soil Guidance Document, CT DEEP Bureau of Water Management.
13. General Permit to Act as a Contractor to Contain or Remove or Otherwise Mitigate the Effects of Certain Releases ("Registered Existing Release Response Contractor."

C. Applicable CT DEEP regulations for any Out-of-State transfer and disposal of excavated contaminated materials.

D. United States Environmental Protection Agency (EPA)

E. Federal Hazardous Waste Regulations, 40 CFR 261-268

F. Engineer will be LEP of Record and, if necessary, based on sampling performed by the Contractor, will make any necessary notifications and reporting to CT DEEP as required by CGS.

1.7 EP AND LABORATORY QUALIFICATIONS

A. The Environmental Professional (EP) shall have the following minimum qualifications:

1. A minimum of five years of demonstrated experience on projects involving contaminated soil management, on-site reuse, and transport/off-site disposal.
2. A minimum of three assignments where similar soil management program has been completed.
3. A.S. or B.S. degree in engineering, engineering technology, or science.
4. Registration as a Connecticut LEP (Licensed Environmental Professional).
5. 40-hour OSHA (Occupational Safety and Health Administration) Hazardous Waste Operations and Emergency Response (HAZWOPER) training, 8-hour OSHA HAZWOPER Supervisor training, current annual 8-hour OSHA HAZWOPER Refresher training, and current medical monitoring.

B. The analytical testing laboratory shall meet the following minimum requirements:

1. The laboratory shall be an independent, third-party analytical testing laboratory, hired by the Contractor, specializing in the analysis of environmental samples and shall not otherwise be affiliated with the Contractor, the trucking/hauling company, or the disposal facilities.
2. The laboratory shall be certified by the Connecticut Department of Public Health under the Environmental Laboratory Certification Program (ELCP) for the analytical methods and sample matrices to be employed for the work of this Section. Submit proof of current certification and maintain certification throughout the performance of the work of this Section.
3. Have a minimum of five years experience.
4. Ability to perform all analyses and provide analytical reports in accordance with CT DEEP's Reasonable Confidence Protocols. Analysis shall be performed using standard laboratory turnaround time. It is expected that the standard turnaround time will be less than 10 working days.

1.8 PROJECT CONDITIONS

A. The boring logs (Appendix A) and environmental soil sampling data (Appendix B), provide subsurface conditions and soil chemical analysis. Information regarding the approximate ground water elevations is included in boring logs.

B. Notify the Engineer if unexpected subsurface conditions are encountered, including visual or olfactory evidence of contamination and discontinue work in area until Engineer provides notification to resume work.

C. The Engineer shall be notified within 24 hours if Regulated Soil is discovered that has not been previously identified or if other discrepancies between data provided and actual field conditions are discovered.

D. Do not remediate, excavate, treat, or delineate Regulated Soil that was not previously identified without consent from the Engineer.

1.9 SCHEDULING

A. Notify the Engineer a minimum of 14 calendar days prior to the start of excavation of Regulated Soil. The Engineer will be responsible for contacting regulatory agencies in accordance with the applicable reporting requirements.

1.10 CLOSEOUT SUBMITTALS

A. Maintenance Data: All laboratory results including data validation reports.

B. Prepare closeout report with shipping and disposal documentation containing at a minimum the following items:

1. Plan/Figures of the limits of the excavated areas with sample/boring locations indicated (indicate reference benchmark used),
2. Laboratory reports with associated chain of custody forms,

3. Tabulated quantity of exported materials by soil disposal category based on disposal facility weight slips (e.g., date shipped, date received, quantity, receiving facility),
4. Plan/figure with quantity, origin, and placement depth interval of materials reused within the Project Area
5. Certificates of disposal (e.g., weight slips), manifests/shipping documents, and
6. Description of the work completed.

PART 2 - PRODUCTS

2.1 STOCKPILE LINERS

A. The high-density polyethylene (HDPE) liners shall be manufactured of new, first quality product designed and manufactured specifically for the intended use and have the following properties:

1. The material shall be 3 ply polyethylene reinforced with a non-woven grid of high strength nylon cord.
2. The material shall be U.V. resistant (black in color) and cold crack resistant to minus 40 degrees F.
3. The material shall be manufactured in a minimum 12-ft seamless width. Labels on the rolls shall identify the thickness, length, width, and manufacturer's mark number.
4. The material shall be 20 mil thickness (liner under stockpile) and 10 mil thickness (liner over stockpile.)

2.2 ROLL-OFF CONTAINERS

A. If a roll-off container is used, it must be in good condition and water-tight. A liner made from polyethylene and manufactured specifically for a roll-off shall be used. The roll-off shall have a cover that does not contain rips or tears.

PART 3 - EXECUTION

3.1 GENERAL

A. Perform the work of this section in accordance with the requirements of Section 013529 “Safety, Health, and Emergency Response Plan Requirements.” Provide workers with personal protective equipment (PPE) as necessary to comply with the Safety, Health, and Emergency Response Plan (SHERP).

B. All site health and safety controls shall be fully established and in operation prior to beginning the work of this Section. Site controls shall include but not be limited to work zones properly barricaded, decontamination stations, and all support equipment and supplies including personal protective equipment (PPE). All site controls shall be reviewed by Engineer in the field.

C. It is intended that Contractor activities for the transportation, handling, and disposal of soils on this project will involve management of only those materials that are encountered. It is not

intended that the Contractor remediate soils located outside the limits of excavation anticipated for the project as designed, unless directed by the Engineer.

D. Contractor shall reuse as much excavated soil as possible during construction in accordance with Section 312000, Article 3.3, and Appendix B-1. Engineer shall determine reusability of soil on-site for backfill purposes.

E. At the direction of the Engineer, decontaminate grossly contaminated equipment by means of dry methods such as brooms and absorbent towels.

3.2 DISPOSAL CHARACTERIZATION SAMPLING

A. If surplus soil is generated or soil is not able to be reused in place in accordance with Article 3.3, Contractor shall perform disposal characterization soil sampling to achieve disposal facility testing requirements in accordance with Section 028100 “Transportation and Disposal of Excavated Material”.

B. Perform the work in accordance with the submitted and approved Soil Management Plan.

C. Coordinate schedule so that Engineer may observe all sampling activities.

D. Disposal Facility Testing:

1. Perform this work in accordance with Soil Management Plan and the requirements of the selected disposal facility.
2. Contractor’s Environmental Professional shall perform additional sampling and analysis to meet disposal facility testing requirements and frequency. This analysis can be performed on samples of in situ soil collected prior to excavation and/or on samples of excavated soil that has been stockpiled. The frequency of sampling and parameters analyzed shall be performed as required by the Contractor’s selected disposal facilities.
3. Collect soil samples based on known site data, existing conditions, and perform the testing required by the disposal facility.
4. Take samples in such a manner as not to cause any cross contamination. All sampling equipment shall be decontaminated between collection of each sample.
5. Sampling of soil shall be done at sufficient and adequately distributed locations so that the concentrations of the chemical constituents are adequately characterized.

    a. If samples are collected via stockpile, collect one representative composite sample from each 500-cubic yard or less stockpile, or at the frequency specified by the Contractor’s selected disposal facility. Composite sample shall consist of a minimum of 10 discrete locations collected uniformly through the entire volume of stockpile. Samples collected for VOC analysis shall be collected from one discrete location.
6. Within one week of receipt of laboratory results, provide analytical data, including original laboratory data, and tabulated summary to the Engineer.

    a. Summary table shall include listing of all detected compounds with comparison to the Contractor’s selected reuse/recycle/disposal facility acceptance criteria.

7. If disposal facility testing results exceed the applicable acceptance criteria for the disposal facility identified, material shall be disposed of at the next applicable category of disposal facility.
8. If soil sample results indicate that the TCLP concentration for any metal exceeds the regulatory limit set forth in Table 1 of 40 CFR 261.24, the Engineer and Owner shall be notified. Prior to excavation, the soil shall be stabilized to render TCLP concentrations less than the regulatory limit prior to removal.
9. If the disposal facility selected by Contractor requires jar headspace screening or any additional field screening as a part of their disposal characterization testing, the Contractor will conduct the required testing. Based on the field screening results, headspace readings, photoionization detector (PID) meter readings, and/or visual/olfactory observations, review if the material is acceptable to go to the proposed facility. If the material is not accepted, the material would require disposal at the Contractor's proposed backup facility. This analysis can be performed on samples of *in situ* soil collected prior to excavation or on samples of excavated soil that has been stockpiled.

3.3 EXCAVATED SOIL MANAGEMENT

A. Manage soil in accordance with the procedures in the approved Soil Management Plan (SMP) and the SHERP. Contractor is responsible for all soil management costs (stockpiling, loading, transportation, and disposal), including laboratory analysis required by the disposal facilities.

B. Conduct management of excavated soil in accordance with this Section and the analytical soil results collected by Contractor and existing data included in Appendix B.

C. When managing or stockpiling Contaminated Soil, follow the best management practices of the CT DEEP Staging and Transfer General Permit. Contaminated soil cannot be stockpiled off site unless approved by Owner and Engineer.

D. All excavated soil requires proper handling, temporary storage, and management, until it has been identified for reuse in the project area or for off-site disposal.

E. Identify appropriate disposal facilities, provide waste profiles and acceptance criteria to the Engineer, and secure approvals from the disposal facilities for soil disposal. Be responsible for preparing the waste profiles and shipping documents in accordance with Section 028100 "Transportation and Disposal of Excavated Material".

F. Perform work and decontamination procedures in areas containing contaminated material in accordance with standard industry practices including use of decontamination facilities, barriers, liners, and other means to control cross-contamination.

G. Manage, store and stockpile excavated Regulated Soil and material separately from uncontaminated soil and material. Manage, store and stockpile excavated contaminated soil/material that requires special handling or off-site disposal, as specified in this Section and in Section 028100 "Transportation and Disposal of Excavated Material", separately.

H. For the soil that has been adequately characterized in place, the Contractor can direct load and transport to the approved and permitted disposal facility in accordance with Section 028100 "Transportation and Disposal of Excavated Material."

I. If soil/material has not been pre-characterized or if direct loading is not feasible, the Contractor can temporarily stockpile in accordance with Article 3.4 and sample from stockpile in accordance with Article 3.2. All excavated soil shall be stockpiled and handled in accordance with the most recent version of applicable regulations and guidance policies. Contractor will not co-mingle soil from different soil disposal categories. Assign each stockpile a unique identifier.

J. Reuse onsite as much excavated soil as possible, provided material meets reuse and backfill requirements in this Section, Section 312000 "Earthwork", and Section 312333 "Trenching and Backfill." Excavated uncontaminated and contaminated soil may be reused in the project area at the point of excavation if determined to be physically suitable. If determined to be physically suitable for on-site reuse:

1. Reuse of excavated soil shall be in compliance with CT DEEP RBCR and CT DEEP Guidance on Re-use of Polluted Soil.
2. Excavated uncontaminated material may be reused in the Project area without any restriction.
3. Contaminated material may be permissible for reuse in the Project area, based on Engineer review. Soil that is to be reused on-site that contains a substance at a concentration above the CT DEEP DECs and GA PMC shall not be placed below the water table and shall be placed a greater than 1 foot below the final ground surface.

3.4 SOIL TRACKING AND STOCKPILING

A. Track all soil and material from the point of excavation, through stockpiling to final disposition. Excavated materials shall be stockpiled on-site in accordance with the most recent version of CT DEEP guidance policies.

B. The area for stockpiling and testing of the excavated soils shall be limited to the temporary staging areas proposed by the Contractor in the Soil Management Plan. Contaminated soil cannot be stockpiled off-site unless a CT DEEP Staging and Transfer General Permit has been submitted and approved by the CT DEEP.

C. Temporarily stockpile soil and material on-site in stockpiles not exceeding a volume of 500 cubic yards. Soil from different soil disposal categories or uncharacterized soil shall be segregated and stockpiled separately and separated from clean fill. "Jersey" barriers or aisle space shall be used to separate stockpiles. Maintain a distance of 12 feet from the stockpile to any property line. Contaminated soil/material that requires special handling or off-site disposal, as specified in Section 028100 "Transportation and Disposal of Excavated Material", shall be segregated and stockpiled separately. Blending of soil to attain composition thresholds by dilution is not allowed.

D. The stockpiles shall be tracked to provide complete data necessary to locate any stockpile within the site. All Work necessary to coordinate stockpiling from placement to disposal shall be included. Provide Engineer with duplicate copies of all documentation at the time of stockpiling.

E. The temporarily stockpiled soil and material must be removed from the site in accordance with applicable regulatory deadlines or no later than the completion date of this Contract, whichever is less.

F. Soil/material shall be suitably dewatered prior to their leaving the site, to prevent free water from developing during transport to the disposal facility.

G. The Engineer shall be responsible for approving the final disposition of all soil and material removed from the site. All stockpiles and stockpile areas must be properly managed and secured.

H. Stockpile Management

1. Contractor will identify a temporary stockpile storage location(s) for use and propose these locations to the Owner for approval in writing inclusive of a map showing the proposed stockpile location(s). All locations proposed for temporary stockpiling locations will require approval by the Owner before any soil can be transported and stored. The stockpile area shall be prepared prior to the commencement of excavation.
2. Stockpile areas shall be graded such that stormwater runoff is diverted away from stockpiled materials.
3. Segregate and stockpile soil in accordance with all requirements of this Section.
4. Excavated materials shall be placed on a base lined with 20 mil (or higher gauge) HDPE and be completely and securely covered with 10 mil (or higher gauge) HDPE at the end of each day. Overlapping of the HDPE base liner may be required to eliminate gaps, at direction of the Engineer.
5. The HPDE shall have a berm around the edges to prevent any infiltration of stormwater or exfiltration of leachate. Place hay bales or other berm material in a manner that prevents sediment and soil from spilling out of the stockpile. The berm height shall be a minimum of 12 inches.
6. Contractor will not co-mingle soil from different soil disposal categories.
7. Assign each stockpile a unique identifier.
8. Track stockpiles to provide complete data necessary to locate any stockpile within the site. All Work necessary to coordinate stockpiling from placement to off-site disposal shall be included. Provide Engineer with copies of all documentation at the time of stockpiling.
9. Stockpiled material must be covered securely (from rain and wind disturbances) with a top liner (cover) of impervious material at the end of each workday or at any time the stockpile area is left unattended. Top liner and stockpiled material must be configured in a manner to prevent pooling of rainwater and run on/run off controls shall be consistent with the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control.
10. The location of the hay bales or other berm material will be adjusted based on the volume of stockpiled material to prevent sagging of the top liner and to promote drainage off of the top liner.
11. The HDPE cover shall be adequately secured using a network of sandbags secured to one another by rope or approved equal to prevent damage or loss by wind or other weather elements.
12. Contractor shall inspect stockpiles on a daily basis, and maintain the stockpiles including berms, top liner, and bottom liner, throughout construction activities. Record information in photographs and provide to Engineer weekly.

3.5 LOADING

A. Load Regulated Soil for transport from the project site to the facility following approval by the Engineer.

B. Load all Regulated Soil into the transportation vehicle in the location(s) specified in the Soil Management Plan.

C. Ensure trucks are equipped with DOT approved covers.

D. Following load-out from the stockpile or direct loading each day, remove residual Regulated Soil resulting from spillage from the loading area and return it to appropriate stockpile, dump trailer or roll-off.

E. All vehicles hauling Regulated Soil from the site shall be inspected by the Contractor prior to leaving the site. Vehicles not properly covered to prevent loss of material will not be allowed to leave the site. All soil residues on the truck shall be removed before leaving the site and properly disposed of. Contractor shall employ anti-tracking measures including construction entrance anti-tracking pads.

F. The Contractor shall be responsible for ensuring that free liquid does not develop during transport. Wet soils shall not be loaded for transport. The Contractor shall be responsible for the cost to properly dispose of any free liquid that may develop during transport.

END OF SECTION 026110

© 2026 CDM Smith
All Rights Reserved

SECTION 028100 - TRANSPORTATION AND DISPOSAL OF EXCAVATED MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section provides for the transport and disposal of Regulated Soil generated during construction that requires off-site disposal at a permitted facility. The Work of this Contract involves the excavation of Regulated Soil based on generator site knowledge and initial soil characterization data collected in the project area. Based on the information collected at the site to date, all soil encountered has been classified as non-RCRA hazardous. Analytical soil results are summarized in Appendix B.

B. Furnish all labor, materials, tools and equipment and incidentals necessary for the transportation and off-site reuse, recycle or disposal of excess Regulated material generated from activities specified in Section 026110 “Excavation and Management of Soil”. Excess material includes Regulated Soil (which includes polluted soil, contaminated soil, and hazardous soil), and uncontaminated soil. The word “materials” shall be used in this Section to describe any and all of these types of wastes.

C. The Contractor shall be responsible for determining the appropriate off-site permitted reuse/recycling/disposal facility location based on existing soil characterization data referenced in Section 026110 “Excavation and Management of Soils” and any disposal facility testing results from this Section. Off-site reuse/recycle/disposal facility determinations will be subject to the Engineer's review.

D. The Owner will be the Generator and will sign all waste profiles, shipping documents, bills of lading, and hazardous and non-hazardous waste manifests. Owner information is as follows:

1. Owner's Name: Town of Brookfield, CT WPCA
2. Owner's Title: *(individual name to be provided during construction)*
3. Owner's Address: 53A Commerce Road, Unit 1, Brookfield, CT 06804
4. Owner's Telephone Number: 203-775-7319
5. Owner’s E-Mail Address: *(to be provided during construction)*
6. Project Name: Dean and Pocono Roads Sanitary Sewer Extension
7. Site Address: various streets, Dean Road and Pocono Road area, Brookfield, CT
8. Generator's EPA Identification Number: *(to be provided during construction)*

E. Where more than one reuse/recycle/disposal facility option exists, select the least costly disposal option, inclusive of both transportation and facility costs.

F. Related Requirements:

1. Section 015526 “Traffic Control” for traffic control.
2. Section 026110 “Excavation and Management of Soils”
3. Section 013529 “Safety, Health, and Emergency Response Plan Requirements”

1.3 DEFINITIONS

A. Contaminated Soil: Treated or untreated excavated soil affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding Connecticut Department of Energy and Environmental Protection (CT DEEP) Release Based Cleanup Regulation (RBCR) criteria.

B. EP: Environmental Professional. A person who is certified by the State and specializes in soil remediation to conduct site investigations and/or remedial actions at hazardous waste sites.

C. EPA: United States Environmental Protection Agency.

D. Excess Soil: Excavated soil that cannot be reused as backfill on the project or reused onsite and requires offsite disposal. Collectively surplus soil, unsuitable soil, contaminated soil, and uncontaminated soil may be excess soil. Includes excavated soil that cannot be reused due to physical or chemical characteristics of the material or project restrictions.

E. Disposal Facility: Off-site facility where soil will be transported to for final reuse/recycling/disposal which includes Soil Reclamation/Reuse/Recycling Facility, In-state Landfill, Out-of-State Landfill, RCRA Subtitle D Landfill, RCRA Subtitle C Landfill, or RCRA TSD Facility.

F. In-State Landfill: This type of landfill shall be approved or permitted by CT DEEP to accept soil/material that is not classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR Part 261 or polychlorinated biphenyl (PCB) waste as defined in 40 CFR 761. This type of landfill shall accept soil for cover or disposal purposes.

G. Hazardous Soil: Soil that is classified as a hazardous waste (40 CFR 261). Soil is classified as hazardous waste if it exhibits a hazardous waste characteristic or if it contains RCRA listed hazardous constituents above Connecticut’s RCRA “Contained-In” Policy, dated May 2002 (as amended).

H. Listed Waste Material: Soil, through volatile organic compound (VOC) analysis, which indicates the presence of any F-code wastes set forth in 40 CFR 261.31 or U-code wastes set forth in 40 CFR 261.33.

I. Out-of-State Landfill: This type of landfill shall be state approved or permitted to accept soil that is not classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR Part 261or PCB waste as defined in 40 CFR 761. This type of landfill shall accept soil for disposal and reuse purposes. These landfills may be lined or unlined.

J. OHM: Oil and Hazardous Materials

K. Polluted Soil: means soil affected by a release of a substance at a concentration above the laboratory reporting limit for such substance, as defined in RCSA 22a-133tt-1(a)(111).

L. PPE: Personal Protective Equipment

M. RCRA: Resource Conservation and Recovery Act

N. RCRA Subtitle D Landfill (Non-hazardous): This type of facility shall be state approved or permitted to accept soil for reuse, recycling, or disposal but that is not classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR Part 261.

O. RCRA Subtitle C Landfill (Hazardous): This type of landfill shall be state and federally approved to accept soil that is classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR 261.

P. RCRA TSD Facility: This type of TSD (treatment, storage, and disposal) facility shall be state and federally approved to accept material that is classified as either a RCRA characteristic waste or RCRA listed waste as defined in 40 CFR 261.

Q. Regulated Soil: Includes Contaminated Soil, Hazardous Soil, and Polluted Soil.

R. Soil Reclamation/Reuse/Recycling Facility: These types of facilities may be in-state or out-of-state and are approved to accept uncontaminated or polluted soil/materials for Beneficial Reuse/Reclamation/Recycling. These facilities have their own Material Acceptability Protocols including acceptance criteria and testing/screening requirements.

S. SPLP and/or TCLP Material: Soil, through synthetic precipitation leaching procedure (SPLP) and/or toxic characteristic leaching procedure (TCLP) analysis, that exceeds the regulatory limit established for any one or more RCRA metals set forth in Table 1 of 40 CFR 261.24.

T. SPLP/TCLP Treatment: Soil treatment to stabilize leachable RCRA metals in soil identified as SPLP or TCLP Material. Material shall be stabilized to render TCLP and SPLP concentrations less than the regulatory limit prior to excavation or off-site disposal.

U. Suitable Soil: Excavated soil that is physically suitable for use as backfill material.

V. Uncontaminated Soil: Excavated soil that is not impacted based on visual and olfactory observations during soil screening and/or is not considered Contaminated Soil or Polluted Soil.

W. Underlying Hazardous Constituent (UHC): As defined in 40 CFR 268.2, "Any constituent listed in 40 CFR 268.48, Table UTS – Universal Treatment Standards, except fluoride, selenium, sulfides, vanadium and zinc which can be reasonably expected to be present at the point of generations of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard."

X. Universal Treatment Standard (UTS): Numerical standards set forth in 40 CFR 268.48, Table UTS – Universal Treatment Standards. Non-wastewater and wastewater treatment standard levels that are used to regulate most prohibited hazardous wastes. Applicable UTS for soils are defined in 40 CFR 268.49(c).

1.4 ACTION SUBMITTALS

A. Submit, in accordance with Section 013300 “Submittal Procedures”, all pertinent information

relating to the transport and reuse/recycle/disposal of materials specified herein. The information submitted shall include, as a minimum:

1. Transporter Information:

    a. Name and address of common carrier transporters to be used on project.
    b. Name and address of licensed waste transporters to be used on project.
    c. Provide current licenses and permits to operate in all states affected by transport.
    d. Provide current EPA transporter license.

2. Facility Information

    a. General Information

        1) Facility Name
        2) Facility Address
        3) Name of Contact Person
        4) Title of Contact Person
        5) Telephone Number of Contact Person
        6) Email of Contact Person
        7) Permit Number

    b. The facility shall provide written confirmation that they are permitted to accept and will accept material of the general quality and quantity described by these Specifications.
    c. The facility shall provide a listing of all current and valid permits, registrations, licenses, letters of approval, and other authorizations to operate that they hold, pertaining to the receipt and management of materials specified in this Contract.
    d. Submit a complete list of the disposal facility's permitted allowable contaminant levels and physical characteristic requirements for impacted material, sampling frequency, and list any required regulatory approvals for individual waste streams.

B. Submit to the Engineer, copies of all analytical data, if applicable. Analytical data shall be kept confidential and distributed to the Engineer and Owner only.

C. Prepare and submit to the Engineer for review and approval no less than 30 days in advance of shipping materials off site. Engineer will be responsible for obtaining Owner signature. Submittal package to include but not be limited to:

1. All waste profiles and specialists' opinion letters packages.
2. Any permit applications, registrations or authorizations required for reuse, recycle or disposal of soil at an in-state or out-of-state facility.
3. Provide the Engineer with originals of all hazardous waste manifests, non-hazardous waste manifests and bills of lading, and material shipping records.

D. Submit to the Engineer, by email, within 7 days of receipt of wastes at accepting disposal/recycling/reuse facilities, copies of facility-signed hazardous waste manifests, non-hazardous waste manifests, bills of lading, and material shipping records.

E. Submit to Owner and the Engineer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected receiving facility.

1. Facility signed manifests and appropriate shipping documents.
2. Certified tare and gross weights for each waste load removed from the site.

1.5 QUALITY ASSURANCE

A. Conform to applicable municipal, State, and Federal Regulations and Codes for environmental requirements and disposal of material and debris.

B. Connecticut Department of Energy & Environmental Protection (CT DEEP)

1. Solid Waste Management Regulations, RCSA 22a-209-1 to 17.
2. Hazardous Waste Regulations, RCSA 22a-449(c)-100 to 119.
3. Release Based Cleanup Regulations (RBCRs), RCSA 22a-134tt-1 to tt-app12.
4. Remediation Standard Regulations (RSRs), RCSA 22a-133k-1 to k-3.
5. Connecticut DEEP Bureau of Materials Management and Compliance Assurance - Disposal of Special Waste Authorization (DEP-WEED-APP-200)

C. United States Department of Environmental Protection (EPA)

1. Federal Hazardous Waste Regulations, 40 CFR 261-268.
2. Disposal of characteristic hazardous waste at RCRA Landfills is subject to all applicable provisions of the Phase IV Land Disposal Restrictions (LDR) of 40 CFR 268. The Work of this Section shall include all necessary supplemental treatment required to reduce concentrations of all Underlying Hazardous Constituents (UHCs) to levels below applicable Universal Treatment Standards (UTS) prior to landfill disposal.

1.6 SITE CONDITIONS

A. Based on the information collected at the site to date, contaminated soil exists at borings documented in analytical data shown in Appendix B, Table B-1. Both uncontaminated and contaminated materials are expected to be encountered, and all material will require proper handling and management.

PART 2 - PRODUCTS

2.1 GENERAL

A. All Contractor personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection for this Work as indicated in the Health and Safety Plan (SHERP) described in Section 013529 “Safety, Health, and Emergency Response Plan Requirements.”

B. Provide all materials required for packaging, labeling, marking, placarding, and transportation of soil in conformance with Department of Transportation (DOT) standards.

C. Provide all materials required to ensure trucks are equipped with DOT approved covers.

PART 3 - EXECUTION

3.1 GENERAL

A. The Owner will be the Generator and will sign waste profiles, hazardous waste manifests, non-hazardous waste manifests, bills of lading, and material shipping records.

B. Identify appropriate disposal facilities and make all necessary arrangements for transportation and disposal of materials. Identify at least one backup facility for each soil disposal category in the event the primary facility cannot accept the material.

3.2 DISPOSAL FACILITY TESTING

A. The Contractor shall be responsible for characterizing the soil and materials for the purpose of obtaining approvals for final disposal of materials listed in this Section. Collect samples to perform testing required by the disposal facility. Contractor will be responsible for obtaining the final approval from the disposal facility.

B. Provide to the Engineer the sampling and analysis requirements for each of the selected material disposal facilities (i.e., analytical requirements, sampling frequency, etc.).

1. Submit a copy of all analytical results to the Engineer within two days of receipt of the laboratory report.

C. If a Soil Reclamation/Reuse/Recycling Facility selected by Contractor requires jar headspace VOC screening as a part of their disposal characterization testing, Contractor will conduct the headspace testing. Based on the headspace readings and/or visual/olfactory observations, Engineer will determine if the material is acceptable to go to the proposed facility. If the material is not accepted at the facility, the material would require disposal at the Contractor's proposed backup facility.

D. If disposal facility testing results exceed the applicable acceptance criteria for the disposal facility identified, material shall be disposed of at the next applicable category of disposal facility.

E. Sampling of contaminated material shall be done at sufficient and adequately distributed locations so that the concentrations of the chemical constituents are adequately characterized.

F. Coordinate schedule so that the Engineer may observe sample collection.

G. Pre-characterization data does not indicate that TCLP material is present. If future sample results indicate that the TCLP concentration for any metal exceeds the regulatory limit set forth in Table 1 of 40 CFR 261.24, the soil shall be stabilized to render TCLP concentrations less than the regulatory limit prior to removal or excavation.

3.3 WASTE PROFILES, SHIPPING RECORDS AND MANIFESTS

A. Identify disposal facilities and provide to Engineer all disposal facility material acceptance

information, including waste profile forms, certifications, and acceptance criteria. Perform all coordination with the disposal facilities.

B. Prepare and submit to the Engineer for review all waste profiles, EP opinion letters, and coordinate with disposal facilities. Engineer will review shipping paperwork and appropriate shipping documents and will obtain Owner's signature prior to said use.

C. Following review, submit the completed acceptance packages to the receiving facilities.

D. Prepare all manifests, shipping records, and if necessary, land ban certifications. Submit these to the Engineer for review at least 30 days before transport. Engineer will be responsible for obtaining Owner's signature prior to said use.

E. Submit to Owner and Engineer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and reused/recycled/disposed of, at the selected off-site receiving facility, including but not limited to:

1. Facility signed manifests, bills of lading, and material shipping records.
2. Weights slips. Provide certified tare and gross weights for each load.

3.4 TRANSPORT AND DISPOSAL

A. The Contractor shall not be permitted to transport materials off-site until all disposal facility documentation has been received, reviewed, and accepted by the Engineer. Materials are not permitted for transport until the Contractor provides back to the Engineer the disposal facility's approval letter documenting acceptance of the material.

B. Transport and dispose in accordance with all United States DOT, US EPA, State of Connecticut, and other applicable regulations of all affected states.

C. All transportation vehicles are to have secure, watertight containers free of defects for material transportation.

D. Cover transported soil prior to leaving the point of generation and until it has arrived at the treatment, recycling, or disposal facility. Ensure that loose material on the body of the truck is removed prior to leaving the site.

E. All vehicles departing the site are to be properly logged to show the vehicle identification number, driver's name, time of departure, destination, and approximate volume and content of materials.

F. The Hauler(s) shall be licensed in all states along the transport route.

G. The Contractor shall be responsible for ensuring that free liquid does not develop during transport. "Wet soils" shall not be loaded for transport. The Contractor shall be responsible to properly dispose of any free liquids that may result during transportation.

H. For characteristic hazardous waste, if encountered, including SPLP or TCLP Material, stabilize and reduce UHCs to below applicable UTS to comply with Phase IV of the Land Disposal Restrictions (LDR) prior to transport.

I. Temporarily stored material must be removed from the site in accordance with applicable regulatory deadlines, however no later than the completion date of this Contract.

1. Dispose of regulated materials within 45 days of generation.

2. Dispose of hazardous waste within 90 days of generation.

J. Be responsible for any and all actions necessary to remedy situations involving waste spilled in transit or tracked off-site; this action will be performed at the Contractor's expense.

END OF SECTION 028100

©2026 CDM Smith
All Rights Reserved

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Furnish, as required to establish concrete mixes, all sampling and laboratory testing of products and materials performed by an independent testing laboratory engaged by and at the expense of the Contractor. Field sampling, testing, inspection and related laboratory tests will be provided by the Owner.

C. Related Requirements:

1. Section 033053.13 "Cast-In-Place Concrete for Underground Ducts and Raceways for Electrical Systems" for cast-in-place concrete for underground electrical systems.
2. Section 036000 "Grouting" for grouting.
3. Section 260510 Limited Electrical for Small Projects" for electrical items for casting into concrete.
4. Section 312000 "Earthwork" for drainage fill under slabs-on-grade.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, or slag cement.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.weld

B. Design Mixtures: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard (cubic meter), water cementitious ratio, air content, concrete slump, type and manufacturer of cement and type and manufacturer of fly ash or ground granulated blast furnace slag. Provide either subparagraph 1. or 2., below, for each mix proposed.

1. Standard deviation data for each proposed concrete mix based on statistical records. Provide the following for each strength data point used in the calculation of the standard deviation for determination of the minimum required average strength:

    a. Date of sampling and name of testing laboratory.
    b. Name of concrete batch plant.
    c. Water cementitious ratio.
    d. Slump of batch.
    e. Air content of batch.
    f. Compressive strengths of all cylinders tested at that age in that batch.
    g. If available, temperature and unit weight of batch.
    h. Provide data from projects not more strictly controlled than outlined in these specifications. Provide summary sheet showing all pertinent data and the computation of the standard deviation.

2. Water cementitious ratio curve for concrete mixes based on laboratory tests. Provide average cylinder strength test results at 7, 14, and 28 days for laboratory concrete mix designs.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, spacing, lengths, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, and supports for concrete reinforcement. Reference bars to be the same identification marks shown on the bar bending details.

D. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Curing compounds.
6. Repair materials.

E. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
2. Mill Test Reports:

    a. Cementitious materials.
    b. Steel Reinforcing.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and independent testing agency responsible for concrete design mixtures.

B. Certifications:

1. Certify that the Contractor is not associated with the independent testing laboratory proposed for use by the Contractor nor does the Contractor or officers of the Contractor's organization have a beneficial interest in the laboratory.

C. Certificate of conformance for concrete production facilities from the NRMCA.

1.6 QUALITY ASSURANCE

A. Comply with ACI 318, and other stated specifications, codes and standards. Apply the most stringent requirements of stated specifications, codes, standards, and this Section when conflicts exist.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Provide reinforcement free from mill scale, rust, mud, dirt, grease, oil, ice, or other foreign matter that will reduce or destroy bond. Deliver, store, and handle steel reinforcement to prevent bending and damage. Store reinforcement off the ground, protect from moisture, and keep out of standing water, and free from rust, mud, dirt, grease, oil, ice, or other contaminants and deleterious films that will reduce or destroy bond.

1.9 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.
2. ACI 117.
3. ACI 318.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. Structural 1, B-B or better; mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

2.4 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

B. Tie wires for reinforcement: 16 gauge or heavier black annealed wire.

2.5 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type II.
2. Fly Ash: ASTM C 618, Class F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.

C. Normal-Weight Aggregates: ASTM C33/C 33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Fine Aggregate: ASTM C33, free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

F. Water: ASTM C94/C94M and potable.

2.6 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.

2.7 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash: 20 to 25 percent.
2. Slag Cement: 25 to 45 percent.
3. Combined Fly Ash and Slag Cement: 50 percent, with fly ash not exceeding 25 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete, for placement and workability.
2. High-range water-reducing admixture in concrete, may be used, for placement and workability.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.44.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: 6.0 +/- 1.5 percent at point of delivery.
5. Coarse Aggregate: ASTM C 33, Size Number 467.

B. Concrete Fill: Normal-weight concrete:

1. The concrete mixture in this paragraph shall also be used for electrical raceway encasements, except as specified in Section 033053.13 "Cast-in-Place Concrete for Underground Ducts and Raceways for Electrical Systems."
2. Minimum Compressive Strength: 2500 psi at 28 days.
3. Coarse Aggregate: ASTM C33, Size Number 57.
4. Maximum W/C Ratio: 0.62.
5. Slump Limit: 3 inches, plus or minus 1 inch.
6. Air Content: 4 percent, plus or minus 1.0 percent at point of delivery.

2.9 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.

1. Install reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, ice, snow and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of slabs, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose mill scale, rust, mud, dirt, grease, oil, ice, and other foreign materials that reduce or destroy the bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Splicing:
1. If not indicated on Drawings, locate reinforcement splices at point of minimum stress.

3.5 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Place concrete according to ACI 301 and ACI 318.

C. Ensure that reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

D. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.

E. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.6 FINISHING FORMED SURFACES

A. Finish concrete surfaces according to ACI 301.

B. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to view.

C. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to view.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.7 FINISHING SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

C. Broom Finish: Apply a broom finish to exterior concrete platforms, slabs, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.8 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Anchor Bolts:

1. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Cast anchor-bolt insert into pads. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including slabs.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit sawcut at the perimeter of the area to a depth of 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.11 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Notify the Owner when the reinforcing is complete and ready for inspection, at least six working hours prior to the proposed concrete placement. Do not cover reinforcing steel with concrete until the installation of the reinforcement, including the size, spacing and position of

the reinforcement has been inspected by the Owner's inspection agency and the Owner's inspection agency release to proceed with the concreting has been obtained. Keep forms open until the Owner's inspection agency has completed inspection of the reinforcement.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements by the Owner's testing agency:

1. Testing Frequency: One composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests will be performed when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure one set of six 6-inch by 12-inch long standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: Specimens shall be 6"x12" cylinders. ASTM C39/C39M; test one specimen at 7 days, test one specimen at 14 days, test two specimens at 28 days, two cylinder specimen is to be held for further testing if required. A 28-day compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at 28 days.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for 7-, 14-, and 28-day tests.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.

11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

©2026 CDM Smith
All Rights Reserved

SECTION 033053.13 - CAST-IN-PLACE CONCRETE FOR UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Concrete and reinforcement for encasement of underground ducts and raceways for electrical systems.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for deformed reinforcing bars to be used in electrical ductbank and raceway systems.
2. Section 260510 "Limited Electrical for Small Projects" for electrical component related to ductwork and raceway systems.

1.3 ACTION SUBMITTALS

A. Submit reinforcement under Section 033000 "Cast-in-Place Concrete."

B. Submit concrete mix design under Section 033000 "Cast-in-Place Concrete."

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Concrete: Comply with Section 033000 "Cast-In-Place Concrete," except as follows:

1. Maximum Coarse-Aggregate Size: ASTM C33 Size 8.
2. Minimum Compressive Strength: 2500 psi at 28 days.
3. Maximum Water / Cement Ratio: 0.62.
4. Dye Color: Red-oxide coloring pigment.

2.2 STEEL REINFORCEMENT MATERIALS

A. Comply with Section 033000 "Cast-in-Place Concrete."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Dye Color:

1. Dye concrete red throughout by adding coloring pigment to mix during batching. Surface treatment will not be accepted.
2. Colorant Proportion: 8 lbs. of integral pigment per cu. yd. of concrete.
3. Costs, if any, for cleaning coloring pigment due to concrete delivery, handling, equipment, and other related cleanings shall be considered as part of base work scope.

    a. Replace adjacent surfaces that cannot be cleaned of red dye with new materials without additional compensation.

3.3 CONCRETE AND REINFORCING INSTALLATION

A. Install materials according to manufacturer’s installation instructions. Comply with recommended weather conditions.

B. Reinforcement: Reinforce all concrete-encased duct where indicated. Arrange reinforcing bars and ties without forming conductive or magnetic loops around ducts or duct groups.

1. Comply with requirements of Section 033000 "Cast-in-Place Concrete."

C. Forms: Form as specified in Section 033000 "Cast-in-Place Concrete."

D. Concrete Cover: Provide not less than 4 inches of concrete between the outside of a duct or raceway and the earth. Provide not less than 2 inches of concrete between adjacent ducts or raceways.

E. Concreting Sequence: Place each run of envelope between manholes or other terminations in one continuous operation.

1. Start at one end and finish at the other, allowing for expansion and contraction of duct as its temperature changes during and after the placement.
2. Use expansion fittings installed according to manufacturer's written instructions or use other specific measures to prevent expansion-contraction damage.
3. If more than one placement is necessary, terminate each placement in a vertical plane and provide construction joint as indicated.

F. Placing Concrete: Comply with requirements in PART 3 of Section 033000 "Cast-in-Place Concrete."

1. Place concrete to prevent voids under and between duct or raceway and at exterior surface of envelope.
2. Do not allow a heavy mass of concrete to fall directly onto ducts or raceways.
3. Allow concrete to flow around duct or raceway and rise up in middle, uniformly filling all open spaces.
4. Do not use power-driven agitating equipment unless specifically designed for duct-installation application.

G. Leave concrete encasement of utilities complete and ready for backfilling and installation of utility warning as specified and provided under provisions of various Sections in their appropriate Division.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Concrete will be considered defective if it does not pass tests and inspections.

END OF SECTION 033053.13

©2026 CDM Smith
All Rights Reserved

SECTION 036000 - GROUTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Nonshrink cementitious grout.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete."

1.3 ACTION SUBMITTALS

A. Product Data: Submit manufacturer information regarding grout and surface preparation, mixing and installation.

1. Commercially manufactured nonshrink cementitious grout. Include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, and conformity to the specified ASTM standards.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Manufacturer Instructions: Submit instructions for mixing, handling, surface preparation, and placing nonshrink grouts.

C. Qualifications Statement:

1. Submit qualifications for manufacturer.

1.5 QUALITY ASSURANCE

A. Perform Work according to industry standards.

B. Maintain one copy of each standard affecting Work of this Section on Site.

1.6 QUALIFCATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years' experience in production and use of provided grouts.

B. Services of Manufacturer's Representative: Provide services of a field technician of the nonshrink grout manufacturer who has performed at least five projects of similar size and complexity during the last five years, to attend the pre-installation meeting, to be present for the initial installation of each type of nonshrink grout, and to correct installation problems.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions. Limit total storage time from date of manufacture to date of installation to six months or the manufacturer’s recommended storage time, whichever is less.

C. Remove immediately from the site material which becomes damp, contains lumps, or is hardened and replace with acceptable material.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location.
2. Provide additional protection according to manufacturer instructions.

1.8 AMBIENT CONDITIONS

A. Maximum Conditions: Do not perform grouting if temperatures exceed 90 degrees F.

B. Minimum Conditions: Do not perform grouting if the minimum temperature of base plates, supporting concrete and grout are less than 40 degrees F. Maintain minimum temperature of 40 degrees F before, during, and after grouting, until grout has set.

PART 2 - PRODUCTS

2.1 NONSHRINK CEMENTITIOUS GROUT

A. Description:

1. Pre-mixed and ready-for-use formulation requiring only addition of water.
2. Nonshrink, non-corrosive, nonmetallic, non-gas forming, not containing expansive cement and no chlorides.
3. No shrinkage when tested in conformity with ASTM C827/C827M.

B. Performance and Design Criteria:

1. Certified to maintain initial placement volume or expand after set, and to meet following minimum properties when tested according to ASTM C1107/C1107M and CRD-C621:

a. Maximum Expansion: 0.40 percent.
b. Minimum Compressive Strength:

1) One-Day: 2,500 psi.
2) Seven-Day: 5,000 psi.
3) 28-Day: 6,500 psi.

c. Comply with CRD-C621.

2.2 FORMWORK

A. As specified in this Section and in Section 033000 "Cast-in-Place Concrete."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify areas to receive grout.

3.2 PREPARATION

A. Place grout where indicated or specified over cured concrete which has attained its specified design strength unless otherwise approved by Engineer.

B. Roughen concrete lightly, but not to interfere with placement of grout, by brushing, hammering, chipping, sand blasting or other similar dry mechanical means until sound and clean concrete surface is achieved. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.

1. Air compressors used to clean surfaces in contact with grout shall be the oil-less type or equipped with an oil trap in the airline to prevent oil from being blown onto the surface.

C. Remove foreign materials from metal surfaces in contact with grout.

D. Align, level, and maintain final positioning of components to be grouted.

E. Wash concrete surfaces clean and then keep moist for at least 24 hours prior to the placement of nonshrink cementitious. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, or flooding the surface or other method acceptable to Engineer. Upon completion of the 24 hour period, remove visible water from the surface prior to grouting.

F. Support equipment during alignment and installation of grout by shims, wedges, blocks, or other approved means. Prevent bond of shims, wedges and blocking devices by bond breaking coatings and remove after grouting unless otherwise approved by Engineer. Grout voids created by the removal of shims, wedges, and blocks.

G. Formwork:

1. Construct leakproof forms anchored and shored to withstand grout pressures.
2. Install formwork with clearances to permit proper placement of grout.
3. As specified in Section 033000 "Cast-in-Place Concrete."

3.3 INSTALLATION - GENERAL

A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and these Specifications.

B. Provide staffing and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

C. Maintain temperatures of base plate, supporting concrete, and grout between 40 and 90 degrees F during grouting and for at least 24 hours after placement, until grout compressive strength reaches 1,000 psi or as recommended by grout manufacturer, whichever is longer. Do not allow differential heating or cooling of baseplates and grout during the curing period.

D. Take special precautions for hot weather or cold weather grouting as recommended by manufacturer when ambient temperatures and/or temperature of materials in contact with the grout are outside of 40 to 90 degrees F range.

3.4 INSTALLATION – NONSHRINK CEMENTITIOUS GROUTS

A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by Engineer.

B. Mix in a mortar mixer with moving blades. Pre-wet mixer and empty excess water. Add pre-measured amount of water for mixing, followed by the grout. Begin with minimum amount of water recommended by manufacturer and then add minimum additional water required to obtain workability. Do not exceed manufacturer's maximum recommended water content. Do not mix by hand.

C. Provide forms as specified in “Preparation” Article. Place grout into the designated areas and prevent segregation and entrapment of air. Do not vibrate grout to release air or to consolidate the material. Fill all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes and vent holes as necessary.

D. Place grout rapidly and continuously to avoid cold joints. Do not place grout in layers. Do not add additional water to the mix (retemper) after initial stiffening.

E. Just before grout reaches its final set, cut back grout to the substrate at a 45 degree angle from lower edge of bearing plate unless otherwise ordered and approved by Engineer. Finish this surface with a wood float or brush finish.

F. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement, until grout compressive strength reaches 1,000 psi or as recommended by manufacturer, whichever is longer. Saturate grout surface by use of saturated burlap bags, soaker hoses or ponding. Provide sunshades. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.5 SCHEDULE

A. Use particular types of grout as follows:

1. General Purpose Nonshrink Cementitious Grout (CRD-C621 Grade D): Use at locations where nonshrink grout is indicated.
2. Flowable (precision) Nonshrink Cementitious Grout (CRD-C621 Grade B or C): Use under base plates greater in area than 3-feet wide by 3-feet long. Use at locations indicated to receive flowable (precision) nonshrink grout. Flowable (precision), nonshrink, cementitious grout may be substituted for general purpose nonshrink cementitious grout.

END OF SECTION 036000

©2026 CDM Smith
All Rights Reserved

SECTION 050519 - POST-INSTALLED ANCHORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Post-installed adhesive and expansion anchors for concrete substrates.

B. Related Requirements:
1. Section 033000 "Cast-In-Place Concrete" and related Sections for concrete, reinforcement, and accessories.

1.3 ACTION SUBMITTALS

A. Post-Installed Expansion Anchors:

1. Design Data: Submit manufacturer’s specifications and data including recommended design values and physical characteristics for expansion anchors.
2. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, materials and finishes for post-installed expansion anchors installed into cracked concrete.

B. Post-Installed Adhesive Anchoring System:

1. Design Data: Submit manufacturer’s specifications and data including recommended design values and physical characteristics, including temperature, humidity, and moisture limitations for adhesive anchoring system.
2. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, materials, and finishes for post-installed adhesive anchoring system installed into cracked concrete.

1.4 INFORMATIONAL SUBMITTALS

A. Installation procedure: Submit installation procedure for post-installed expansion anchors and adhesive anchoring system, including method of drilling and complete installation method.

B. Evaluation Reports: From ICC-ES for expansion anchors, for installation of post-installed anchors into cracked concrete, indicating conformance with current ICC ES Acceptance Criteria.

C. Manufacturer's Certificate of Proper Installation: Submit upon completion of work, for the post-installed anchors.

1.5 QUALITY ASSURANCE

A. General: Coordinate with the work of other Sections, field verifying dimensions and work of other trades adjoining items of work before installing items specified in this Section.

B. Adhesive Anchoring System:

1. Installer Training: Conduct thorough training by the manufacturer or the manufacturer's representative. Training shall consist of the complete installation process for post-installed anchors and reinforcing bar dowels, including but not limited to:

a. Tool selection.
b. Hole drilling procedure.
c. Hole preparation and cleaning techniques.
d. Adhesive injection technique and dispenser training and maintenance.
e. Anchor preparation and installation.
f. Reinforcing bar dowels preparation and installation.
g. Proof loading and torqueing.
h. Temperature, humidity, and moisture limitations.
i. Working time limitations.
j. Setting time.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked prior to installation.

B. Handle materials with cranes or derricks. Do not dump material off transportation vehicles or handle in ways that will cause damage.

C. Store materials elevated above grade and block up so they will not become bent or otherwise damaged.

D. Repair items that have become damage or corroded to satisfaction of the Engineer prior to incorporating them into the work.

PART 2 - PRODUCTS

2.1 EXPANSION ANCHORS

A. Fastening to Concrete Substrate: Zinc plated carbon steel wedge type anchors, complete with zinc plated nuts and washers, unless otherwise noted.

B. Submerged or Weather Exposed Substrates: ASTM A276 Type 316 stainless steel wedge type anchors, complete with Type 316 stainless steel nuts and washers, unless otherwise indicated.

C. Meet ICC ES AC193 cracked concrete qualifications.

D. Length: When length or anchor embedment is not indicated, provide length sufficient to place the wedge and expansion cone portion of the anchor at least 1 inch behind concrete reinforcing steel.

E. Basis-of-Design:

1. Anchorage designs indicated are based on Hilti, Kwik-Bolt TZ, unless otherwise noted.
2. Acceptable Anchors: Hilti Kwik-Bolt TZ; Simpson Strong-Tie Strong Bolt 2 Wedge Anchor; DeWalt Power-Stud+ SD6; or equal.

2.2 ADHESIVE ANCHORING SYSTEM

A. Fastening to Concrete Substrate: Manufactured system consisting of post installed threaded rods, nuts, washers, other anchoring hardware, and chemical dispenser for installation in hammer drilled holes.

1. Anchors: Meet ICC ES AC308 cracked concrete qualifications.
2. Injection Adhesive: Two-component epoxy system consisting of a hardener and a resin, furnished in pre-measured side-by-side cartridges which keep both components separate.
3. Adhesive Cartridge: Side-by-side design to accept a static mixing nozzle which thoroughly blends both components and allows injection directly into a drilled hole.
4. Anchor; Zinc plated carbon steel or Type 316 stainless steel as indicated consisting of an all-thread anchor rod with nut and washer, of matching material to anchor rod.

a. Basis-of-Design:

1) Anchorage designs indicated are based on Hilti HIT- RE 500 V3, unless otherwise noted.
2) Acceptable Manufacturers: Hilti HIT- RE 500 V3; Simpson Strong Tie SET-3Gh; ITW Ramset Red Head Epcon G5; or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install anchoring system in strict compliance with manufacturer's published installation instructions and approved Shop Drawings. Comply with recommended surface preparation, temperature, and moisture of substrate and ambient conditions.
2. Coordinate installation with Special Inspector.
3. Use drill bit of correct diameter and drill to required depth using rotary impact type hammer drills with carbide-tipped bits.
4. When drilling holes for anchors, stop drilling if reinforcing is encountered. Do not cut reinforcing without prior approval by the Engineer. Relocate hole to avoid reinforcing as approved by the Engineer.

a. Identify reinforcing locations prior to drilling using reinforcing bar locators so that drill hole locations may be adjusted to avoid reinforcing interference.

5. Drill holes perpendicular to concrete surface, unless otherwise indicated.
6. Use oil free compressed air to blast out loose particles and dust from drilled holes.

B. Expansion anchors:

1. Check expansion anchors for tightness a minimum of 24 hours after initial installation.

C. Adhesive anchoring system:

1. Perform installation only by personnel trained in anchor installation and having certification required in PART 1 - GENERAL.
2. Inject adhesive and install anchors that are clean and free of dirt, oil, grease, ice or other deleterious material which would reduce bond.

END OF SECTION 050519

©2026 CDM Smith
All Rights Reserved

SECTION 260510 – LIMITED ELECTRICAL FOR SMALL PROJECTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper power and control wire rated 600V or less.
2. Low-voltage instrumentation cable.
3. Connectors, splices, and terminations.
4. Grounding and bonding components.
5. Support systems for raceways, boxes, and electrical equipment.
6. Metal conduits and fittings.
7. Nonmetallic conduit and fittings.
8. Boxes, enclosures, and cabinets.
9. Identification requirements.

1.3 DEFINITIONS

A. ARC: Aluminum rigid conduit. See also RAC.

B. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.

C. Duct: A single duct or multiple ducts. Duct may be installed singly or as a component of a duct bank.

D. Duct Bank:

1. Two or more ducts installed in parallel, with or without additional casing materials.
2. Multiple duct banks.

E. EMI: Electromagnetic interference.

F. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50V or for remote-control and signaling power-limited circuits.

G. RAC: Rigid aluminum conduit. See also ARC.

H. RoHS: Restriction of Hazardous Substances.

I. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

J. National Electrical Code (NEC) / NFPA conduit types:

1. RMC – rigid metal conduit
2. FMC – flexible metal conduit
3. LFMC – liquidtight flexible metal conduit
4. PVC – rigid polyvinyl chloride conduit
5. RNC – rigid nonmetallic conduit

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product used on this project.

B. Installation Working Drawings: For underground conduit routing.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 ELECTRICAL MATERIALS

A. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with associated UL Standards as applicable and listed in this specification.

2.2 WIRE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Alpha Wire Company.
2. Encore Wire Corporations.
3. General Cable Technologies Corporation.
4. Okonite Company (The).
5. Service Wire Co.
6. Southwire Company.

B. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V.

C. Standards:

1. RoHS compliant.

2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Size: Minimum No. 12 AWG for power circuits, minimum No. 14 AWG for control circuits.

F. Stranding: Refer to Part 3 “Conductor Applications” Article.

G. Conductor Insulation: Refer to Part 3 “Conductor Applications” Article.

1. Type TC-ER: Comply with NEMA WC 70/ICEA S-95-658 and UL 1277.
2. Type XHHW-2: Comply with UL 44.

2.3 INSTRUMENTATION CABLE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Belden.
2. Rockbestos.

B. Single of Multiple Paired Cable: NEC type ITC (Instrumentation Tray Cable), UL Type TC for 4-20mA process instrumentation signals and use under NEC Article 72.

1. One or Multi-pair, twisted, shielded, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. XLPE insulation, 600V.
3. Shield: 100 percent aluminum/polyester foil with drain wire. Pairs individually shielded.
4. PVC jacket with manufacturer’s identification.
5. Standards: UL 1277 Type TC, UL 1581

2.4 CONNECTORS, SPLICES, AND TERMINATIONS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. 3M Electrical Products.
2. Ideal Industries, Inc.
3. TE Connectivity Ltd.
4. Thomas & Betts Corporation; A Member of the ABB Group.

B. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Tin-plated copper.

2. Type:

    a. Locking spade with insulated sleeve for No. 10 AWG and smaller.
    b. One hole with long barrels for No. 8 AWG to No. 4/0 AWG.
    c. Two holes with long barrels for 250 kcmil and larger.

3. Termination: Compression for No. 8 AWG and larger.

D. Connectors:

1. Solderless pressure type (wirenuts) for No. 10 AWG and smaller.
2. Pre-filled with silicone-based sealant for exterior, wet, or corrosive locations.
3. Split bolt type for No. 8 AWG and larger splices.

E. Motor Terminations: Mechanical compression ring type, secured with bolt, nut, and spring washer. Insulated with Raychem type RVC, roll-on stub insulator or equal.

2.5 GROUNDING AND BONDING MATERIALS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ERICO; a brand of nVent.
2. Hubbell Incorporated (Construction and Energy Group).
3. O-Z/Gedney; a brand of Emerson Industrial Automation.
4. Thomas & Betts Corporation; A Member of the ABB Group.

B. Standard: Comply with UL 467 for grounding and bonding materials and equipment.

C. Grounding Conductors:

1. Insulated conductors to match corresponding 600V phase conductor insulation requirements.
2. Bare copper conductors: tin-plated.

D. Ground rods: Copper-clad steel, sectional type; 3/4-inch diameter by 10-foot; minimum copper thickness 0.25 mm (10 mil).

E. Grounding conduit hubs: Malleable iron type, mechanical type, terminal with threaded hub, sized for the associated conduit.

F. Exothermic weld: CADWELD process, or equal. Molds and powder furnished by same manufacturer and selected for specific combination of conductors and connected items. Use low emission type, CADWELD EXOLON or equal for welds used indoors in occupied buildings or confined spaces.

2.6 SUPPORT SYSTEMS

A. Aluminum Channel:

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Channel Material: 6063-T5 aluminum alloy.
3. Fittings and Accessories Material: 5052-H32 aluminum alloy.

B. Accessories: conduit clamps, straps, hangers, rods, backplates, anchors, nuts, washers, etc. shall match channel material as listed in the SUPPORT MATERIALS APPLICATION Article. Use of galvanized steel components is only allowed with galvanized steel channel.

C. Threaded rod: 3/8-inch minimum diameter.

D. Expansion anchors: 3/8-inch minimum diameter.

2.7 METAL CONDUITS AND FITTINGS

A. Rigid Aluminum Conduit: Comply with ANSI C80.5 and UL 6A.

B. LFMC: Sealtite®, Type UA, continuously interlocked flexible steel conduit with sunlight and chemical resistant PVC jacket and complying with UL 360.

C. FMC: Comply with UL 1; zinc-coated steel.

D. Metallic Fittings: Comply with NEMA FB 1 and UL 514B.

1. Use cast aluminum fittings with RAC.
2. Use malleable iron, three-piece screw in type with LMFC.
3. Use Myers Electric Products, Inc. or equal, grounding type for conduit hubs.
4. Use die cast compression type fittings with EMT, no set-screw type.

2.8 NONMETALLIC CONDUIT AND FITTINGS

A. RNC: Schedule 40 or Schedule 80 PVC based on application; comply with NEMA TC 2 and UL 651.

B. Nonmetallic Fittings:

1. RNC: Comply with NEMA TC 3; match conduit type and material.

C. Solvents and Adhesives: As recommended by conduit manufacturer.

2.9 BOXES, ENCLOSURES, AND CABINETS

A. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.

B. NEMA 7/4 Junction and Pull Boxes: When Drawings classify the area for Class 1, Division 1, Group D hazardous area, cast aluminum, cover gasket to meet NEMA 4 requirements, stainless steel hinged cover, stainless steel bolts. Crouse-Hinds Type EJB or equal.

C. Pedestal Cabinets

1. Description: Factory assembled, hinged cover enclosure with electrical distribution component intended for outdoor installation on a concrete pad. Specific components and dimensions as indicated on the Drawings.
2. NEMA 3R Pedestal Cabinets:

    a. Material: Aluminum
    b. Construction: Full sized backboard, complete with hardware and accessories. Provide removable center post for double door cabinets.
    c. Cover: Gasketed, hinged, three-point latch and pin tumbler type door lock with provisions for padlocking.
    d. Finish color: Selected by Engineer.
    e. Temperature Control and Ventilation: As required to maintain internal temperature to prevent condensation or overheating of components.

3. Identification

    a. Identify cabinet and major components with nameplates, 3/8-inch high letters, black letters on white background.
    b. Identify internal wiring at each end with typed sleeve type labels corresponding to wiring diagrams. Wiring less than 6 inches may be numbered at only one end.

D. Handholes and Boxes for Exterior Underground Cabling: Comply with details as indicated on the Drawings.

2.10 IDENTIFICATION

A. Factory applied insulation color for No. 8 AWG conductors and smaller. Factory applied insulation color or field applied colored electrical tape for No. 6 AWG conductors and larger:

1. Color for 208/120V Circuits:

    a. Phase A: Black.
    b. Phase B: Red.
    c. Phase C: Blue.
    d. Neutral: White.

2. Color for Equipment Grounds: Green.
3. Color of Individual Control Conductors:

    a. AC: Red.
    b. DC: Blue.

B. Nameplates and Labels:

1. Equipment Identification and Source Nameplates:

    a. Black letters on a white field.
    b. Engraved, laminated plastic, 3/16-inch-high lettering.
    c. Provide for all electrical equipment. Match Drawing designation.

d. Include power source information, i.e., “FED FROM MCC-2” or provide separate nameplate.

2. Device Identification Labels:

a. Black letters on a white field.
b. Machine generated, self-adhesive, 1/4-inch-high lettering.
c. Provide for all receptacles, wall switching, lighting fixtures, photocells, exit lights, instruments, etc.
d. Include power source and branch circuit information, i.e., “LP-2/15” indicates panelboard LP-2, branch circuit 15.

3. Wire and Cable Labels:

a. Black letters on a white field.
b. Wraparound or sleeve type.

C. Detectable Underground-Line Warning Tape:

1. Foil-backed, detectable buried utility tape with black lettering on a bright background.
2. Width: 6 inches.
3. Overall Thickness: 5 mils.
4. Background Color / Description:

a. Red / Electric: electrical power, control, or instrumentation.

PART 3 - EXECUTION

3.1 GENERAL

A. Comply with the applicable National Electrical Contractors Association (NECA) documents for installation requirements except where requirement on Drawings or in this specification are stricter.

1. NECA 1: Standard for Good Workmanship in Electrical Construction.
2. NECA 101: Standard for Installing Steel Conduits.
3. NECA 102: Standard for Installing Aluminum Rigid Metal Conduit.
4. NECA 111: Standard for Installing Nonmetallic Raceways.
5. NECA 331: Standard for Installing Building and Service Entrance Grounding and Bonding.

3.2 CONDUCTOR APPLICATIONS

A. Wires and Cables: Copper, stranded, except for lighting and receptacle wiring which may be solid.

B. Wire for lighting, receptacles, and other circuits not exceeding 150 volts to ground shall be NEC type XHHW-2.

C. Wire for power circuits over 150 volts to ground shall be NEC type XHHW-2.

D. Equipment grounding conductors shall be the same NEC type as the phase conductors described previously, green and sized per NEC Table 250.122.

E. Bare copper ground wire shall be stranded, tinned soft drawn annealed copper wire.

F. Ground grid conductors shall be uninsulated unless shown otherwise on the Drawings.

G. Wire for control, status, and alarm shall be NEC type XHHW-2.

H. Multi-conductor power cable shall be stranded, 600V, cross-linked polyethylene insulated with PVC jacket, Type TC (XLP) with ground.

3.3 CONDUCTOR INSTALLATION

A. Complete raceway installation between conductor and cable termination points prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway. Use of steel fish tapes and/or steel pulling cables in PVC conduit or raceways that terminate into energized enclosures is prohibited.

D. Adequately support cables.

E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

F. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors. Do not splice service or feeder cables without prior written approval of Engineer. Instrumentation and Ethernet cables may not be spliced and shall be continuous from terminal to terminal.

G. Wiring at Outlets:

1. Install conductor at each outlet, with at least 6 inches of slack.
2. Form solid wire into loop to fit around device terminal screw. Do not overlap wire.

H. Identify and color-code conductors and cables.

I. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

J. Identify circuit number associated with lights, receptacles, and other miscellaneous loads to panelboards. Identify phase and neutral conductors with circuit number.

K. Install instrumentation cabling in separate raceway from control or power wiring.

L. Separation from EMI Sources:

1. Separation between open instrumentation cables or cables in non-metallic or non-ferrous raceways and unshielded power conductors and electrical equipment shall be as follows:

a. Equipment or circuits rated less than 2 kVA: Minimum 5 inches.
b. Equipment or circuits rated between 2 and 5 kVA: Minimum 12 inches.
c. Equipment or circuits rated more than 5 kVA: Minimum 24 inches.

3.4 GROUNDING

A. Comply with NEC Article 250.

B. Install insulated green equipment grounding conductor in all power and control raceways.

C. For instrumentation wiring, ground shield at one end only as recommended by instrument manufacturer and in accordance with Owner's standard.

D. Install grounding conductors in conduit or sleeves when passing through floor slabs.

E. Use exothermic welding process for all underground connections, connections to structural steel, connections to ground rods, or other connections which will become inaccessible at project completion.

3.5 SUPPORT MATERIALS APPLICATON

A. Outdoor, process areas, or areas shown on the drawings as "DUST", "DAMP", or "WET": Aluminum and/or stainless-steel channel, depending upon load requirements.

3.6 RACEWAY APPLICATIONS

A. Refer to Appendix Table 260510-1 for specific raceway application requirements.

B. Minimum Raceway Size: 3/4-inch trade size.

3.7 BOX APPLICATIONS

A. All boxes shall be metallic unless specified herein or indicated on the Drawings.

B. Use cast aluminum for boxes and condulet fittings for exposed switch, receptacle, and lighting outlets.

C. Pull boxes, junction boxes, cabinets, etc. shall be suitable for the location and conform to the NEMA enclosure rating and material descriptions as indicated on the Drawings.

D. Where no size is indicated for junction boxes, pull boxes, or terminal cabinets, size in accordance with NEC Article 314.

3.8 RACEWAY INSTALLATIONS

A. Complete raceway installation before starting conductor installation.

B. Tightly plug ends of conduits during construction to exclude dust and moisture.

C. Arrange stub-ups so curved portions of bends are not visible above finished slab.

D. Arrange conduit system to allow liquids such as water, condensation, etc. will drain away from equipment served. If conduit drainage is not possible, plug conduits using conduit seals.

E. Install no more than the equivalent of three 90-degree bends in any conduit run. Support within 12 inches of changes in direction.

F. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

G. Support conduit within 12 inches of enclosures to which attached.

H. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

J. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits. Install Meyers grounding type hubs when conduits terminate at gasketed enclosures.

K. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

L. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

M. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

N. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

O. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a

blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

P. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

Q. Install expansion joint fittings where necessary to compensate for thermal expansion and contraction.

R. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission or movement; and for transformers and motors.

S. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

T. A maximum continuous run of conduit shall not exceed 300 feet and shall be reduced by 75 feet for each 90-degree elbow.

U. Provide a 4-inch concrete housekeeping pad at all slab and grade penetrations. Provide a 45 degree, 3/4-inch chamfer at all exposed edges.

V. Protect metallic finish conduit installed in contact with concrete or below grade with two coats of bitumastic paint, heat shrink tubing, or approved equivalent. Extend protection on riser conduits from 12 inches below slab to 6 inches above slab.

W. In hazardous locations, seal conduits terminating at boxes enclosing circuit opening equipment at the entrance to the enclosure with approved compound filled sealing fittings to prevent passage of explosive or combustible gases through the conduits. Similarly seal all conduits leading from or entering hazardous locations at points of exit or entrance. Seal exposed conduits passing through hazardous locations at both the entrance to and the exit from the hazardous locations.

X. Install conduit sealing and drain fittings in all hazardous (classified) areas designated Class 1, Division 1, and Class 1, Division 2.

3.9 UNDERGROUND SYSTEM INSTALLATION

A. Coordinate final arrangement with other underground utilities, site grading, and surface features.

B. Comply with Division 31 specifications for earthwork, excavation, trenching, backfill, and compaction.

C. Raceway Drainage:

1. Drain away from buildings.
2. Drain towards manholes or handholes.
3. Slope raceway not less than 3-inches per 100-feet.

D. Restoration: Restore surface features and re-establish grade, paving, and vegetation to original unless otherwise indicated.

E. Separate underground copper signal conduits (instrumentation and telecommunication) from power conduits by a minimum of 12 inches unless noted otherwise. Keep crossing of these conduits to a minimum; cross at 90-degree angles.

F. Transition to Metal Conduit:

1. Use fittings manufactured for RNC to metal conduit transition.
2. Make transition from underground duct to metal conduit at least 10 feet outside the building wall, without reducing duct line slope away from building and without forming a trap in the line.

G. Minimum Cover and Additional Detail: As indicated per details on Drawings.

H. Where Drawings call for concrete encased duct bank, mark concrete with red dye.

3.10 ELECTRICAL PENETRATIONS

A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc.

B. Locate all slots and concealed conduits and stub-ups for electrical work and place and form as required before concrete is poured.

C. Make weathertight and restore finishes on exterior penetrations.

D. Use conduit wall seals where underground conduits penetrate walls or at other locations indicated on the Drawings.

3.11 IDENTIFICATION INSTALLATION

A. Self-Adhesive Identification Products: Before applying identification product, prepare and clean attachment surface with manufacturer recommended product to allow for effective bond.

B. Verify and coordinate identification names and other features.

C. Nameplate Attachment:

1. Screw mounted for NEMA 1 enclosures.
2. Epoxy or similar waterproof adhesive for all other enclosure types.

D. Install identification and power source nameplates for electrical equipment. Refer to Part 2 “Identification” Article for requirements.

E. Install circuit identification labels for cables and conductors at each termination location and within pull boxes and handholes. Refer to PART 2 “Identification” Article for color code and additional requirements.

F. Install device identification labels for receptacles, light switches, etc. Refer to Part 2 "Identification" Article for requirements.

G. Install underground warning tape during backfilling of trenches for underground conduits and duct banks in accordance with details on the Drawings.

H. Panelboard Identification

1. Provide equipment and power source nameplates as previously described.
2. Label branch circuit phase and neutral wires with associated pole number.
3. Install typed as built circuit directory giving location and nature of load served.

3.12 FIELD QUALITY CONTROL

A. Perform the following tests and inspections for conductors and cables.

1. Visually inspect for correct installation.
2. Perform continuity test.
3. Perform insulation-resistance test for power and control conductors in accordance with NETA standards.
4. Verify uniform resistance of parallel conductors.

B. Cable will be considered defective if it does not pass tests and inspections.

C. Conduct fall-of-potential grounding electrode system test in accordance with IEEE 81.

D. Prepare test and inspection reports.

3.13 CLEANING / PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration. Repair damage as recommended by manufacturer.

B. Remove all rubbish and construction debris from inside electrical equipment and enclosures.

3.14 APPENDICES

A. Table 260510-1: Raceway Application Guidelines

APPENDIX A TABLE 260510-1 RACEWAY APPLICATION GUIDELINES	
Raceway Type	Location / Application
Aluminum Rigid Conduit (ARC)	All indoor and outdoor applications, except where other types are listed. All exposed, non-corrosive areas. All concealed, non-corrosive areas. Under slabs in slab on grade construction. Stub-ups through slabs.

	Use LFMC for flexible connections. When installed underground or in contact with concrete, paint with two coats of bitumastic paint.
PVC Schedule 40	Concrete encased duct banks. Embedded in concrete slabs or structures. Use ARC elbows.

END OF SECTION 260510

©2026 CDM Smith
All Rights Reserved

SECTION 263213.13 - DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Diesel engine and systems.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Alternator overcurrent and fault protection.
5. Alternator, exciter, and voltage regulator.
6. Outdoor engine generator enclosure.

B. Related Requirements:

1. Section 050519 "Post-Installed Anchors" for post installed adhesive anchors.
2. Section 333216.13 "Packaged Sewage Grinder Pumping Units."
3. Section 260510 "Limited Electrical for Small Projects" for additional electrical requirements.

1.3 DEFINITIONS

A. EPS: Emergency power supply.

B. EPSS: Emergency power supply system.

C. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include manufacturer and model number for engine, alternator, and other accessories.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories. Including but not limited to:

a. Engine: Cylinder number and arrangement, RPM, displacement, bore stroke, maximum power at rated RPM, aspiration, Brake Mean Effective Pressure

(BMEP) at rated kW (including parasitic loads and alternator efficiency), piston speed, maximum allowable engine exhaust back pressure, exhaust pipe size, combustion air flow rate.

b. Engine Systems: starting, lubrication, cooling, exhaust, and silencing.
c. Controller.
d. Alternator: Voltage, frequency, kW / kVA, power factor, temperature rise, winding type, insulation class, excitation type.
e. Vibration Isolation.

3. Include thermal damage curve for alternator.
4. Include time-current characteristic curves for alternator protective device.
5. Include fuel consumption in gallons per hour at 0.8 power factor at 0.5, 0.75, and 1.0 times generator set capacity.
6. Include engine emissions data summary.
7. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator set capacity.
8. Include airflow requirements for cooling and combustion air in cubic feet per minute at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 degrees F. Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
9. Include generator set characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for generator set and other components and assemblies specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of generator set and other equipment assemblies. Indicate equipment dimensions, weights, loads, required clearances, anchorage requirements, and method of field assembly. Indicate conduit entry stub-up locations and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for engine generators and functional relationship between all electrical components.
7. Engine-generator sizing calculations to confirm unit performance as specified herein.
8. Calculations to confirm outdoor enclosure performance as specified: lighting, ventilation, sound attenuation, etc.
9. Anchor Bolt Plans: Submit anchor bolt plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor bolts required to attached generator to foundation.

C. Specification Compliance:

1. Include a copy of this specification confirming compliance with each paragraph. For deviations, provide detailed commentary to explain the deviation.

D. Anchor Bolts:

1. Submit anchor bolt details including locations, quantity, type, material, diameter, projection, minimum edge distance, and depth of embedment, per 1.4.B.9 and 1.5.F of this Section.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and testing agency.

B. Seismic Qualification Data: Certificates, for engine generator, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: With engine and generator mounted on rails, identify center of gravity and total weight, including full fuel tank, supplied enclosure, external silencer, subbase-mounted fuel tank, skid-mounted load bank, and each piece of equipment not integral to the engine generator, and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Source Quality-Control Reports: Including, but not limited to, the following:
1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.
7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

D. Field quality-control reports and start up and commissioning reports.

E. Warranty: For special warranty.

F. Post-installed anchors: Submit installation procedures, certificates, and evaluation reports as specified in Section 050519 "Post-Installed Anchors and Reinforcing Bars."

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. Include the following:

    a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
    b. Operating instructions laminated and mounted adjacent to generator location.
    c. Training plan.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
    1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
    2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
    3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
    4. Tools: Each tool listed by part number in operations and maintenance manual.

1.8 QUALITY ASSURANCE

A. Manufacturer of engine-generator assembly must be ISO 9001 certified or have a quality management system in place comparable to the requirements of ISO 9001.

B. Supplier Qualifications: An authorized dealer of the manufacturer who also maintains a permanent service organization and supply of spare parts within 150 miles of the project site.

C. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

D. Testing Agency Qualifications: Accredited by NETA.

    1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Ship equipment, material and spare parts complete except with partial disassembly if required by transportation regulations or for protection of components.

B. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.

C. Protect all mechanical and electrical equipment with coatings, coverings and wraps to protect from the elements including but not limited to snow, rain, drippings of any sort, dust, dirt, mud, flood, and condensed water vapor during shipment, and while installed in place during construction. Keep protection in place until work areas are substantially free of dust and debris.

D. Energize generator space heaters during storage and construction until generator is ready to be placed into operation.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   1. Caterpillar, Inc.; Electric Power Division.
   2. Cummins Power Generation.
   3. Generac.
   4. Kohler.
   5. Or equal.

B. Basis of design for the engine generator set is Kohler engine model 20REOZK, alternator model 4D8.3. Acceptable manufacturers per previous paragraph.

C. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer and their authorized representative located in the project’s territory.

2.2 PERFORMANCE REQUIREMENTS

A. Service Use: Installed as a single generator with open transition transfer connecting to an automatic transfer switch and installed inside the enclosure specified herein.

B. Seismic Performance: Engine generator housing, subbase fuel tank, engine generator, batteries, battery racks, silencers, load banks, sound attenuating equipment, accessories, and components shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
   2. Shake-table testing shall comply with ICC-ES AC156. Testing shall be performed with all fluids at worst-case normal levels. Water shall be substituted for diesel fuel in fuel tank during test.
   3. Component Importance Factor: 1.5.

C. B11 Compliance: Comply with B11.19.

D. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 110 requirements for Level 2 EPSS.

E. UL Compliance: Comply with UL 2200.

F. Engine Exhaust Emissions: Comply with EPA Tier 3 requirements and applicable state and local government requirements.

G. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

H. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: 5 to 104 degrees F.
2. Relative Humidity: Zero to 95 percent.
3. Altitude: Sea level to 1000 feet.

I. Unit Performance:

1. Minimum standby duty of 42 kW.
2. Refer to additional Articles herein for performance requirements of the engine and alternator.
3. Capable of accepting the following step loads with a maximum frequency dip of 7 and a maximum voltage dip of 15.

a. Step 1: Pedestal cabinet loads, pump control panel, and one (1) submersible pump (15 hp on VFD).

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. EPSS Class: Engine generator shall be classified as a Class 48 according to NFPA 110.

D. Electrical Rating: Not less than 42 kW / 52 kVA, 208/120VAC, three phase, four wire, wye connected, 0.8 lagging power factor, 60 Hz.

E. Induction Method: Naturally aspirated.

F. Governor: Adjustable isochronous, with speed sensing.

G. Support Structure:

1. Mounting Frame: Rigid, welded fabricated steel base, sized to maintain alignment of mounted components without depending on concrete foundation. Extend base entire length of engine and alternator. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

H. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries.
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

I. Engine Generator Performance for Non-Sensitive Loads:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:

    a. Comply with NFPA 110, Type 10 system requirements.
    b. 10 seconds.

2.4 DIESEL ENGINE AND SYSTEMS

A. Fuel: ASTM D975, diesel fuel oil, Grade 2-D S15.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid-mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499 and with NFPA 110 requirements for Level 2 equipment for heater capacity.

1. Voltage and Phasing: 208/120 VAC three phase.

E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

    a. Rating: 50-psig maximum working pressure with coolant at 180 degrees F, and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

G. Starting System: 12-V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above

50 degrees F regardless of external ambient temperature within range specified in "Performance Requirements" Article. Include accessories required to support and fasten batteries in place. Provide ventilation to exhaust battery gases.

7. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
8. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
9. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. La Mache A 12B Mag Amp Charger or equal. Unit shall comply with UL 1236 and include the following features:
    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 to 140 degrees F to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Overcurrent protection: Circuit breakers for AC input and DC output.
    e. DC Ammeter and Voltmeter: Flush mounted in door, 2 percent accuracy. Meters shall indicate charging rates.
    f. Trouble and Alarm Conditions: Low or high battery voltage, loss of ac input, loss of dc output, DC ground fault alarm. Any condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    g. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.
    h. SCADA System Connection: Dry contacts for trouble and alarm conditions.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 37.

B. Piping: Fuel-oil piping shall be Schedule 40 black steel, suitable for the service. Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL 142 fuel-oil tank. Materials of construction: Inner tank steel, outer tank steel. Features include the following:

1. Tank level indicator and level transmitter, loop powered, 4-20 mA output to communicate with SCADA system.
2. Fuel-Tank Capacity: 123 gallons.
3. Leak detection in interstitial space.
4. Vandal-resistant fill cap.
5. Containment Provisions: Comply with requirements of authorities having jurisdiction.
6. SCADA System Connection: Dry contacts for trouble and alarm conditions.

2.6 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in the automatic transfer switch initiate starting and stopping of engine generator. When mode-selector switch is switched to the ON position, engine generator starts. The OFF position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts engine generator. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

C. Provide minimum run time control set for 30 minutes with override only by operation of a remote emergency-stop switch.

D. Comply with UL 508A.

E. Configuration:
   1. Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.

F. Control and Monitoring Panel:
   1. Digital engine generator controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
   2. Instruments: Located on the control and monitoring panel and viewable during operation.
      a. Engine lubricating-oil pressure gage.
      b. Engine-coolant temperature gage.
      c. DC voltmeter (alternator battery charging).
      d. Running-time meter.
      e. AC voltmeter, for each phase connected to a phase selector switch.
      f. AC ammeter, for each phase connected to a phase selector switch.
      g. AC frequency meter.
      h. Generator-voltage adjusting rheostat.

   3. Controls and Protective Devices: Controls, shutdown devices, and common alarm indication, including the following:
      a. Cranking control equipment.
      b. Run-Off-Auto switch.

c. Control switch not in automatic position alarm.
d. Overcrank alarm.
e. Overcrank shutdown device.
f. Low-water temperature alarm.
g. High engine temperature prealarm.
h. High engine temperature alarm.
i. High engine temperature shutdown device.
j. Low lube-oil pressure alarm.
k. Low lube-oil pressure shutdown device.
l. Overspeed alarm.
m. Overspeed shutdown device.
n. Low fuel main tank.

1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for duration required for the indicated EPSS class.

o. Coolant low-level alarm.
p. Coolant low-level shutdown device.
q. Coolant high-temperature prealarm.
r. Coolant high-temperature alarm.
s. Coolant low-temperature alarm.
t. Coolant low-temperature shutdown device.
u. EPS supplying load indicator via ammeter.
v. Battery high-voltage alarm.
w. Low cranking voltage alarm.
x. Battery-charger malfunction alarm.
y. Battery low-voltage alarm.
z. Lamp test.
aa. Contacts for local and remote common alarm.
bb. Air shutdown damper alarm when used.
cc. Air shutdown damper shutdown device when used.
dd. Emergency stop shutdown device.
ee. Overload alarm/load shed contact.
ff. Generator overcurrent-protective-device not-closed alarm.
gg. Hours of operation.
hh. Engine generator metering, including voltage, current, hertz, kilowatt, kilovolt ampere, and power factor.

G. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

2.7 ALTERNATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.
1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.

2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

B. Generator Overcurrent Protective Device:
1. Molded-case circuit breaker, thermal-magnetic type; 100 percent rated; complying with UL 489:

a. Tripping Characteristic: Designed specifically for generator protection.
b. Trip Rating: Matched to generator output rating.
c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
d. Mounting: Adjacent to, or integrated with, control and monitoring panel.

2.8 ALTERNATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H or Class F.

D. Temperature Rise: Manufacturer's standard for standby service.

E. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide six-lead alternator.

F. Range: Provide broad range of output voltage by adjusting the excitation level.

G. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

H. Enclosure: Dripproof.

I. Instrument Transformers: Mounted within generator enclosure.

J. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.

1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Maintain voltage within 15 percent on one step, full load.
3. Provide anti-hunt provision to stabilize voltage.
4. Maintain frequency within 10 percent and stabilize at rated frequency within 5 seconds.

K. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point, 120VAC.

L. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

M. Subtransient Reactance: 12 percent, maximum.

2.9 OUTDOOR ENGINE GENERATOR ENCLOSURE

A. Enclosure Performance Requirements:

1. Structural Design and Anchorage:

a. Comply with ASCE/SEI 7 and the Connecticut State Building Code, for wind loads based on an ultimate wind speed of 125 mph and Exposure C. Comply with seismic requirements and parameters in ASCE/SEI-7 and the Connecticut State Building Code. Anchors shall be type 316 stainless steel or galvanized steel conforming to the requirements of Section 050519 "Post-Installed Anchors." Design anchorage in accordance with ACI Chapter 17 for installation in cracked concrete with no anchor reinforcement and f'c = 4000 psi. The generator fuel tank shall be securely anchored to the equipment foundation in accordance with Section 050519 "Post-Installed Anchors," ensuring compliance with all relevant load and safety requirements.

B. Enclosure General:

1. Four-point lifting system at base with capacity of rigging entire assembly.
2. Fully gasketed and hinged access doors.
3. Locking door handles and duplicate keys.
4. Number and location of doors adequate to provide easy access for operation and maintenance.
5. Factory installed doors and frames.
6. All exposed screws, bolts and nuts, Type 304 stainless steel.

C. Non-Walk-in Weatherproof Enclosure: Vandal-resistant, sound-attenuating, weatherproof steel housing; set on concrete pad. Access doors shall be removable by one person without tools. Mount instruments and controls within the enclosure. Include the following features and accessories:

1. Muffler Location: Within enclosure.
2. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
3. Convenience power receptacle: Weatherproof-in-use, 120V, 20A, GFCI, duplex receptacle, located on enclosure exterior.
4. Interior LED light(s) to illuminate interior to 20 foot-candles: 120V, 20A, located inside enclosure.
5. Exterior adjustable aim small LED floodlight: 120V, 15W, 1600 lumens, 5000K color, UL rated for wet locations, 5 year warranty. RAB X34-16L or equal. Located over access door to circuit breaker.
6. NEMA 4X emergency stop break glass station, mounted on exterior.
7. Provide a generator load center.

D. Regulatory Compliance:

1. Certify compliance with Connecticut Building Code.

2. Comply with National Electrical Code.

E. Space Heater: Thermostatically controlled and sized to prevent condensation and interlocked with generator controls.

F. Electrical materials: In accordance with Division 26.

1. Rigid aluminum conduit, 3/4-inch minimum.
2. THHN/THWN wire, No. 12 AWG minimum.

G. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine generator components.

H. Muffler Location: Within enclosure.

I. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.
1. Louvers: Fixed-engine, cooling-air inlet and discharge. Stormproof and drainable louvers prevent entry of rain and snow.
2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.
3. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.

J. Inlet louvers and hoods: Removable and constructed of aluminum and riveted into an aluminized steel frame to form a rigid water resistant assembly. The system shall not exceed 0.25 w.g. total external static pressure to ensure adequate airflow for cooling and combustion. Screen with stainless steel mesh all intakes to prevent the entrance of rodents or insects.

K. Convenience Outlets: Factory-wired, industrial specification grade, duplex 20A GFCI receptacles. Arrange for external electrical connection. Minimum of two.

L. Radiator Discharge: Through a gravity operated damper and into a hood. Do not exceed 0.5 inch w.g. total external static pressure to ensure adequate airflow for cooling and combustion.

M. Sound Insulation: Comply with the UL Standard 94HF-1 Flammability Test, covering all the inside walls of the enclosure and shall consist of the type, thickness and number of baffles required to limit the resulting noise level as described in the Noise Emissions paragraph of the "Performance Requirements" Article. Use semi-rigid, thermo-acoustic insulation.

2.10 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.11 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with IEEE 115 and with NFPA 110.

B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
10. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.

B. Examine roughing-in for electrical connections. Verify actual locations of connections before packaged engine generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
1. Notify Owner no fewer than two working days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner's written permission.

3.3 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.

C. Equipment Mounting:
   1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
   2. Coordinate size and location of concrete bases for packaged engine generators and remote radiators mounted on grade. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.
   3. Install packaged engine generator with specified vibration isolation device on high concrete base as indicated on Drawings. Secure enclosure to anchor bolts installed in concrete bases.

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

F. Install anchors such that embedment depth into the structural concrete slab is equal to the embedment depth required by the design. If post-installed anchors are used, install in accordance with Section 050519 "Post-Installed Anchors."

3.4 CONNECTIONS

A. Ground equipment according to Section 260510 "Limited Electrical for Small Projects."

B. Connect wiring according to Section 260510 "Limited Electrical for Small Projects." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.

3.5 IDENTIFICATION

A. Identify system components according to Section 260510 "Limited Electrical for Small Projects."

B. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.6 FIELD QUALITY CONTROL

A. Division of Responsibilities:

   1. Provide installation and assist with all testing and startup activities.

2. Engage factory authorized service representative to assist in installation, inspection, testing, startup, and commissioning activities specified herein to activate manufacturer's warranty.

B. Perform checkout and testing activities recommended by and in accordance with manufacturer's instructions, NETA ATS, NFPA 110, and as specified herein. Provide fuel, materials, and labor as necessary. Correct deficiencies, make adjustments, and retest until requirements are met. Provide written report for each field testing or service visit.

C. Visual and Mechanical Inspection:

1. Compare equipment nameplate data with Drawings and Specifications.
2. Inspect physical and mechanical condition.
3. Inspect anchorage, alignment, and grounding.
4. Verify tightness of accessible bolted electrical connections. Use calibrated torque wrench.
5. Verify correct application of lubricants and coolants.
6. Inspect electrical field connections: jacket water heater, space heaters, batteries, etc.
7. Verify that the unit is clean.

D. Electrical Tests:

1. Perform insulation-resistance tests according to IEEE 43.

   a. Alternators 150 kW or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

2. Verify correct operation of alternator space heater.
3. Test protective relay devices.
4. Verify phase rotation, phasing, and synchronized operation as required by the application.
5. Perform battery and battery charger tests.

E. Gen Set Mechanical Tests:

1. Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
2. Verify correct functioning of the governor and regulator.

F. Batteries:

1. Perform visual and mechanical inspection.
2. Test for contact integrity of all connectors.
3. Perform a load test in accordance with manufacturer's instructions.
4. Measure battery system voltage from positive to ground and negative to ground.
5. Verify acceptance of charge for each element of the battery after discharge.
6. Verify that measurements are within manufacturer's specifications.

G. Battery-Charger:

1. Perform visual and mechanical inspection.
2. Verify float and equalize voltage.
3. Verify charger shutdown settings, functions, and operation of alarms.
4. Measure and record input and output voltage and current.

H. Coordinate generator system testing with transfer equipment testing.

I. Generator System Startup and Commissioning:

1. Confirm all SCADA generator system alarms function correctly including fuel systems and battery system.
2. Confirm all SCADA generator system monitoring is displaying correctly at SCADA system display.
3. Simulate utility power failure and restoration sequences, to demonstrate system operational compliance.
4. Verify all safety features perform correctly, including testing of all emergency-off stations.
5. Verify absence of leaks and repair and reverify as necessary.
6. Prior to turning engine-generator system over to Owner for beneficial use, supply all diesel fuel for the specified fuel tanks to reach 100% capacity.
7. Provide written summary start up and commissioning report. Include in report the values at which the devices will alarm and/or stop the engine and all adjustments made during startup and commissioning.

3.7 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

3.8 DEMONSTRATION AND TRAINING

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

B. Comply with Section 017900 "Demonstration and Training" to provide minimum of one 8-hour man day for instruction. Time instruction to cover all working shifts.

END OF SECTION 263213.13

©2026 CDM Smith
All Rights Reserved

SECTION 310515 - SOILS AND AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Soils: Soil materials and topsoil materials.
2. Aggregates: Coarse aggregate materials and fine aggregate materials.

B. Related Sections:
1. Section 026110 “Excavation and Management of Soils.”
2. Section 028100 “Transportation and Disposal of Excavated Material.”
3. Section 312000 "Earthwork."
4. Section 312333 "Trenching and Backfilling."
5. Section 312500 "Erosion and Sedimentation Controls."
6. Section 321123 “Aggregate Base Courses.”
7. Section 329200 "Turf and Grasses."
8. Section 333113 "Public Sanitary Utility Sewerage Piping."
9. Section 333126 “Sanitary Pressure Sewer Piping”
10. Section 333400 "Sanitary Utility Sewerage Force Mains."

1.3 ACTION SUBMITTALS

A. Samples – Soils and Aggregates: Submit in 5-gallon air-tight containers, 50 lbs. representative sample of each type of soil to testing laboratory at least 15 days prior to placement of backfill or fill.

B. Quality Control Testing: Submit conformance testing performed by a certified independent laboratory engaged by Contractor for all fill materials. Verify maximum density, gradation, Atterberg limits, sand equivalent, and other applicable criteria at least 72 hours prior to importing or placing any fill. Perform additional conformance testing at a minimum frequency of 1 per every 2000 cubic yards or change in material.

1.4 INFORMATIONAL SUBMITTALS

A. Materials Source: Submit name and location of imported materials suppliers.

B. Source’s Certificate: Certify materials meet or exceed specified requirements.

C. Material Test Reports: For each on-site and borrow soil and aggregate material proposed for fill and backfill as follows:

1. Classification according to ASTM D2487.
2. Laboratory compaction curve according to ASTM D1557.
3. Particle size analysis per ASTM D6913 or ASTM C136.
4. Organic content analysis according to ASTM D2974.
5. pH of soil according to ASTM D4972.
6. Test Reports: Submit any test reports required by this Section to the Engineer.

1.5 QUALITY ASSURANCE

A. Furnish each subsoil and topsoil material from single source throughout the Work, unless an alternate source is approved by the Engineer.

B. Furnish each coarse and fine aggregate material from single source throughout the Work, unless an alternate source is approved by the Engineer.

C. Perform Work according to Connecticut Department of Transportation standards.

D. Quality Control and Quality Assurance consists of laboratory conformance testing of samples supplied from each coarse and fine aggregate source and quality control during installation.

1. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.

E. Maintain one copy of each standard affecting Work of this Section on Site.

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Tree and Plant Protection Zones: Comply with requirements and measures specified in Section 015000 "Temporary Facilities and Controls."

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Common Fill:

1. Approved on site excavated material or imported fill material that is composed of durable soil free of debris, organic matter, or other deleterious materials.
2. Does not contain stones larger than 6 inches in largest diameter.
3. Does not contain more than 30 percent passing the No. 200 sieve by dry weight.
4. Maximum dry density of at least 90 pounds per cubic foot (pcf) as determined by ASTM D1557.
5. Does not contain asphalt, granite blocks, broken concrete, masonry rubble, or other similar materials.
6. Can be readily spread and compacted during filling.

B. Select Common Fill:

1. As specified above for common fill, except contains no stones larger than 2 inches in largest diameter.

C. Structural Fill:

1. Consist of mineral soil free of organic material, loam, debris, frozen soil or other deleterious material which may be compressible, or which cannot be properly compacted,
2. Liquid Limit: 40 percent maximum.
3. Plasticity Index: 10 percent maximum.
4. Dry Density: 120 pcf maximum, as determined by ASTM D1557.
5. Meets the following gradation for Sieve Size and Percent Fines by Weight:

    a. 3-inch: 100 percent.
    b. No. 4: 20 to 70 percent.
    c. No. 40: 5 to 35 percent.
    d. No. 200: 0 to 10 percent.

2.2 TOPSOIL MATERIALS

A. Topsoil Existing:

1. Excavated and reused material.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.

    a. Screening: Double screened.

B. Topsoil Imported:

1. Imported borrow.
2. Friable loam.

3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.

    a. Screening: Double screened.

4. Acidity range (pH) of 5.5 to 7.5.
5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.

2.3 COARSE AGGREGATE MATERIALS

A. Coarse Aggregate - Crushed Stone: Natural stone; washed, free of clay, shale, organic matter; conforming to State of Connecticut Department of Transportation (CTDOT) standards..

1. Coarse Aggregate Designation: No. 57.

B. Coarse Aggregate - Screened Gravel: Natural stone; washed, hard, durable, rounded, or sub-angular particles of proper size and gradation, and shall be free from sand, loam, clay, excess fines, and other deleterious materials; to the following limits:

1. Percent Passing per Sieve Size:

    a. 5/8-inch: 100 percent.
    b. 1/2-inch: 40 to 100 percent.
    c. 3/8-inch: 15 to 45 percent.
    d. No. 10: 0 to 5 percent.

C. Coarse Aggregate – Granular Fill: Conforming to Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819, Division III Section M.02.01.

D. Coarse Aggregate – Processed Aggregate Gravel Base: Conforming to Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819, Division III Section M.05.01.

E. Coarse Aggregate – Pea Gravel: Natural stone; free of clay, shale, organic matter; graded according to ASTM C136 to the following limits:

1. Percent Passing per Sieve Size:

    a. 1/2-inch: 100 percent.
    b. 3/8-inch: 85 to 100 percent.
    c. No. 4: 10 to 30 percent.
    d. No. 8: 0 to 10 percent.
    e. No. 16: 0 to 5 percent.

2.4 FINE AGGREGATE MATERIALS

A. Fine Aggregate - Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded according to ASTM C33; within the following limits:

1. Percent Passing per Sieve Size:

    a. No. 4: 95 to 100 percent.
    b. No. 8: 80 to 100 percent.
    c. No. 16: 50 to 85 percent.
    d. No. 30: 25 to 60 percent.
    e. No. 50: 10 to 30 percent.
    f. No. 100: 2 to 10 percent.

2.5 SOURCE QUALITY CONTROL

A. Section 014000 "Quality Requirements": Testing and inspection services. Submit test result reports to the Engineer.

B. Soil Material - Testing and Analysis: Perform in accordance with ASTM D6913 and ASTM D1557.

C. Topsoil Material - Testing and Analysis: Perform in accordance with ASTM D6913, ASTM D4972, and ASTM D2974.

D. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

E. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

F. When tests indicate materials do not meet specified requirements, change material and retest.

G. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 EXCAVATION - SOILS

A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.

B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.

C. Remove excess excavated materials, subsoil, and topsoil not intended for reuse, from site.

D. Remove excavated materials not meeting requirements for subsoil materials and topsoil materials from site and replace with new materials as required to complete the work.

3.2 EXCAVATION - AGGREGATES

A. Coordinate excavation of aggregate materials from on-site locations designated by Engineer as specified in Section 312000 "Earthwork."

B. Stockpile excavated material meeting requirements for coarse aggregate materials and fine aggregate materials.

C. Remove excess excavated materials coarse aggregate materials and fine aggregate materials not intended for reuse, from site.

D. Remove excavated materials not meeting requirements for coarse aggregate materials and fine aggregate materials from site.

3.3 STOCKPILING

A. Stockpile materials on site at locations indicated on Drawings or designated by Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate different soil and aggregate materials with dividers or stockpile individually to prevent mixing. Prevent intermixing of soil types or contamination.

D. Stockpile topsoil 8 feet high maximum.

E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

F. Stockpile unsuitable or hazardous materials on impervious liner and cover to prevent erosion and leaching, until disposed of.

3.4 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water

B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION 310515

©2026 CDM Smith
All Rights Reserved

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Nonwoven geotextile material.

B. Related Requirements:

   1. Section 310515 "Soils and Aggregates for Earthwork" for fill and grading materials.
   2. Section 312000 "Earthwork" for excavation and backfilling procedures.
   3. Section 312333 "Trenching and Backfilling" for trenching and backfilling procedures.
   4. Section 312500 "Erosion and Sedimentation Controls" for erosion and sedimentation control devices.
   5. Section 321123 "Aggregate Base Courses" for subbase and base course for placement under paving.

1.3 ACTION SUBMITTALS

A. Submit items in this Article at least 30 days prior to installation.

B. Product Data: Submit certified test results from the manufacturer including tensile strength, elongation, thickness, UV resistance, and other material properties.

C. Shop Drawings: Indicate fabric layout, seam locations, and overlap details in installation drawings. Provide installation schedule.

D. Samples for Verification:

   1. Submit samples, full width by 12 inches long, for each type and weight of geotextile used on Project, illustrating thickness, color, and texture.
   2. Submit samples, 12 inches by 24 inches long, for each type and weight of geotextile used on Project, illustrating each field seaming method.
   3. Submit samples of securing pin and washer.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures and quality control and quality assurance.

C. Manufacturer’s quality control program and manual, including a description of laboratory facilities.

D. Source Quality-Control Submittals: Provide results of factory tests and inspections, including test results that indicate materials meet the requirements of PART 2.

E. Field Quality-Control Submittals: Provide results of Contractor-furnished tests and inspections.

F. Qualifications Statements:

1. Submit qualifications for manufacturer and installer.
2. Submit manufacturer's approval of installer.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of geotextile material, including placement depth.

1.6 QUALITY ASSURANCE

A. Perform Work according to the recommendations of the Manufacturer.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging that identifies the manufacturer/supplier’s name, style, and roll number. Inspect for damage.

B. Comply with ASTM D4873.

C. Store materials according to manufacturer instructions.

D. Protection:

1. Protect materials from moisture, dust, chemicals, UV radiation or other environmental conditions that might damage the geotextile by storing at least 3 inches off the ground in a clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.9 WARRANTY

A. Special Warranty: Installer agrees to repair or replace geotextile related products that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS - NONWOVEN GEOTEXTILES (FILTER FABRIC)

A. Manufacturers:

1. TENCATE Mirafi.
2. Carthage Mills.
3. Hanes Geo Components

B. Description:

1. Non-biodegradable, non-reactive (for pH of three to eleven), UV-resistant, insect/rodent-resistant nonwoven needle punched material consisting of filaments formed into a stable network.
2. Edges: Selvaged or finished to prevent separation of outer material.

C. Performance and Design Criteria:

1. When tested in accordance with ASTM D4759, test results from any sampled roll in the lot shall meet or exceed the values listed in Table 1. Strength values are in the weaker principal direction.

TABLE 1: NONWOVEN GEOTEXTILE MINIMUM AVERAGE ROLL VALUES

PROPERTIES	TEST METHOD	UNIT	6 oz
Mass per Unit Area	ASTM D5261	oz/yd^2	6
Thickness	ASTM D5199	mils	75
Grab Strength	ASTM D4632	lbs	160
Grab Elongation	ASTM D4632	percent	50
Trapezoid Tear Strength	ASTM D4533	lbs	60

PROPERTIES	TEST METHOD	UNIT	6 oz
Puncture Strength	ASTM D4833/ D6241	lbs	90
Water Flow Rate	ASTM D4491	gpm/ft^2	110
Permittivity	ASTM D4491	sec-1	1.5
Apparent Opening Size (Max)	ASTM D4751	inch US Std. Sieve	0.008 70
UV Resistance	ASTM D4355	percent strength retained	70

2.2 MATERIALS - ACCESSORIES

A. Use products to secure geotextile fabrics as recommended by geotextile manufacturer.

2.3 SOURCE QUALITY CONTROL

A. If requested by the Owner, provide materials for Quality Assurance Laboratory (QAL) testing by an independent GRI accredited laboratory to confirm conformance testing results.

B. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. The Engineer shall inspect subgrade to verify that underlying surface is smooth and free of ruts or protrusions that could damage geotextile material and that subgrade has been properly prepared.

B. Subgrade Material and Compaction Requirements: As specified in Section 312333 "Trenching and Backfilling" and Section 312000 "Earthwork."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's published installation instructions. Do not install damaged materials.

B. Geotextile Material:

1. Lay and maintain smooth and free of tensile stresses, folds, wrinkles, or creases.
2. Ensure that material is in direct contact with subgrade and sides of trench.
3. Orientate with long dimension of each sheet parallel to direction of slope and in accordance with the manufacturer’s recommendations and approved shop drawings.
4. Minimum Unseamed Joints Overlap: 18 inches.
5. Fully encapsulate screened gravel bedding in geotextile.

C. Penetrations: As recommended by geotextile manufacturer.

D. Repairing Damaged Geotextiles:

1. Repair torn or damaged geotextile by placing patch of same type of geotextile over damaged area minimum of 12 inches beyond edge of damaged area and fasten as recommended by geotextile manufacturer.
2. Remove and replace geotextile rolls which cannot be repaired.

E. Fill and Cover:

1. Place fill to prevent tensile stress or wrinkles in geotextile.
2. Place fill from bottom of side-slopes upward.
3. Do not drop fill from height greater than 3 feet.

3.3 FIELD QUALITY CONTROL

A. Acceptance:

1. The Engineer will inspect installation and identify repairs or modifications necessary to perform as specified.
2. Make final adjustments and repairs under direction of The Engineer or manufacturer's representative.

3.4 PROTECTION

A. Ballast: Adequate to prevent uplift of material by wind.

B. UV Exposure: Do not leave material uncovered for more than 14 days after installation.

C. Do not use staples or pins to hold geotextiles in place where located adjacent to other geosynthetic layers that could be damaged.

D. Do not operate equipment directly on top of geotextile.

END OF SECTION 310519

©2026 CDM Smith
All Rights Reserved

SECTION 310900 - GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes performing pre-construction surveys and installing and monitoring geotechnical instrumentation and survey markers to measure.

1. Performance of excavation support systems.
2. Groundwater levels inside and outside excavation limits.
3. Vertical deformation of ground surface adjacent to and directly over the Work.
4. Vertical and horizontal deformation of existing utilities and structures adjacent to and over the Work.
5. Ground vibration levels at adjacent facilities due to Contractor activities, including but not limited torock excavation.

B. Related Requirements:

1. Section 312000 "Earthwork" for earthwork materials and operations.
2. Section 312316 "Rock Removal" for removal of existing rock.
3. Section 312319 "Dewatering" for dewatering and drainage.
4. Section 312333 “Trenching and Backfilling” for those procedures.
5. Section 315000 "Excavation Support and Protection" for temporary procedures.

1.3 DEFINITIONS

A. Crack Gauges: Plastic gauges mounted across cracks identified on existing structures during the preconstruction survey to monitor crack widths.

B. Deformation Monitoring Points (DMPs): Fixed markers placed on existing utilities and structures to measure both vertical and horizontal movement. Initial coordinate locations and vertical controls are determined by optical survey methods.

C. Excavation Support Monitoring Points (ESMPs): Inscribed marking or fixed makers placed on excavation support systems to measure horizontal movement of the excavation support system.

D. Seismographs: Electronic recording device with vibration transducer capable of monitoring and recording ground vibrations induced by construction activity.

E. Surface Monitoring Points (SMPs): Inscribed marking or approved surveyor's nail installed to measure vertical (elevation) movement.

F. Utility Monitoring Points (UMPs): Steel rod inside fully cased hole that is resting on existing utilities or underground structures to measure movement of the existing underground structure or utility.

1.4 ACTION SUBMITTALS

A. Submit for the Engineer's review four weeks prior to instrument installation:

1. Installation Plan and Schedule: Full details and plan/layout of proposed instruments/points, schedule for installing and monitoring instruments/points, equipment types, installation methods, reference points, and monitoring and data reporting schedule for instruments/points, and instrumentation protection.
2. Description of methods for installing and protecting all instrumentation including but not limited to seismographs, observation wells, crack gauges, monitoring points, and reference points.
3. For instrumentation installed in borings, submit a detailed procedure for installation, including post-installation acceptance test, together with a sample installation record sheet that include:

    a. Method to be used for cleaning inside of casing or augers.
    b. Drill casing or auger type and size.
    c. Depth increments for backfilling boreholes with sand and bentonite.
    d. Method for overcoming buoyancy of instrumentation components during grouting.
    e. Method of sealing joints in pipe casing to prevent ingress of grout.

B. Installations Records: Within five working days of installing each instrument, submit to the Engineer, specified as-built instrument location and its corresponding installation record sheet.

1. Include in installation record sheet, location with instrument identification numbers, established elevations, initial elevations and coordinates (baseline readings), boring log, installation, and monitoring date and time.
2. Furnish details of installed instruments showing dimensions, materials used, and as-built drawings of each instrument.
3. Submit field calibrations.

C. Reports and Records: Provide reports of monitoring data to the Engineer. include following minimum information:

1. Preconstruction survey.
2. As-installed location plan, installation records, and baseline values for instrumentation.
3. Monitoring data for instruments with plots against threshold values.
4. Weekly records of crack monitors and including photographs with readings.
5. Event reports and summary from vibration monitoring.
6. Discussion and associated action related to results exceeding threshold values.

D. Submit proposed remedial measures to the Engineer of action to be taken in event that instrument Threshold Values are reached.

1.5 INFORMATIONAL SUBMITTALS

A. Submit names, qualifications, and experience of personnel who will install instruments, perform optical level survey and vibration monitoring, read instruments, and report data to the Engineer demonstrating compliance with “Quality Assurance” Article in this Section.

B. Certificates: Submit for each seismograph or other necessary instrument that manufacturer has inspected and tested each instrument before it leaves the factory confirming that it is working correctly without defects or missing parts and current calibration records.

1.6 QUALITY ASSURANCE

A. Geotechnical Instrumentation Engineer Qualifications: Professional engineer registered in the State of Connecticut with at least 5 years’ experience in installation of specified instrumentation and will supervise and direct technicians and be responsible for instrument installation. Be present at installation sites to direct and supervise installations, oversee instrumentation reading, and supervise geotechnical instrumentation data interpretations.

B. Surveyor Qualifications: Professional Land Surveyor registered in the State of Connecticut with at least 3 years’ experience in surveying of similar instruments. Establish Deformation Monitoring Points, Surface Monitoring Points, Utility Monitoring Points, and Excavation Support Monitoring Points and take baseline readings.

C. Manufacturer Qualifications: Provide instruments and components from an approved manufacturer currently engaged in manufacturing specified geotechnical instrumentation hardware.

D. Preconstruction Survey Engineer Qualifications: Professional engineer registered in the State of Connecticut with at least 5 years’ experience in structural evaluations and condition surveys.

E. Technicians Qualifications:

1. Minimum 3 years’ experience for personnel responsible for optical level surveys, instrument readings, and report data.
2. Trained in use of seismograph along with reporting results of analyzing and reporting frequency content of seismograph record.
3. Experienced in installation and reading of specified geotechnical instrumentation and equipment.

F. Factory Calibration: Conduct factory calibration on instruments prior to shipment with certification submitted to indicate that test equipment used for this purpose is calibrated and maintained in accordance with test equipment manufacturer's calibration requirements and that, where applicable, calibrations are traceable to U.S. National Institute of Standards and Technology.

1. Include a calibration curve with data points clearly indicated and a tabulation of data. Mark each instrument with a unique identification number.

G. Perform instrument installations in presence of the Engineer.

H. Be responsible for installation, maintenance, and monitoring of geotechnical instrumentation.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE REQUIREMENTS

A. Project Requirements:

1. Install geotechnical instrumentation to monitor ground conditions, ground response, and facilities to achieve specified project requirements and prevent damage to facilities potentially affected.
2. Install instrumentation in accordance with approved Instrumentation Schedule.
3. Engineer's monitoring of installed instruments does not relieve Contractor of its obligation to complete project within the requirements specified herein taking necessary additional measurements.

B. Pre-Construction Survey:

1. Prior to start of demolition, excavation work, installation of excavation support and dewatering work, engage the services of an independent licensed professional engineer, to conduct a pre-construction survey of existing structures and conditions within 100 feet of the anticipated demolition, excavation work, installation of excavation support, and dewatering work.

    a. Coordinate activities, issue notices, obtain clearances and provide photographic and secretarial assistance necessary to accomplish the survey.
    b. Give notice in writing to property owners and representatives of local authorities required to be present at such survey. Notify in writing the dates on which surveys are planned so that representatives are present during the examination. Provide copies of notices to Owner and the Engineer

2. Record observations of the existing conditions for residences, buildings and other structures, which are affected.

    a. Provide the survey consisting of a description of interior and exterior conditions. Locate cracks, damage or other defects existing and include information to make it possible to determine the effect, if any, of the construction operations on the defect. Where significant cracks or damage exist, or for defects too complicated to describe in words, photographs shall be taken and made part of the record.
    b. Records of each property examined must be signed by the representatives present and, if practicable, by property owners, whether or not they are present at the examinations.

3. Record of the pre-construction survey shall consist of written documentation, video and photographs of the conditions identified. At the completion of the survey, submit copies of the documentation to Owner.
4. Upon completion of all excavation work, installation of excavation support and dewatering work, complete a similar examination of properties and structures where complaints of damage have been received or damage claims have been filed. Give notice

to interested parties so that they may be present during the final examinations. Records of the final examination shall be signed and distributed as the original pre-construction survey.

5. Retain records in Contractor's file for at least 3 years after completion of the Contract. In the event of damage claims, prepare a report on the particular structures as requested by the Engineer from those notes and photographs and submitted to Owner. Repair damage attributed to Contractor's activity promptly and completely to property owners' satisfaction to restore the conditions of the property to that existing prior to work.

C. Provide and facilitate safe access to the instruments at all times. Engineer may perform additional monitoring in a manner that will minimize unnecessary work delays. Allow and facilitate instrument monitoring as required by the Engineer. No claim for lost production time due to this activity will be allowed.

D. Maintain instrumentation. Report damaged or non-functional instrumentation to the Engineer within 24 hours. Replace damaged or non-functional instruments within 24 hours.

E. Availability of Data:

1. Instrumentation readings shall be collected by the Contractor's Geotechnical Instrumentation Monitoring Firm. Contractor may take their own supplementary readings in addition to those specified.
2. Monitoring data is the property of Owner and is not to be disclosed or published to third parties without Owner's written permission.
3. Contractor is expected to make their own interpretations for their own purposes without additional compensation.
4. Coordinate with the Engineer to verify consistency of collected data.

2.2 INSTRUMENTATION - GENERAL

A. Instruments and materials, including readout units, installation tools, materials, and miscellaneous instrumentation components.

B. Provide surface protection for instruments flush with surface in paved or other ground surface areas at the time that work is completed.

C. Minimum Quantity of Instruments: While quantities in following Paragraph are considered minimums, obtain data from instrumentation in quantity to monitor construction, performance, and safety aspects of the Work.

D. Following subparagraphs identify instrument type, minimum number to be provided, and approximate installed depth from below bottom of excavation / tunnel invert:

	Instrument Type:	Number:	Depth:
1.	Seismographs:	2	N/A
2.	Surface Monitoring Points:	70	N/A
3.	Deformation Monitoring Points:	175	N/A
4.	Utility Monitoring Points:	2	N/A
5.	Excavation Support Monitoring Points:	As Needed	N/A
6.	Crack Gauges	(as req'd to monitor existing cracks)	

E. Locate instruments and obtain approval from the Engineer.

2.3 MONITORING POINTS

A. Surface Monitoring Points (SMPs):

1. Use to monitor vertical deformation at or near ground surface, clearly identifying points with permanent easily readable letters and numbers as approved by the Engineer.
2. Paved Areas: 2 inches long masonry nail, manufactured from hardened zinc–plated steel and driven into an asphalt covered surface. Identify each nail individually with an identification tag or surface marking.
3. Non-Paved Areas: 3 feet by 3/4 inch diameter steel rod driven into ground or set in concrete such that no more than 3 inches of rod is exposed above ground surface. Round top of rod and punch-mark it at its center. Identify each rod with a surface marking.
4. Utility Manholes: Observable cross mark or welded bead on top horizontal surface of manhole rim. Clean surface within 3 inches of point and mark it using fluorescent spray paint adjacent to point to permit easy identification of exact location.

B. Deformation Monitoring Points (DMPs):

1. Use to monitor vertical and horizontal movement of adjacent utilities and structures with following approved by the Engineer.
2. Materials: Nails, screws, reinforcing bars, bolts, and similar materials with well-defined measurement points.
3. Firmly attach and protect from damage and vandalism. Remove or cover points protruding more than 1/4 inch with a protective box or cap.
4. Clearly identify with permanent easily readable letters and numbers.

C. Utility Monitoring Points (UMPs):

1. Use to monitor vertical and horizontal deformation of selected utilities and underground structures. Include following at a minimum:

    a. Steel Pipe: ASTM A53/A53M Grade B, 3-1/2 inch extra strong steel sleeve and 1 inch extra strong steel riser, threaded and coupled.
    b. PVC Centralizers: ASTM D1785, Schedule 40 PVC pipe, sized to provide a tight fit on riser pipe, and spring-formed to a larger diameter to provide a loose fit in sleeve pipe.

2. Install to top of utility or underground structure by vacuum excavation method. Set monitoring rod with centralizers on top of the utility or underground structure and extending to within 1 foot of ground surface.
3. Install with a flush mount roadbox casing at grade, clearly identified by surface marking.

D. Excavation Support Monitoring Points (ESMPs):

1. Use as fixed markers on vertical elements of excavation support system and to monitor horizontal deformation of excavation support system designed by Contractor.
2. Clearly identified points with permanent easily readable letters and numbers as approved by the Engineer.

3. Clean surface within 3 inches of each point and clearly identify using fluorescent spray paint adjacent to point.

2.4 SEISMOGRAPHS

A. Portable for monitoring ground vibrations velocities resulting from construction activities, calibrated within the previous six months, and having following characteristics:

1. Measure three mutually perpendicular components of particle velocity in directions vertical, radial, and perpendicular to vibration source.
2. Measure and display maximum peak particle velocity continuously during vibration-generating activities.
3. Seismic Range: 0.01 inch to4 inches per second with an accuracy of plus or minus 5 percent of measured peak particle velocity or better at frequencies between 10 Hertz and 100 Hertz, and with a resolution of 0.01 inch per second or less.
4. Frequency Response (plus or minus 3 dB): 2 Hertz to200 Hertz.
5. Two Power Sources: Internal rechargeable battery and charger capable of supplying power to monitor vibrations continuously for up to 24 hours at 115 volts AC.
6. Self-triggering wave form capture mode that provides plot of wave forms, peak particle velocities, peak overpressure, and frequencies of peaks.
7. Continuous monitoring mode capable of recording single-component peak particle velocities and frequency of peaks with an interval of 1 minute or less.

B. Provide for full-time use on the project during vibration causing construction activities.

2.5 CRACK MONITORS

A. Basis-of-Design Manufacturer - Crack Gauges: Provide Model HC-2937 as manufactured by Humbolt Mfg. Co. or equal for monitoring width of existing cracks and joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with the Engineer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Existing Conditions: Locate vaults, structures, conduits and underground utilities in areas where wells are to be drilled and installed. Conduct utility clearance and contact utility companies prior to any drilling.

1. Modify instrument locations, as approved by the Engineer, to avoid interference with existing vaults, structures, conduits and utilities.

2. Repair damage to existing facilities resulting from instrument installations without additional compensation.

B. Prior to commencing installation of, excavation support, excavation for open trench, rock excavation,, and dewatering work, furnish instrumentation and related components that are to be installed during construction and conduct pre-construction surveys.

C. Protect from damage and maintain instruments. Repair or replace damaged instruments.

D. Drilling from Ground Surface: Obtain necessary permits for each instrument and conform to permit requirements during drilling and installation.

E. Implement remedial measures based on interpretations of monitoring data program.

3.3 GENERAL REQUIREMENTS

A. Perform a pre-construction survey prior to any dewatering, excavation, or installation of excavation support.

B. Install instruments at the Engineer approved locations in accordance with approved installation procedures. Engineer may modify instrument locations depending on field conditions and monitoring objectives. Install instrumentation in accordance with approved installation schedule. Install instruments and obtain baseline data before construction starts.

C. Allow the Engineer access to instrument locations and assistance required in obtaining monitoring data.

D. Clearly mark and label instruments and protected to avoid being obstructed or otherwise damaged by construction operations or general public. Immediately following installation, survey location and top of instruments to provide horizontal and vertical coordinates.

1. Resurvey if the Engineer questions instrument locations

E. Assign a unique identification number to each instrument and each point that is clearly marked in a non-destructible manner.

F. Initial Reading: Immediately following instrument installation take two sets of initial readings in the Engineer’s presence to provide baseline readings and to demonstrate adequacy of completed installation.

3.4 MONITORING POINTS

A. Monitoring Points: Include but not be limited to SMPs, DMPs, UMPs and ESMPs. Monitor these control points using surveying methods. Modify locations to meet site constraints with the Engineer’s approval.

B. SMPs, DMPs and UMPs: Install as described below near excavations for and open trench locations. Additional SMPs, DMPs, and UMPs may be required by the Engineer.

C. Additional SMPs:

1. Install in pavement or ground surface within 5 feet along each side of trench excavations that are over 12 feet deep or that are within 50 feet of structures. Install at spacing not exceeding 50 feet.
2. Install on rim of utility manhole covers located within 30 feet of open excavations.
   a.

D. DMPs:

1. Install on exterior walls of buildings or structures located within 50 feet of open excavations, Preferred installations are on supporting walls or columns. Avoid installation in brick, unless no other option exists.
2. As a minimum, install on exterior wall corners of buildings, structures, or property boundary walls at not more than 50 feet spacing. Install additional DMPs to monitor building movement at other locations when determined by the Engineer.
3. Install DMPs in cooperation with property Owners so that installations are inconspicuous and acceptable to them. Existing features of building foundations that are permanent and can be repeatedly surveyed may be substituted for DMPs, if approved by the Engineer.

E. UMPs: Install on existing utilities over 36 inches in diameter and located within 15 feet from excavation. Locate at a spacing of not more than 50 feet.

F. ESMPs:

1. Install on excavation support systems other than trench boxes along support walls at spacing not more than 25 feet.
2. Install prior to excavation within excavation support system.
3. Read results at least daily during associated excavation and twice a week until backfill is completed.

G. SMPs, UMPs, and DMPs:

1. Obtain two sets of measurements for each monitoring point to establish baseline data within three days of installation. Make at least 24 hours apart, but not more than 48 hours.
2. Check monitoring points with initial surveyed elevations or offsets as appropriate differing by more than 0.01 foot for secure installation and resurvey.
3. Read monitoring points prior to installing excavation support, beginning, excavation, operation of groundwater control system, , or start of installation of excavation support at the site.
4. Read daily during, excavation, dewatering, filling and backfilling,, rock excavation, and excavation support installation located within 50 feet of the work, then at least twice a week until excavation, dewatering, and backfill has been completed.

H. Crack Gauges:

1. Install on exterior walls of buildings or structures with existing cracks located within 30 feet of open excavations.
2. Install DMPs in accordance with manufacturer’s recommendations and in cooperation with property Owners so that installations are inconspicuous and acceptable to them.

3.5 VIBRATION MONITORING

A. Take seismograph readings during rock excavation and excavation support installation or other activities causing ground vibrations within 50 feet of existing structures to document that peak particle velocities do not exceed specified limit criteria.

B. Install seismographs near existing structures when vibratory or impact hammers are used for the installation of excavation support within 50 feet of existing structures, and as directed by the Engineer.

3.6 INSTRUMENT PROTECTION, MAINTENANCE AND REPAIR

A. Protect instruments from damage. Replace damaged or destroyed instruments within 72 hours of damage, without additional compensation. If necessary, suspend work in areas being monitored by damaged instrument and take remedial action.

B. Maintain instruments by draining water and flushing debris from under protective covers and keeping covers locked and sealed at all times.

3.7 MONITORING

A. Collect, tabulate, plot, and interpret survey monitoring data and provide the Engineer with tabulated and plotted data. Report status of, excavation, bracing, groundwater levels, and backfilling at time of data collection with each report.

B. Monitoring frequency may be modified as directed and approved by the Engineer.

C. Submit data from readings of monitoring points to the Engineer within 24 hours of reading. Communicate verbally with the Engineer immediately after visual observations or data collection if excessive movements or other anomalies are indicated.

D. For seismograph data, submit a summary report with event summary of peak particle velocity and frequency measured during each 5-minute interval of monitoring period. List a summary of vibration producing activities for that week along with specific events causing anomalous readings.

E. Make visual observations of ground conditions and building conditions in site vicinity and communicate immediately with the Engineer if signs of ground or building movements are observed.

F. Engineer may take independent instrumentation measurements. Cooperate with the Engineer during instrumentation monitoring by providing access to instrumentation locations in a timely manner and by providing and maintaining safe means of access to instrumentation locations for data collection. Data acquired by the Engineer will be made available to Contractor in a timely manner.

G. Contractor may make their own interpretations of monitoring data for their own purposes. Do not publish or disclose data or interpretations shall to other parties without advance written permission of Owner.

H. For data collected from an instrument that has been installed to replace a damaged instrument, use formal initial reading as an initial reading for replacement instrument so that data are continuously plotted, without an offset at time of damage. Note time of damage and replacement on plot.

3.8 INTERPRETATION AND RESPONSE VALUES

A. Make interpretations of data resulting from monitoring programs.

B. Threshold and Limiting Values for Instruments:

	Instrument	Threshold Value	Limiting Value
1.	Seismographs:	1.0 in/sec over 40 Hz 0.75 in/sec at 30 to 40 Hz 0.50 in/sec at 20 to 30 Hz 0.25 in/sec under 20 Hz	2.0 in/sec over 40 Hz 1.5 in/sec at 30 to 40 Hz 1.0 in/sec at 20 to 30 Hz 0.5 in/sec under 20 Hz
2.	Surface Monitoring Points:	0.5 inch	1.0 inch
3.	Deformation Monitoring Points:	0.25 inch	0.5 inch
4.	Utility Monitoring Points:	0.25 inch	0.5 inch
5.	Excavation Support:	1.0 inch	2.0 inches

C. Values are subject to adjustment by the Engineer as indicated by prevailing conditions or project circumstances. Crack Gauge criteria will be established based upon existing conditions identified during preconstruction survey.

D. If a Threshold Value is reached:

1. Engineer and Contractor will meet to discuss remedial measures.
2. Increase instrument monitoring frequency as directed by the Engineer.
3. Install and monitor additional instruments as directed by the Engineer.
4. Implement remedial measures in event Threshold Value is reached, so Limiting Value is not reached.

E. Take necessary steps so Limiting Value is not exceeded. Engineer may direct Contractor to suspend activities in affected area with exception of those actions necessary to avoid exceeding Limiting Value.

3.9 TOLERANCES

A. Survey Measurements: Initial location of each instrumentation elements consisting of determining elevation and horizontal positions with respect to the Engineer approved benchmarks.

B. Monitoring Points (SMPs, DMPs, UMPs and ESMPs):

1. Instrumentation Elevations: Determine to accuracy of plus/minus 0.01 foot
2. Horizontal Position of SMP, DMPs, UMPs, and ESMPs: Determine to accuracy of plus/minus 0.1 foot.

C. If actual field conditions prohibit installation at location and specified elevations, obtain prior acceptance from the Engineer for new instrument location and elevations.

3.10 DISPOSITION OF INSTRUMENTS

A. Monitoring Points and Crack Gauges: Remove monitoring points and crack gauges during cleanup and restoration work, unless directed otherwise by the Engineer.

B. Utility Monitoring Points: When required by the Engineer, abandon and remove protective housings and caps in accordance with required permits. Restore surfaces affected by installation of instruments to their original condition prior to completion of work.

1. Leave in place any casings located within plan limits of new or existing structures or pipelines or within zone below 1H:1V planes extending downward and out from edges of foundation elements, from downward vertical footprint of pipe, or where removal would otherwise result in ground movements causing adverse settlement to adjacent ground surface, utilities or structures.
2. Where casings are pulled, fill holes with sand. Where left in place, fill casings with non-shrink cement grout and cut off a minimum of 3 feet below finished ground level or 1 foot below foundation level so as not to interfere with finished structures or pipelines.
3. Following backfilling, remove precast boxes or vaults and reconstruct pavement in paved areas. Restore surface to conditions existing prior to instrument installation.

C. Seismographs: Remove units following completion of rock excavation installation of excavation support and excavation

END OF SECTION 310900

©2026 CDM Smith
All Rights Reserved

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Disconnecting, capping or sealing, and abandoning site utilities in place.
8. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.
2. Section 312316 "Rock Removal" for rock and boulder excavation.
3. Section 312500 "Erosion and Sedimentation Controls" for temporary protection of erosion and sedimentation.

1.3 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than one percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled for Owner’s us or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

B. Topsoil stripping and stockpiling program.

C. Rock stockpiling program.

D. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

E. Burning: Documentation of compliance with burning requirements and permitting of authorities having jurisdiction. Identify locations and conditions under which burning will be performed.

1.7 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed roadways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Engineer.

C. Utility Locator Service: Notify Call Before You Dig for area where Project is located before site clearing.

D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

E. Tree and Plant-Protection Zones: Protect according to requirements in Section 015000 "Temporary Facilities and Controls."

F. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earthwork."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015000 "Temporary Facilities and Controls."

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

D. Notify Call Before you Dig service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways,

according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to requirements in Section 015000 "Temporary Facilities and Controls."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015000 "Temporary Facilities and Controls."

3.4 EXISTING UTILITIES

A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.

1. Verify that utilities have been disconnected and capped before proceeding with site clearing.

B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Arrange with utility companies to shut off indicated utilities.
2. Owner will arrange to shut off indicated utilities when requested by Contractor.

C. Locate, identify, and disconnect utilities indicated to be abandoned in place.

D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer’s written permission.

E. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated. Confirm ALL tree, shrub, and vegetation removal with Engineer prior to removal.
2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.
5. Do not perform clearing on private property or beyond limits required for construction of new facilities.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 96 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than one foot (across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches.
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.

3.8 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

©2026 CDM Smith
All Rights Reserved

SECTION 312000 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. General: Earthwork includes clearing and stripping, procurement of on-site and imported fill material, excavating, placing, and compacting fill and backfill, structural excavating and backfilling, transportation and storage of excess earthwork materials; disposal of unsuitable, waste, and surplus materials; restoration of excavation and trench surfaces; and subsidiary work necessary to complete the grading of developed areas to conform with required lines, grades, and slopes.

B. Work includes but is not necessarily limited to; excavation for structures, tanks, foundations, manholes, vaults, electrical manholes, conduits, cables, raceways and ducts, pipes, paving; embankments; grading; and related work such as sheeting, bracing and dewatering.

C. Provide services of a licensed Professional Engineer to prepare temporary excavation support system, dewatering system designs, and submittals.

D. Provide temporary excavation support systems, including sheeting, shoring, and bracing, to ensure the safety of personnel and protect adjacent structures, piping, and other materials in accordance with Federal, State, and local laws, regulations, and requirements. Temporary excavation support systems are specified in Section 315000 "Excavation Support and Protection."

E. Provide temporary dewatering, surface water control systems, and operate to dewater and maintain excavations in a dry condition. Control drainage into excavations and remove seepage water and rainwater. Dewatering and surface water control are specified in Section 312319 "Dewatering."

F. Examine site and review available geotechnical data prior to submitting a proposal, taking into consideration project conditions that may affect the work. Owner and Design Engineer do not assume responsibility for variations of subsurface conditions at locations other than places shown and at the time investigations were made.

G. Do not initiate extra work without written notification to Owner and Engineer and receiving Owner’s written approval in response.

H. Protect existing structures and utilities that remain.

I. Related Requirements:

1. Section 013200 "Construction Progress Documentation" and Section 013233 "Photographic Documentation" for recording pre-excavation and earthwork progress.
2. Section 026110 “Excavation and Management of Soils.”
3. Section 028100 “Transportation and Disposal of Excavated Material.”
4. Section 310515 "Soils and Aggregates for Earthwork" for fill materials.
5. Section 310519.13 “Geotextiles for Earthwork” for geotextile materials.
6. Section 311000 "Site Clearing" for site preparation work, including stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
7. Section 310900 “Geotechnical Instrumentation and Monitoring” to measure earthwork activities.
8. Section 312333 “Trenching and Backfilling” for stated work.
9. Section 312316 "Rock Removal" for excavation of rock and boulders.
10. Section 312319 "Dewatering" for controlling surface and groundwater and disposing of water during construction.
11. Section 312500 "Erosion and Sedimentation Controls" for temporary stated work.
12. Section 315000 "Excavation Support and Protection" for shoring, bracing, and sheet piling of excavations.
13. Section 321216 "Asphalt Paving" for flexible paving system.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

C. Coverage: Pass of compaction equipment over the complete surface area of exposed lift or subgrade.

D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions.
2. Unauthorized Additional Excavation: Excavation as directed by Engineer to correct Contractor’s work not in compliance with Contract Documents, which will be performed without additional compensation.
3. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
4. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be provided without additional compensation.

E. Finished Grade: Required final grade elevation indicated on Drawings. Spot elevations take precedent over proposed contours.

F. In-the-Dry: An excavation subgrade where groundwater level: has been lowered to at least 2 feet below lowest level of excavation; is stable with no ponded water, mud, or muck; is able to support construction equipment without rutting or disturbance; and is suitable for placement and compaction of fill material, pipe, or concrete foundations.

G. Objectionable Material: Includes topsoil, organic matter, contaminated soil, construction debris, perishable materials, snow, ice, frozen earth, and rocks or lumps of cemented soils over 6 inchesin maximum dimension.

H. Optimum Moisture Content: Moisture content (percent by dry weight) corresponding to maximum dry density of the same material as determined by ASTM Test Method D1557 .

I. Overexcavation: Removal of unsuitable soil or objectionable material at or below the normal grade of excavation or subgrade as indicated on Drawings.

J. Percent Compaction: In-place dry density of the material, expressed as a percentage of the maximum dry density of the same material, as determined by ASTM Test Method D1557.

K. Structures: Buildings, wet wells, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, manholes and vaults, or other man-made stationary features constructed above or below the ground surface.

L. Subgrade: Required surface of subsoil, borrow fill, or compacted fill that is immediately beneath site improvements, especially dimensioned fill, paving, or other surfacing material.

M. Unsuitable Soil: Includes existing fill materials, organic soils, weak native soils, or clays with a plasticity index of greater than 30, and any materials that cannot be properly placed and compacted as specified.

N. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

O. Zone of Influence: A line extending at least 2 feet beyond foundation or pipeline edge, then outward and downward at a slope of 1 horizontal to 1 vertical. Do no excavation below foundation of existing structures or pipeline.

P. Professional Engineer: Registered Professional Engineer meeting project qualifications and who is hired by Contractor.

Q. The Engineer: The Engineer or designated representative hired by Owner.

1. Approval given by The Engineer shall not relieve Contractor of its responsibilities for performing the work in accordance with Contract Document requirements.

1.4 ACTION SUBMITTALS

A. Coordinate various submittal types required by this Section with requirements of dewatering, support of excavation, and rock removal submittals specified in other Sections.

B. Slope Stability Evaluation: Submit a temporary excavation slope stability evaluation in accordance with OSHA for temporary slopes over 20 feet in height or where existing or proposed facilities or property limits are located at the top of the slope and within a distance from the top of the slope equal to the slope height.

1. Prepare evaluation by a licensed Professional Engineer registered in the State of Connecticut.

C. Site Characterization Data: Submit following information regarding off-site source and material:

1. Site location.
2. Present and past usage of the source site and material.
3. Previously existing reports associated with an assessment of source site relating to presence of oil or other hazardous materials.
4. Location within the site from which the material will be obtained.

D. Samples: Submit a representative sample weighing approximately 50 pounds of each fill material, filter sand, and crushed stone contained in sealed 5-gallon containers, at least 30 calendar days prior to date of anticipated use of each material.

E. Submit laboratory test results for fill materials that include maximum density, gradation, Atterberg limits, sand equivalent, and other applicable criteria, at least 72 hours prior to importing or placing fill.

F. Prepare excavation support system designs by a licensed Professional Engineer, registered in State of Connecticut and having a minimum of 5 years of professional experience in design and construction of excavation support systems.

1. Submit an original and three copies of licensed Professional Engineer's certification, stating excavation support systems designs have been prepared by Professional Engineer who is responsible for their execution.

1.5 INFORMATIONAL SUBMITTALS

A. Construction and Operations Plan: Submit proposed methods of construction, including earthwork operations, excavation limits, slopes, fill material moisture conditioning and handling, compaction equipment, excavation support systems designs, backfilling and filling and compaction, and material sources.

1. Include additional submittal requirements related to schedule, work sequence, and on-site and off-site storage when necessary based on project conditions.
2. Submit excavation support system plan as prepared by registered Professional Engineer complying with requirements stated in previous Article.

B. Submit copies of field daily reports by soil technician at the end of each work day that earthwork and grading operations occur.

C. Upon completion of earthwork and grading operations, submit an as-graded map showing density test numbers and locations, a table of density test results and depths, and a certification of compliance by geotechnical engineer in charge.

D. Qualification Data: For qualified testing agency to conduct geotechnical observation, testing and documentation. include qualifications of firm, resumes of soil technicians assigned to the project, and licensed geotechnical engineer in charge.

1. Firm Qualifications: Meet ASTM D3740.
2. Soil Technicians: Have minimum three years demonstrated experience in earthwork and grading operations and satisfy certification requirements of agency having local jurisdiction.

    a. The Engineer reserves right to request substitution of soil technicians assigned to field work. Do not substitute assigned soil technicians without prior approval of The Engineer.

E. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.6 QUALITY ASSURANCE

A. Excavation, trenching, sheeting, bracing, and similar work shall comply with requirements of OSHA excavation safety standards, 29 CFR Part 1926 Subpart P and State and local authorities having jurisdiction. Where conflict between OSHA, State and local regulations exists, apply most stringent requirements.

B. At least three working days prior to starting any excavation, notify the appropriate regional notification center for underground utilities and underground utility owners who are not members of notification center. To obtain area specific information for project site, refer to www.call 811.com.

C. Quality Control Testing for Off-site Borrow Materials:

1. Chemical testing will not be required where site characterization of off-site borrow sources indicates that soils are acceptable for use. If site characterization data or materials are suspected of being contaminated, perform chemical testing as directed by The Engineer with no additional compensation.
2. Chemical Test Data: Test each material source requiring testing by a person experienced in sample collection who is a registered Professional Engineer or geologist or certified groundwater or environmental professional registered in the State of Connecticut. Submit samples of each proposed material to a chemical analytical laboratory, certified by the governing agency, for following analyses:

    a. Volatile Organic Compounds: EPA 8240 plus Hazardous Substance List (HSL) Parameters.
    b. Acid and Base Neutral Extractable Organic Compounds: EPA 8270.
    c. Pesticides and PCBs: EPA 8080.
    d. Total Petroleum Hydrocarbons: Infrared Method, EPA 9071/418.1.

e. Thirteen Priority Pollutant Metals: EPA 7000 Series.
f. Total Cyanide: EPA 9012.

3. Obtain and test off-site borrow samples in accordance with criteria established by The Engineer. Submit results for review and approval prior to use on site.

1.7 FIELD CONDITIONS

A. Be responsible for construction layout and reference staking necessary for proper control and satisfactory completion of structures, cutting, filling, grading, drainage, fencing, embankment improvements, curbing, and other appurtenances.

B. Perform construction layout and staking by a Professional Surveyor or Professional Engineer registered in State of Connecticut, experienced and skilled in construction layout and staking requirements.

C. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earthwork operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

D. Improvements on Adjoining Property: Authority for performing earthwork indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by The Engineer.

E. Utility Locator Service: Notify Call Before You Dig for area where Project is located before beginning earthwork operations.

F. Do not commence earthwork operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and Section 311000 "Site Clearing" are in place.

G. Do not commence earthwork operations until plant-protection measures specified in the contract drawings are in place.

H. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

I. Do not direct vehicle or equipment exhaust towards protection zones.

J. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Fill materials designated for use in this Section are specified in Section 310515 "Soils and Aggregates for Earthwork."

B. On-Site Fill Material: Earth and rock material obtained at project site during excavation, following clearing and stripping, from which any Unsuitable Soil or Objectionable Material has been removed.

C. General: Provide imported fill materials when sufficient satisfactory soil materials are not available from excavations.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, tanks, utilities, sidewalks, pavements, fencing, landscaping, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

1. If necessary, remove and restore or replace curbing, driveway aprons, and fencing after performing backfilling work.
2. Replace existing facilities damaged by construction with new material fully equal to existing without additional compensation.

B. Prior to and During Earthwork Operations:

1. Provide, monitor, and maintain geotechnical instrumentation regarding settlement; coordinate with Section 310900 “Geotechnical Instrumentation and Monitoring.”

2. Protect and maintain erosion and sedimentation controls; coordinate with Section 312500 "Erosion and Sedimentation Controls."
3. Provide, monitor, and maintain excavation support; coordinate with Section 315000 “Excavation Support and Protection.”
    a. Use excavation support system for excavations within the zone of influence for existing structures or utilities.
    b. Do not permit excavations below base level of adjacent foundations or retaining walls, unless excavation design and bracing includes an analysis of structure’s stability supported by the foundation. When necessary due to project conditions, incorporate required bracing and foundation underpinning.
4. Provide, monitor, and maintain dewatering and drainage systems; coordinate with Section 312319 "Dewatering."

C. Test Pits:

1. Perform exploratory excavation work, test pits, for purpose of verifying the location of underground utilities and structures and to check for unknown utilities and structures, prior to commencing excavation work.
2. Backfill and compact test pits as soon as desired information has been obtained. Stabilize backfilled surfaces in accordance with approved erosion and sedimentation control plans.

D. Clearing and Stripping. Initially clear and strip ground surfaces beneath planned structures and in areas requiring excavation or filling of organic material and debris. Do not use those materials as On-Site Fill Material; remove from the site and properly disposed**.**

E. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

F. Saw cut existing pavement with a saw, wheel, or pneumatic chisel along straight lines before excavating.

3.2 DEWATERING AND DRAINAGE

A. Provide dewatering and drainage in accordance with Section 312319 "Dewatering." This Article supplements those requirements.

B. Prevent surface water and groundwater from entering excavations, from ponding on prepared subgrades, and from flooding project site and surrounding area.

C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff and groundwater seepage away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Prior to excavation, verify groundwater will be at required level indicated on approved dewatering and drainage submittal.

E. Accomplish dewatering by methods that preserve undisturbed state of subgrade soils. Dewater in a manner to prevent boiling, detrimental under-seepage, or disturbance at excavation base.

3.3 SUPPORT OF EXCAVATION

A. Provide excavation support in accordance with Section 315000 “Excavation Support and Protection.” This Article supplements those requirements.

B. Install excavation support in accordance with reviewed Shop Drawings prior to beginning excavation work. Maintain excavation supports that are required to remain in place, if applicable, as indicated on Drawings or as required by approved Shop Drawings.

C. Owner or The Engineer may direct that certain excavation supports remain in place or be cut off at any specific elevation. Supports directed by Owner or The Engineer to be left in place and not so designated on Contract Documents will be paid for according to Contract provisions.

D. The right of Owner or The Engineer to direct that certain excavation supports remain in place shall not be construed as creating any obligation on Owner or The Engineer to give such direction, nor shall failure to give such direction relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient excavation supports to prevent any movement of the ground or damage to adjacent structures.

E. Construct temporary excavation slopes in accordance with the requirements of OSHA excavation safety standards and approved Shop Drawings.

F. Where allowed, carefully remove excavation supports in a manner without endangering the Work or other adjacent structures, utilities, or property. Immediately fill voids left or caused by withdrawal of supports with sand and compact.

3.4 EXCAVATION

A. Include material of every description and of whatever substance encountered as an unclassified excavation.

B. General: Excavate on-site soils using standard earthmoving equipment. Excavation in dense soil or rock may require special equipment. Do not plough, scrape, or dig earth with machinery so near to finished subgrade to result in excavation of or disturbance of below grade material.

C. Make excavations to grades indicated on Drawings and in widths sufficient for laying of pipe, construction of the structure, installing bracing, excavation supports, dewatering and drainage facilities, and working clearances.

D. Perform excavation in-the-dry and accomplished by methods which preserve the natural undisturbed condition of subgrade soils.

E. Moisture Sensitive Soils: Use a smooth-edge bucket to excavate last one foot of depth when excavation is to end in such soils.

F. If excavation bottom is removed below the limits shown on Drawings, specified, or directed by The Engineer, refill with structural fill or other material satisfactory to The Engineer without additional compensation.

G. When excavation has reached prescribed depths, notify The Engineer who will observe the conditions. If materials and conditions are not satisfactory, The Engineer will issue instructions for corrective procedures. The Engineer will be the sole judge as to whether the work has been accomplished satisfactorily.

H. Subgrade soils that have become soft, loose, quick, or otherwise unsatisfactory due to inadequate excavation, dewatering, or other construction methods in the opinion of The Engineer, remove existing soil and replaced with structural fill as acceptable to The Engineer at Contractor's expense.

I. Exposed subgrades in large open areas and for foundations shall be proof-rolled with at least four overlapping coverages of a vibratory drum roller with a minimum static drum weight of 10 tons. Conduct proof-rolling in presence of The Engineer. The Engineer will waive this requirement, if in its opinion the subgrade will be rendered unsuitable by such proof-rolling.

1. Confined Areas: Proof-roll with hand-operated vibratory equipment that is approved by The Engineer.

J. Perform overexcavation at The Engineer's request to remove unsuitable soil, objectionable material, or other materials as determined by The Engineer and to such depth and width as directed. Replace with suitable material as directed by The Engineer.

K. Perform excavation for pipelines beneath structures and excavation for footings with excavating equipment operating from the subgrade for the structure, while in-the-dry and in a manner preserving the undisturbed state of subgrade soils.

L. When excavations have reached the required subgrade, including any allowances for working mats or base materials and prior to their placement, notify soils testing laboratory to verify suitability of existing subgrade soils for anticipated foundation and structural loadings.

1. If existing subgrade soils are determined to be unsuitable, follow direction provided by The Engineer regarding removal and replacement with suitable materials.
2. Notify Engineer if the revised work scope would modify Contractor's cost and thereby entitle a change to the Contract Sum. Authorized additional excavation and replacement material will be paid for according to Contract provisions.

M. Replace overexcavation beyond the limits and depths required by Contract Documents using structural fill or other material satisfactory to The Engineer without additional compensation.

N. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Section 015000 "Temporary Facilities and Controls."

3.5 SUBGRADE PREPARATION

A. Notify Engineer when excavations have reached required subgrade.

B. Maintain excavated subgrade in-the-dry condition.

C. Prior to fill placement, remove objectionable material which includes, but not be limited to, pavement, topsoil, organic matter, contaminated soil, construction debris, perishable materials, snow, ice, frozen earth, and rocks or lumps of cemented soils over 6 inches in maximum dimension.

D. For subgrades consisting of granular soils, proof roll the final subgrade using at least four coverages of a vibrator plate compactor.

E. Where existing subgrade contains a significant amount of clay or cohesive soils, over-excavate sufficiently below the bottom of structure for placement of a lean concrete working mat. Remove loose or soft material from the subgrade immediately prior to placing lean concrete working mat.

F. Remove and replace soft subgrades or unusable material with structural fill or other material satisfactory to the.

G. During wet or freezing weather, or in areas where exposed subgrade consists of moisture-sensitive soils, take measures to protect foundation excavations once they have been approved by The Engineer. Protective measures include, but are not limited to, placing insulation blankets, placing a layer of fill, pea gravel, crushed rock, or lean concrete on the exposed subgrade, or covering the exposed subgrade with a plastic tent.

1. If additional overexcavation is required due to the subgrade not being protected against wet or freezing weather, perform additional work without additional compensation.

H. Notify The Engineer to observe conditions following subgrade preparation and prior to fill placement. If existing subgrade soils are determined to be unsuitable, follow direction provided by The Engineer regarding removal and replacement with suitable materials.

3.6 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. Protect from precipitation.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.7 FILL PLACEMENT AND COMPACTION PROCEDURES

A. Fill and Backfill: Place materials in lifts to suit specified compaction requirements to required lines and grades, making allowances for settlement and placement of cover materials, such as topsoil or sod. Correct soft spots or uncompacted areas.

B. Do not place or compact fill and backfill when materials are too wet to properly compact.

1. In-place Soil Moisture Content: Maximum of three percentage points above optimum moisture content of soil, as determined by laboratory test of moisture-density relation appropriate to specified level of compaction.

C. Structural Fill and Embankment Fill: Construct to required lines and grades, making allowances for settlement and placement of cover materials, such as topsoil and sod. Correct soft spots or uncompacted areas.

D. Fill material shall be free of snow, ice, frost, and frozen earth. Do not place fill materials on frozen surfaces or surfaces covered by snow, ice, or frost.

E. Complete structure water-tightness tests and installation of dampproofing or waterproofing systems prior to placing various types of fill or backfill around structures.

F. If subgrade slopes more than 10 percent, step subgrade to produce a stable, horizontal surface for placement of fill materials. Scarify existing subgrade slope to a depth of at least 6 inches.

G. Compact filled slopes by slope rolling and trimming, or overfill and trim back to plan grade to expose a firm, smooth surface free of loose material.

H. Do not allow fill lifts to contain stones with a dimension larger than 2/3 the specified loose measure lift thickness.

I. Perform compaction in open areas using compaction equipment by any of the following methods:

1. Fully loaded ten-wheel trucks or front-end loaders.
2. Tractor dozers weighing minimum of 30,000 pounds.
3. Heavy vibratory rollers.

J. Confined Compaction: Perform compaction in confined areas, including areas within a 45-degree angle extending upward and outward from the base of a wall, and in areas where the use of large equipment is impractical, using hand-operated vibratory equipment or mechanical tampers.

1. Do not exceed lift thickness of 6 inches, measured before compaction, when using hand operated equipment.

K. Moisture condition on-site fill material prior to placement, unless Contractor demonstrates to The Engineer in-place moisture conditioning methods can achieve the required moisture content.

L. Conduct compaction of each specified lift of fill materials by a minimum of four complete coverages with acceptable compaction equipment to a specified density as a percentage of maximum dry density as determined by ASTM D1557, unless otherwise specified.

M. Use structural fill required beneath foundations or slabs on grade, except sidewalks. Place and compact structural fill in even lifts having a maximum thickness of 8 inches, measured before compaction.

N. Use select fill and backfill material placed within 10 feet of all structures. Uniformly place and compact select fill around the structure in even lifts having a maximum thickness of 8 inches, measured before compaction.

O. Use common fill in areas beyond those designated for structural fill or select fill, unless shown or otherwise specified. Place in even lifts having a maximum thickness of 12 inches, measured before compaction.

P. Place impervious fill in controlled, even lifts having a maximum thickness (measured before compaction) of 6 inches.

1. Permeability: Compact to attain a reading of less than 1 x 10^{-7} cm/sec.
2. Moisture Content: Compact to optimum moisture content of minus 2 percent to plus 3 percent.

3.8 COMPACTION REQUIREMENTS

A. Perform in-place testing of compacted fill lifts to measure in-place density and water content according to ASTM D6938 and ASTM D1557.

B. Beneath Foundations and Slabs-on-Grade, except sidewalks: Compact top 12 inches of existing subgrade and each layer of fill, if applicable to:

1. Maximum Dry Density: Minimum of 95 percent for ASTM D1557.
2. Moisture Content: At or near its optimum moisture content of minus 2 percent to plus 3 percent.

C. Area Around Structures: Within 10 feet compact each fill or backfill layer to:

1. Maximum Dry Density: Minimum of 95 percent for ASTM D1557.
2. Moisture Content: At or near its optimum moisture content of minus 2 percent to plus 3 percent.

D. Embankments, Lawn, or Unimproved Areas: Does not include embankments under roadways and earth dam structures. Compact each fill or backfill layer to:

1. Maximum Dry Density: Minimum of 92 percent for ASTM D1557
2. Moisture Content: At or near its optimum moisture content of minus 1 percent to plus 4 percent.

E. Sidewalks: Compact each fill layer to:

1. Maximum Dry Density: Minimum of 95 percent for ASTM D1557.
2. Moisture Content: At or near its optimum moisture content of minus 2 percent to plus 3 percent.

F. Roads, Paved Areas, and Roadway Embankments: Compact each layer of fill or backfill to:

1. Maximum Dry Density: Minimum of 95 percent for ASTM D1557.
2. Moisture Content: At or near its optimum moisture content of minus 2 percent to plus 3 percent.

3.9 DISPOSAL OF UNSUITABLE, WASTE, AND SURPLUS EXCAVATED MATERIALS

A. Unsuitable soil, objectionable material, waste, and surplus excavated material shall be removed and disposed of off-site. Materials may be temporarily stockpiled in an area within the limits of construction that does not disrupt construction activities, create any nuisances or safety hazards, or otherwise restricts access to work site.

B. Topsoil or loam excavated under this Section may be salvaged for use as specified under Section 329200 "Turf and Grasses" as approved by The Engineer.

3.10 GRADING

A. Perform grading to lines and grades shown on Drawings. Remove objectionable materials encountered within the limits indicated and disposed of off-site. Completely and continuously drained and dewatered subgrades throughout the grading process. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the execution or condition of grading work.

B. If it is not possible at the time of grading to place material in its proper section of the Work, stockpile it in approved areas for later use. No additional compensation will be made for stockpiling or double handling of excavated materials.

C. In cut areas, remove loose or protruding rocks in slopes to line or finished grade of the slope. Uniformly dress, cut, and fill slopes to slope cross-section and alignment shown on Drawings, unless otherwise directed by The Engineer.

3.11 FIELD QUALITY CONTROL

A. Test and observe materials as described in this Article. Cooperate by allowing free access to work for selection of test materials and observations.

B. General Testing Requirements:

1. At Structures: Prior to placement of bedding material, concrete work mats, structural fill or structural concrete, coordinate with The Engineer to verify suitability of existing subgrade soil.
2. Backfill and Fill: Prior to and during the placement of backfill and fill coordinate with The Engineer and Soils Testing Laboratory to perform in-place soil density tests to verify that backfill and fill material has been placed and compacted in accordance with specified compaction requirements.

    a. Provide minimum 48 hours' notice prior to placement of backfill and fill.

3. Subgrade: Do not cover with fill without observation, testing, and approval by The Engineer.

    a. Earthwork activities performed without properly scheduled inspection are subject to removal and replacement or additional testing as directed by The Engineer without additional compensation.

C. Test materials by a certified independent laboratory, engaged by Contractor and acceptable to The Engineer, demonstrating conformance with project requirements. Deliver test reports and material certifications to The Engineer before using any material in the work.

D. If field test results are not in conformance with project requirements, costs involved in correcting deficiencies in compacted materials to satisfaction of The Engineer without additional compensation.

E. Earthwork activities performed without properly scheduled inspection are subject to removal and replacement or additional testing as directed by The Engineer without additional compensation.

F. Testing methods shall comply with latest ASTM or equivalent AASHTO Standards applicable during bidding.

G. During placement of bedding, backfill, and fill, perform in-place soil density testing to confirm that fill material has been compacted in accordance with project requirements. The Engineer may designate areas to be tested. Notify Engineer at least 72 hours in advance of scheduled compaction testing. In place soil density tests on backfill and fill material shall be as required by authorities having jurisdiction, , but in no instance, shall less than those listed:

1. Structures and Embankments: At least one density and moisture content test for each 2,500 square feet of surface area for each lift of fill at embankment, structure, and manhole locations.
2. Trench Excavations: At least one nuclear density and one moisture content test at a maximum of 50 feet intervals for each lift of fill placed or as directed by The Engineer.
3. The Engineer may designate supplemental areas to be tested at additional compensation.

H. Materials which have been previously tested may be subjected to further testing from time to time and may be rejected, if it is determined that results do not conform to project requirements. Immediately remove rejected materials when directed by The Engineer, notwithstanding results of previous testing.

I. The Engineer or Owner may conduct additional soil testing. Cooperate fully in allowing additional test to be made, including free access to the work.

J. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.

3.12 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by The Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION 312000

©2026 CDM Smith
All Rights Reserved

SECTION 312316 - ROCK REMOVAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Excavating, removing, and disposing of discovered rock and boulders during excavation.
2. Tools to assist rock removal.
3. Backfill in place of the excavated rock.

B. Related Requirements:

1. Section 310515 "Soils and Aggregates for Earthwork" for backfilling material.
2. Section 312000 "Earthwork" for excavation, backfilling, and filling operations.
3. Section 312333 "Trenching and Backfilling" for trenching and backfilling for utilities.
4. Section 312500 "Erosion and Sedimentation Controls."
5. Section 315000 “Excavation Support and Protection.”

1.3 DEFINITIONS

A. Rock: Intact mass of stone, bedrock, or ledgerock.

B. Boulder: Rock fragments exceeding 1 cubic yard in volume.

C. Rock Excavation: Removal of intact rock, which in The Engineer’s opinion cannot be removed by conventional mechanical excavation equipment and requires continuous, systematic drilling, blasting, wedging, sledging, cutting, barring, jack hammering, hoe ramming or expansive chemical splitting.

D. Boulder Excavation: Removal of non-intact boulders that can be removed by conventional mechanical excavation equipment.

E. Conventional Mechanical Excavation Equipment: Bulldozer, rock splitters, excavator, hoe ram, ripper, and/or tractor, drawing a single tooth hydraulic ripper with a minimum drawbar pull of 56,000 pounds.

F. Soil Excavation:

1. Rock fragments less than 1 cubic yard in volume that can be removed by conventional mechanical excavation.

2. Earth, weathered rock, and rock fragments that can be removed by conventional mechanical excavation.
3. Soil excavation includes excavation of earth materials that are not considered rock excavation or boulder excavation.

Loose or disintegrated rock, rotted shale, nested stones, hardpan, and like materials are not considered as rock or boulder.

G. Abutter: Owner of an adjoining property.

H. The Engineer: Engineer hired by Owner.

1.4 ACTION SUBMITTALS

A. Submit means and methods description at least two weeks prior to commencing rock and boulder excavation.

1. Identify techniques including size and energy of impact equipment and chemical properties of agents to be used for chemical splitting.
2. Name and qualifications of persons responsible for monitoring and reporting rock excavation vibrations.

B. Review by The Engineer of Contractor's submittals does not relieve Contractor of responsibility for accuracy, adequacy, and safety of rock and boulder excavation, exercising proper supervision and field judgment, and producing results specified in this Section.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Uncover rock when encountered, but do not excavate until measurements are made by The Engineer.

3.2 ROCK REMOVAL

A. Perform rock excavation by drilling, wedging, sledging, cutting, barring, jack hammering, hoe ramming, expansive chemical splitting, or other similar process in a manner, which does not cause damage to existing structures, new construction, or affecting Owner operations.

B. Blasting is not allowed.

C. Perform rock excavation operations to comply with project, state, and local noise and dust regulations.

D. When excavation methods shatter rock rendering it unfit for subgrade, as determined by The Engineer, remove rock and refill excavation with thoroughly compacted screened gravel, structural fill, or lean concrete without additional compensation.

E. When directed by The Engineer during the work, remove dirt and loose rock from designated areas and thoroughly clean rock surface; use steam to melt snow and ice, if necessary. Remove water in depressions so the whole surface of designated area can be inspected to determine whether seams or other defects exist.

F. Leave surfaces of rock foundations sufficiently rough to bond well with concrete. When required, cut rock to rough benches or steps.

G. Before installing masonry or embankment on or against rock, free rock surfaces from vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Use picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means to accomplish this cleaning. Remove free water left on rock surface.

3.3 BOULDER EXCAVATION

A. Boulder and rock fragments up to 1 cubic yard in volume may be reduced in size by rock excavation methods to simplify its removal.

3.4 VIBRATION MONITORING

A. Conduct vibration monitoring according to requirements specified in Section 310900 “Geotechnical Instrumentation and Monitoring.”

3.5 DISPOSAL OF ROCK AND BOULDERS

A. Fragmented rock with dimensions not exceeding 6 inches in any direction may be mixed with common fill and used as common fill in accordance with Section 310515 "Soils and Aggregates for Earthwork."

B. Crushed and screened rock and boulders may be reused, provided resultant materials meet requirements for gravel, crushed stone, or structural fill as specified in Section 310515 "Soils and Aggregates for Earthwork."

C. Stockpile excavated material without excessive surcharge on excavation or obstructing free access to hydrants and gate valves. Avoid inconvenience to traffic and abutters as much as possible.

D. Should conditions make it impracticable or unsafe to stack material adjacent to excavations, haul and store material at provided location. When required, re-handle and use it for trench backfilling without additional compensation.

E. Replace rock and boulder material disposed of by wasting using available surplus suitable soils. Where there is a deficiency of surplus backfill material, provide common fill without additional compensation.

©2026 CDM Smith
All Rights Reserved

F. Remove and dispose off-site unused rock and boulders.

END OF SECTION 312316

©2026 CDM Smith
All Rights Reserved

SECTION 312319 – DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes delegated design of temporary construction dewatering and surface water control and incorporates the design, equipment, materials, installation, operation, protection, monitoring and removal of dewatering and drainage system. Provide dewatering system sufficient to lower groundwater and collect surface water, regardless of groundwater level or rainfall at any time during the work.

B. Trench excavations for the installation of the sewer pipe may encounter groundwater. Groundwater elevations are summarized in Appendix A.

C. If dewatering is required, groundwater will require sampling and characterization by the Contractor in order to determine the applicable dewatering discharge permit(s) and potential treatment. Obtain all permits and comply with conditions and terms of the applicable CT DEEP permit or permits required for temporary construction dewatering and drainage systems and their discharges. Applicable permits may include:

1. CT DEEP General Pretreatment Permit for Significant Industrial User, Dewatering, and Remediation Discharges (SIU GP, Permit ID CTSIU0000 and CTDRW0000), as amended, and/or
2. CT DEEP General Permit for the Discharge of Dewatering and Remediation Wastewaters (Permit ID CTDRGP000), as amended, and/or
3. CT DEEP National Pollutant Discharge Elimination System General Permit for the Discharge of Stormwater from Construction Activities (Permit ID CTR10000), as amended.

The Contractor shall be responsible for determining the discharge point(s) as part of the permitting process while determining applicable permit(s), screening and monitoring requirements, and any potential ineligibilities.

D. Abide by all Federal, State, and local requirements when performing any dewatering and drainage work.

E. If treatment is required, design, furnish, install, operate, and maintain a portable groundwater treatment system to maintain dewatering effluent in accordance with the applicable permit(s) effluent limits and this Specification for the types of contaminants and flow volumes encountered. Collect and properly dispose of all spent treatment media and other treatment related waste streams.

F. Collect and properly dispose of all discharge water from the dewatering and drainage systems in accordance with the requirements specified herein, and all Federal, State and local requirements and permits.

G. Protect all wetlands and sensitive areas from siltation and erosion during any dewatering and drainage operations.

H. Retain the services of a Professional Engineer registered in the State of Connecticut to prepare dewatering and drainage system designs and submittals described herein.

I. Related Requirements:

1. Section 013233 "Photographic Documentation" for recording preexisting conditions and dewatering system progress.
2. Section 310515 "Soils and Aggregates for Earthwork" for filter sand.
3. Section 310519 “Geotextiles for Earthwork” for filter fabric materials.
4. Section 310900 “Geotechnical Instrumentation and Monitoring” for monitoring.
5. Section 312000 "Earthwork" for excavating, backfilling.
6. Section 312316 "Rock Removal" for removal of rock and boulders.
7. Section 312333 "Trenching and Backfilling" for trenching, backfilling, and compaction.
8. Section 312500 "Erosion and Sedimentation Controls" for controlling surface-water runoff and sedimentation.
9. Division 32 "Site Improvements" for various Sections relating to civil and landscape related work.

1.3 DEFINITIONS

A. In-the-Dry: An excavation subgrade where all of the following are met:

1. Groundwater level has been lowered to at least 2 feet below lowest excavation level.
2. Subgrade is stable with no ponded water, mud, or muck.
3. Subgrade is able to support construction equipment without rutting or disturbance.
4. Subgrade is suitable for placement and compaction of fill material, pipe, or concrete foundations.

B. Contractor’s Engineered Design: Design prepared on behalf of Contractor by a registered Professional Engineer.

C. CT DEEP: Connecticut Department of Energy and Environmental Protection as the regulatory authority for dewatering discharge permits.

D. Professional Engineer: Registered Professional Engineer meeting project qualifications and who is hired by Contractor.

E. The Engineer: Engineer hired by Owner.

1. Approvals given by The Engineer shall not relieve Contractor of its responsibilities for performing the work in accordance with Contract Document requirements.

1.4 DELEGATED DESIGN SUBMITTALS

A. Design Plan: Submit written dewatering and drainage system design plan, prepared by a qualified Professional Engineer registered in the State of Connecticut, that includes:

1. Description of proposed dewatering system and installation methods to be used for system elements.
2. Description of equipment, drilling methods, holes sizes, filter sand placement techniques, sealing materials, development techniques, number and location of dewatering points.
3. Dewatering system design calculations demonstrating that the proposed system meets all requirements herein and elsewhere.
4. Sequence of well and well-point placement coordinated with support of excavation system installation and control procedures to be adopted if dewatering problems arise.
5. Identification of anticipated area influenced by dewatering system and address impacts to adjacent existing and proposed structures.

    a. Include detailed plans for pre-construction surveys of existing structures in vicinity of dewatering system, settlement monitoring of existing structures during construction, and provisions to address settlement of existing structures resulting from dewatering activities.

6. Coordinate dewatering and drainage submittals with excavation and support of excavation submittals.

B. Shop Drawings: For dewatering system, prepared by a qualified Professional Engineer.

1. Include plans, elevations, sections, and details.
2. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
3. Include pump capacity and anticipated discharge rate.
4. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
5. Show areas and depths of excavation to be dewatered and adjacent structures or facilities within the anticipated area influence.

C. If needed, at least 4 weeks prior to the start of construction, the contractor shall submit a detailed groundwater treatment system design plan. The plan shall include a description of the proposed groundwater treatment system capable of processing the encountered volumes and removing sediment and any other pollutants to below the required discharged limits, shop drawings, and a written description of the installation of operation methods of the proposed groundwater treatment system.

D. At least 90 days before anticipated dewatering, submit draft of permit application forms/registrations before submittal to regulatory authority.

E. Submit final permit application/registrations and regulatory approvals.

F. Do not proceed with any excavation to dewatering activities until the dewatering submittals have been approved by the Engineer.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, land surveyor, and Professional Engineer.

B. Field quality-control reports.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

D. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

E. Discharge sampling log, testing results of effluent samples and flow rate record.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in installation of dewatering systems and dewatering work and having a minimum of 5 years' experience.

B. Professional Engineer Qualifications: Licensed Professional Engineer registered in the State of Connecticut; having a minimum of 5 years' experience in design and construction of dewatering and drainage systems; and having completed not less than 5 successful dewatering and drainage projects of equal type, size, and complexity to that required for the work.

C. Land Surveyor Qualifications: Land Surveyor licensed in the State of Connecticut.

D. Comply with authorities having jurisdiction for the following:

1. Drilling and abandoning of wells used for dewatering systems.
2. Water discharge and disposal from dewatering operations.

E. Obtain permit(s) from CT DEEP for storm water discharge from construction sites.

1.7 FIELD CONDITIONS

A. Project-Site Information: Soil test borings and probes logs have been prepared for this Project and are available for information only. The Contractor is responsible for their own interpretations and conclusions based on their review of this data. Boring logs and well gauging tables are provided in Appendix A.

1. Make additional test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.
2. Groundwater levels may vary during the work and should not be assumed to be accurately represented by groundwater levels reported in the geotechnical data.

B. Survey Work: Engage a qualified land surveyor or Professional Engineer to survey adjacent existing buildings, structures, and site improvements within 50 feet of the anticipated area of influence of the dewatering system; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of surface and ground water and permit excavation and construction to proceed in-the-dry in accordance with the requirements herein and elsewhere.

1. Design dewatering system, including comprehensive engineering analysis by the Contractor's Design Engineer.
2. Continuously monitor and maintain dewatering operations to ensure required groundwater lowering, erosion control, stability of excavations, excavation support, and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
3. Prevent surface water from entering excavations by grading, dikes, or other means.
4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
5. Remove dewatering system when no longer required for construction.

B. Primary Purpose of Work: Preserve natural undisturbed condition of subgrade soils in areas of proposed excavations.

1. Dewatering may be necessary during trenching for installation of the sewer pipe in select locations. Prior to excavation, lower groundwater to at least 2 feet below lowest excavation subgrade elevation.
2. Additional groundwater lowering may be necessary beyond 2 foot requirement, depending on construction methods, equipment used, and prevailing groundwater and soil conditions. Lower groundwater as necessary to complete construction in accordance with Contract Documents without additional compensation.

C. Design deep wells, well points and sumps, and other groundwater control system components to prevent loss of fines from surrounding soils. Use sand filters with dewatering installations, unless screens are properly sized by Contractor's design engineer to prevent passage of fines from surrounding soils.

D. Maintain standby pumping systems and sources of standby power at various sites.

E. Design dewatering system to prevent damage to adjacent properties, buildings, structures, utilities, and facilities from dewatering operations. Be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements, and work that may result from dewatering or surface water control operations.

F. At a minimum, provide means and measures to maintain total suspended solids and pH within applicable CT DEEP permit requirements. The Contractor shall, as necessary, use sedimentation tanks, sand filters, bag filters, or the combination thereof to control suspended solids.

G. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

H. The Contractor shall be responsible for meeting all applicable CT DEEP discharge permit(s) requirements.

2.2 MATERIALS

A. Materials shall be of suitable size, capacity, and type to pump, store, manage, treat, and discharge excavation dewatering effluent and to maintain groundwater levels as specified in this Section.

B. Equipment: Piping, pumping, and other equipment and materials to provide control of surface water and groundwater in excavations.

C. Grout: Mixture of portland cement and bentonite clay or sand suitable for sealing abandoned wells and piping.

2.3 PORTABLE GROUNDWATER TREATMENT SYSTEM

A. Materials and equipment shall be of suitable size, capacity, and type to pump, store, manage, treat, and discharge excavation dewatering effluent and to maintain groundwater levels as specified in this Section.

B. Materials and equipment shall be of appropriate type and maintained in good working order at all times during the course of the Work. Leaks or spills shall be immediately fixed and/or cleaned.

C. As applicable, treatment shall be of sufficient size and capacity to handle the dewatering flows, and to reduce suspended materials in the excavation dewatering effluent in accordance with all permits obtained for the Project. Sedimentation tanks shall contain baffles to reduce velocities and allow sediment to settle inside of them.

D. pH neutralization systems, if needed, shall be of sufficient size and capacity to handle the dewatering flows, and to maintain pH of the dewatering effluent in accordance with the applicable CT DEEP discharge permit(s). The pH fluctuation of the effluent shall be maintained within the permit limit range.

PART 3 - EXECUTION

3.1 GENERAL

A. Control surface water and groundwater such that:

1. Excavation to final grade is made in-the-dry.
2. Natural undisturbed conditions of subgrade soils are maintained.
3. Softening, instability, or disturbance due to presence or seepage of water does not occur.
4. Construction and backfilling proceeds in-the-dry.
5. Floatation of completed portions of work shall be prohibited.

B. Methods of groundwater control may include but are not limited to perimeter trenches and sump pumping, perimeter groundwater cutoff, well points, ejectors, deep wells, or any combination.

C. Where groundwater levels are above proposed bottom of excavation level, provide a pumped dewatering system for pre-drainage of soils prior to excavation and for maintaining lowered groundwater level until construction has been completed such that structure, pipeline, or fill will not be floated or otherwise damaged.

D. Vary type of system, spacing of dewatering units, and other details of the work depending on soil and water conditions at each location.

E. Do work in a manner to protect adjacent structures and utilities without causing loss of ground or disturbance to pipe bearing soils or soils supporting overlying or adjacent structures.

F. Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area or interfere with installation and monitoring of geotechnical instrumentation. Do not make excavations for sumps or drainage ditches within or below 1H:1V slopes extending downward and out from edges of existing or proposed foundation elements or from downward vertical footprint of pipe without approval by the Engineer.

G. The impact of anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and dewatering and drainage systems.

H. Provide backup power generation and groundwater control system components as necessary.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Protect and maintain temporary erosion and sedimentation controls, which are specified in 312500 “Erosion and Sedimentation Controls” and Section 311000 "Site Clearing," during dewatering operations.

3.3 INSTALLATION

A. Install dewatering system utilizing, as necessary, the following components: wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.

C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.4 SURFACE WATER CONTROL

A. Construct surface water control measures, including dikes, ditches, sumps and other methods to prevent flow of surface water into excavations and to allow construction to proceed without delay.

B. Grade excavation to divert surface water and seepage water within excavation areas into sumps and dewatering wells.

3.5 SYSTEM INSPECTION AND MONITORING

A. Contractor shall visually inspect the dewatering system, discharge outlet and, if needed, portable groundwater treatment system, at least twice daily for evidence of odor, color, solids, oily sheen or excessive turbidity. Written inspections logs shall be maintained on-site and provided to the Engineer.

B. Any evidence of an odor, color, solids, or oily sheen or discharge resulting in excessive turbidity shall be immediately reported to the Engineer. Immediately take all reasonable actions to correct and mitigate any violations of effluent limitations or any other condition of the discharge permit(s).

C. Perform influent screening and effluent monitoring as specified in the applicable DEEP discharge permit(s).

1. When requested by the Engineer to determine the need for further treatment, perform laboratory analysis on a 48-hour turnaround basis.
2. The cost for all sampling and laboratory analysis shall be paid by the contractor.

D. All laboratory testing shall be performed by a state-certified laboratory and in accordance with the latest versions of the approved EPA test methods in 40 CFR 136, capable of achieving quantification levels below the effluent limits established by the discharge permit(s).

3.6 EXCAVATION DEWATERING

A. As necessary, provide and maintain equipment and facilities to promptly remove and properly dispose of water entering excavations. Maintain excavations in-the-dry.

B. Excavation dewatering shall maintain the subgrade in a natural undisturbed condition and be in operation until the fill, structure or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

C. Do not place pipe, masonry, and concrete in water or submerge within 24 hours after being installed. Prevent water from flow over new masonry or concrete within four days after placement.

D. Prevent water from rising to cause unbalanced pressure on structures until concrete or mortar has set at least 24 hours. Prevent pipe flotation by promptly placing backfill.

E. Conduct dewatering to preserve natural undisturbed condition of subgrade soils at bottom of excavation.

F. If trench subgrade or excavation bottom becomes disturbed due to inadequate dewatering or drainage, excavate below normal grade as directed by the Engineer and refill with structural fill, screened gravel, or other material as approved by the Engineer without additional compensation.

G. It is expected that initial dewatering plan may be modified to suit variable soil and water conditions encountered. Dewater and excavate in a manner without causing loss of ground or disturbance to pipe bearing soil or soil that supports overlying or adjacent structures or instability of excavation conditions.

H. If methods do not properly dewater excavation, install groundwater observation wells as directed by the Engineer. Do not place pipe or structure until readings obtained from observation wells indicate that groundwater has been lowered to specified minimum of below bottom of final excavation.

I. Surround dewatering units with suitable filter material with no fines being removed by pumping. Pump continuously from dewatering system until pipe or structure is adequately backfilled. Provide stand-by pumps.

J. Collect water entering excavations from precipitation or surface runoff in shallow ditches around excavation perimeter, drain to a sump, and pump from excavation to maintain a bottom free from standing water.

K. Do not discharge dewatering effluent or drainage into new or existing sanitary sewers or storm drains, unless approved by the Engineer, Owner, and the applicable permitting authorities to dispose of drainage.

3.7 GROUNDWATER TREATMENT

A. If necessary, treat dewatered groundwater to meet the discharge requirements and effluent limits of the applicable construction dewatering permit, other Contractor obtained discharge permit(s) and/or disposal facility requirements.

1. Treat contaminated groundwater as necessary to meet the discharge requirements and effluent limits of the applicable construction dewatering permit, or other Contractor obtained discharge permit.
2. At a minimum, treat, as applicable, for sediment removal using treatment techniques that may include separators, settling tanks, and/or filters to remove solids to meet the treatment standards required in the applicable CT DEEP discharge permit.
3. Provide a temporary on-site groundwater treatment and discharge system consisting of equipment, flow control values, piping and water quality sampling ports, properly sized for the anticipated flows from the dewatering system designed by the Contractor.
4. At no additional cost to the Owner, the Contractor shall obtain all required permits not contained herewith and pay all fines when in violation of the permits.
5. Analytical reports, with quality control information, are to be reported to the Engineer as required by applicable permit(s).

B. Provide CT DEEP and the Engineer one week notice of system start-up.

C. Protect against system failure, vandalism, or other incidents that may result in discharges in exceedance of applicable permit(s) threshold.

D. Inspect, monitor and maintain the treatment system at regularly scheduled intervals as determined by site specific conditions, manufacturer specifications, and best professional judgment.

E. Collect and properly dispose of any treatment residues including sludge, sediments, media, or free-phase products.

F. Discharge of any groundwater into any location without a permit or in a manner inconsistent with the federal, state, and local requirements is strictly prohibited.

G. Clean and remove portable groundwater treatment system when no longer needed.

H. Measure and maintain flow and system logs in accordance with applicable permit requirements.

I. Laboratory Analysis of Discharge:

1. Collect any samples requiring laboratory analysis. All dewatered groundwater shall be laboratory tested as required by the permitting authority or other authorization to verify that the discharge water is meeting the necessary discharge requirements. Coordinate the collection of these samples with the Engineer.

J. The Contractor shall be responsible to adapt and modify the dewatering system and treatment system as required to the meet the requirements of the applicable permit or other authorization. Immediately cease discharging effluent and notify the Engineer if one of the conditions outlined below occurs.

1. Discharge of oil or hazardous materials sufficient to cause a sheen (as defined in 40 CFR 110) is observed.
2. Upon discovery, through monitoring, that the effluent is not in compliance with permit requirements.

K. Pay for all fines, penalties and other costs associated with non-compliance of the permits at no additional cost to the Owner.

3.8 WELL-POINT SYSTEMS

A. Where necessary, install a vacuum well-point system around excavation for dewatering purposes. Surround each well-point and riser pipe by a sand or gravel filter. Use sand of gradation that after initial development of well-points, quantity and size of soil particles discharged shall be negligible. Provide well-point systems capable of operating continuously under highest possible vacuum. Include sufficient valves and gauges to accurately monitor and control the system. Develop and redevelop well-points to provide reliable performance throughout the duration of the work.

B. Install well point systems in the Engineer’s presence according with approved submittal.

3.9 DEEP WELLS

A. Where necessary, install a deep well system around an excavation to dewater or depressurize it. Surround each well with a sand or gravel filter having adequate gradation so quantity and size of soil particles discharged are negligible. Install sufficient number of wells to lower or depressurize groundwater level allowing excavation to proceed in-the-dry. Develop and redevelop wells as necessary to provide reliable performance throughout the duration of the work.

B. Install deep wells in the Engineer’s presence according with approved submittal.

3.10 REMOVAL OF SYSTEMS

A. At completion of excavation and backfilling work and when approved by the Engineer, remove from site various pipe, deep wells, well-points, pumps, generators, other equipment, and accessories used for groundwater and surface water control systems.

1. Removed materials and equipment become property of Contractor.

B. Restore areas disturbed by installation and removal of groundwater control systems to their proposed condition.

C. Leave in place deep wells casings and well-points located:

1. Within plan limits of structures or pipelines.
2. Within zone below 1H:1V planes extending downward and out from edges of foundation elements or from downward vertical footprint of pipe.
3. Where removal would result in ground movements causing adverse settlement to adjacent ground surface, utilities, or existing structures.

D. Fill pulled casings holes with sand. Where left in place, fill casings with cement grout and cut off a minimum of 3 feet below finished ground level or 1 foot below foundation level to prevent interference with finished structures or pipelines.

3.11 DISPOSAL OF DRAINAGE

A. Water removed or diverted from excavations must not be allowed to cause nuisance or damage to traffic or any public or private property or service or to cause damage to the environment or pollution to the waters of the state. Dispose of drainage so that flow or seepage back into the excavated area will shall be prevented.

B. Drainage shall be disposed of in accordance with Contractor's approved plan .

C. Drainage and excavation dewatering groundwater shall be treated for sediment removal and discharged in an accordance with the Contractor's approved plan and area in accordance applicable regulatory permits with the applicable CT DEEP permits.

3.12 DISPOSAL OF CONSTRUCTION DEWATERING DISCHARGE

A. Obtain and pay for permits required for dewatering and drainage systems and discharges. Implement measurements to comply with dewatering and discharge permits requirements.

B. If dewatering is required, groundwater will require sampling and characterization by the Contractor in order to determine the applicable dewatering discharge permit(s) and potential treatment. The Contractor shall be responsible for determining the discharge path(s) as part of the permitting process while determining applicable permit(s) and any potential ineligibilities.

C. Contractor shall be responsible for obtaining all necessary approvals and permitting requirements for discharge.

D. Dewatering discharge shall be disposed of in accordance with Contractor's approved plan.

E. All necessary precautions to prevent the discharge of water contaminated with oil or hazardous materials shall be made. Excavation dewatering groundwater shall be treated for sediment removal and discharged in an approved area in accordance with the applicable CT DEEP permits.

END OF SECTION 312319

©2026 CDM Smith
All Rights Reserved

SECTION 312333 - TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes delegated design of trench excavation and support, backfilling, and compaction.

B. Related Requirements:

1. Section 026110 “Excavation and Management of Soils.”
2. Section 028100 “Transportation and Disposal of Excavated Material.”
3. Section 310515 "Soils and Aggregates for Earthwork" for materials used as backfill and for sheeting and bracing.
4. Section 310519.13 "Geotextiles for Earthwork" for subsurface drainage geotextiles.
5. Section 312000 "Earthwork" for related earthwork activities.
6. Section 312316 "Rock Removal" for rock and boulder excavation.
7. Section 312319 "Dewatering" for dewatering and drainage.
8. Section 312500 "Erosion and Sedimentation Controls" to prevent erosion, sedimentation, and contamination of adjacent properties.
9. Section 315000 “Excavation Support and Protection.”
10. Section 329200 "Turf and Grasses."
11. Section 333113 "Public Sanitary Utility Sewerage Piping."
12. Section 333126 “Sanitary Pressure Sewer Piping.”
13. Section 333400 "Sanitary Utility Sewerage Force Mains."

1.3 DEFINITIONS

A. Percent Compaction: Means at least the stated percentage of maximum density as determined by ASTM D1557.

1.4 ACTION SUBMITTALS

A. Submit proposed method of backfilling and compaction prior to start of Work.

1.5 DELEGATED DESIGN SUBMITTALS

A. Submit method of trench excavation and support, where necessary, including design of sheeting and bracing with calculations signed and sealed by qualified professional engineer responsible for their preparation.

B. Qualifications Statement: Submit qualifications for licensed professional.

1.6 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For material excavated from trench for re-use as backfill, by a qualified testing agency.

1.7 QUALITY ASSURANCE

A. Comply with following regulations:

1. Occupational Safety and Health Administration (OSHA): 29 CFR Part 1926 Subpart P.

B. Professional Engineer Qualifications: Licensed Professional Engineer experienced in design of specified Work and licensed in the jurisdiction of Project location; having a minimum of 5 years' experience in design and construction of trench excavation and support.

C. Provide excavation, trenching, related sheeting, bracing, and related materials to comply with requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P) and State requirements. Where conflict exists between OSHA and State regulations, more stringent requirements apply.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store excavated materials according to Section 312500 "Erosion and Sedimentation Control" to prevent erosion of soil type materials and contamination of adjacent water sources.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design trench excavation and support.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine that erosion and sedimentation controls are in place and comply with project requirements and authorities having jurisdiction.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Where excavation activities occur across active vehicular or pedestrian circulation paths, use temporary controls specified in Division 01 to maintain circulation during operations required by this Section. Maintain temporary controls for each day circulation paths are restricted.

B. Coordinate work of this Section with materials specified in other Sections of Division 31.

C. Identify required lines, levels, contours, and datum locations.

D. Protect features to remain-in-place including benchmarks, existing structures, sidewalks, paving, curbs, etc. from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

3.3 TRENCH EXCAVATION

A. Trench excavation includes material of every description and substance encountered, except rock and boulders. Refer to Section 312316 "Rock Removal" for excavation of those materials.

B. Cut rigid and flexible pavement with a saw, wheel, or pneumatic chisel along straight lines before excavating.

C. Strip and stockpile topsoil from grassed areas crossed by trenches.

1. At Contractor's option when required, topsoil may be disposed of and replaced with approved topsoil of equal quality.

D. While excavating and backfilling is in progress, maintain traffic and protect utilities and other property.

E. Excavate trenches to indicated depths and in widths sufficient and of practical minimum for pipe laying, bracing, and pumping and drainage facilities.

F. Accomplish excavation and dewatering by methods preserving undisturbed state of subgrade soils. Excavate trench by machinery to or just below designated subgrade, if material remaining in trench bottom is no more than slightly disturbed.

1. Remove subgrade soils that become soft, loose, quick, or otherwise unsatisfactory due to inadequate excavation, dewatering, or other construction methods and replace with screened gravel fill acceptable to the Engineer at Contractor's expense.

G. Use care when working in clay and organic silt soils, which are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth-edge bucket to excavate the last 12 inches of depth.

H. Where pipe is to be laid in screened gravel bedding, excavate trench by machinery to normal depth of pipe, provided material remaining in trench bottom is no more than slightly disturbed.

I. Where pipe is to be laid directly on trench bottom, manually perform final excavation, providing a flat-bottom, true to grade upon undisturbed material. Make bell holes required by project conditions.

3.4 DISPOSAL OF MATERIALS

A. Remove existing pavement from site and dispose of or recycle in accordance with applicable State of Connecticut requirements.

B. Stack excavated material without excessive surcharge on trench bank or obstructing free access to hydrants and gate valves. Avoid inconvenience to traffic and abutters. Segregate excavated material for use in backfilling as specified below and in Sections 026110 and 028110.

C. Do not remove excavated material from work site, except as directed by the Engineer. When removal of surplus materials is approved by the Engineer, dispose of such surplus material in approved designated areas.

D. Should conditions make it impracticable or unsafe to stack material adjacent to trench, haul and store material at a location provided. When required, re-handled and use it in backfilling trench.

3.5 SHEETING AND BRACING

A. Provide and maintain sheeting and bracing required by Federal, State, or local safety requirements to support sides of excavation and prevent loss of ground which could endanger personnel, damage, adjacent structures, or delay the work. Refer to Section 315000 for Excavation Support and Protection requirements.

1. Engineer may order additional supports placed at Contractor’s expense if it is determined that at any point sufficient or proper supports have not been provided. Compliance with such order shall not relieve Contractor from their responsibility for sufficiency of such supports. Take care to prevent voids outside of sheeting; if voids are formed, immediately fill and ram them.

B. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support trench sides, take care in placing and moving the boxes or supporting bracing to prevent pipe movement, disturbance of pipe bedding, or screened gravel backfill.

1. Rigid Pipe Installation (such as R.C., V.C., A.C.): Raise that portion of box extending below mid-diameter above this point prior to moving box ahead to install next pipe. Perform to prevent separation of installed pipe joints due to box movement.
2. Flexible Pipe Installation (such as PVC): Do not allow trench boxes, moveable sheeting, shoring, or plates to extend below mid-diameter of pipe. As trench boxes, moveable sheeting, shoring, or plates are moved, place screened gravel to fill voids created. Re-compact screened gravel and backfill to provide uniform side support for pipe.

C. Engineer may give permission to use steel sheeting in lieu of wood sheeting for entire project wherever sheeting use is necessary. Include cost for use of sheeting in bid items for pipe, including full compensation for driving, bracing, and later removal of sheeting.

D. Carefully remove sheeting and bracing in manner to not endanger construction of other structures, utilities, or property, whether public or private. Immediately refill voids left after withdrawal of sheeting using sand by ramming with tools especially adapted to that purpose and watering or otherwise directed by the Engineer.

E. No payment will be given for sheeting, bracing, or other support during progress of the work. No payment will be given for sheeting left in trench for Contractor's convenience.

F. Leave sheeting driven below mid-diameter of pipe in place from driven elevation to at least 12 inches above top of pipe.

3.6 TEST PITS

A. Excavation of test pits may be required for purpose of locating underground utilities or structures as an aid in establishing the precise location of new work.

B. Backfill test pits as soon as desired information has been obtained. Maintain backfilled surface appropriate for travel until resurfaced.

3.7 EXCAVATION BELOW GRADE AND REFILL

A. Drain trench completely and effectively be in-the-dry, whatever the nature of unstable material encountered or groundwater conditions.

B. If Contractor excavates below grade through error or for their own convenience, through failure to properly dewater the trench, or disturbs subgrade before dewatering is sufficiently complete, the Engineer may direct Contractor to excavate below grade as set forth in following Paragraph, where work shall be performed at its own expense.

C. If material at trench bottom consists of fine sand, sand and silt or soft earth which may work into the screened gravel, even with effective drainage, remove subgrade material to extent directed. Refill excavation with a 6 inch layer of coarse sand or a mixture graded from coarse sand to fine pea stone to form a filter layer preserving voids in pipe gravel bed. Composition and gradation of gravel shall be approved by the Engineer prior to placement. Place screened gravel in 6 inch layers thoroughly compacted up to normal grade of pipe. If directed by the Engineer, use bank-run gravel for refill of excavation below grade.

3.8 BACKFILLING

A. Begin backfilling as soon as practicable after laying and jointing pipe and continue expeditiously. Place bedding gravel of specified type for pipe installed up to 12 inches over the pipe.

B. Construct an impervious dam or bulkhead cutoff of clay or other impervious material in the trench, as directed by the Engineer, to interrupt unnatural flow of groundwater after construction is completed. Key dam into trench bottom and sidewalls. Provide at least one clay or other impervious material dam in pipe bedding between each manhole where directed or every 300 feet, whichever is less.

C. Where pipes are laid cross-country, fill remainder of trench with common fill material in layers not to exceed 12 inches and mounded 6 inches above existing grade or as directed by the Engineer. Where a loam or gravel surface exists prior to cross-country excavations, remove, conserve and replace it to full original depth as part of the work under pipe items. Where necessary, remove excess material during clean-up process, so that ground may be restored to its original level and condition.

D. Where pipes are laid in Town streets, backfill remainder of trench up to a depth of 12 inches below bottom of specified permanent paving with select common fill material in layers not to exceed 12 inches and thoroughly compacted. Use processed aggregate base for subbase layer of paving and compact in 6 inches layers.

E. Where pipes are laid in State roads, backfill remainder of trench up to a depth of 12 inches below bottom of specified permanent paving with granular fill in layers not to exceed 12 inches and thoroughly compacted. Use processed aggregate base for subbase layer of paving and compact in 6 inches layers.

F. To prevent longitudinal pipe movement, do not dump backfill material into trench and then spread, until selected material or screened gravel has been placed and compacted to a level at least 12 inches over the pipe.

G. Bring backfill up evenly on all sides. Thoroughly compact each layer of backfill material by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping to 95 percent compaction according to ASTM D1557 or 98 percent according to ASTM D698. If rolling, use a suitable roller or tractor being careful to compact fill throughout full width of trench.

H. Do not compact by puddling or water jetting.

I. Use hand or pneumatic ramming with tools weighing at least 20 pounds for compacting in confined areas. Spread and compact material in layers not exceeding 6 inches thick, an uncompacted loose measurement.

J. Use granular fill material as backfill around structures. Spread and compact specified backfill under and over pipes connected to structures.

K. Do not place bituminous paving in backfill. Do not use frozen material under any circumstances.

L. Broom and hose-clean road surfaces immediately after backfilling. Employ dust control measures throughout construction period.

3.9 RESTORING TRENCH SURFACE

A. Where trench occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, thoroughly consolidate backfill and maintain surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore ground level.

B. Restore surface of driveways or other areas which are disturbed by trench excavation to a condition at least equal to that existing before work began.

C. In areas where pipeline passes through grassed areas, remove and replace sod or loam and seed surface at Contractor's own expense.

END OF SECTION 312333

©2026 CDM Smith
All Rights Reserved

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sediment Fences.
2. Construction Entrances.
3. Filter Bags.
4. Erosion Control Blanket.
5. Compost Filter Sock

B. Related Sections:

1. Section 033000 "Cast-In-Place Concrete."
2. Section 310515 "Soils and Aggregates for Earthwork."
3. Section 311000 "Site Clearing."
4. Section 312000 "Earthwork"
5. Section 321216 "Asphalt Paving."
6. Section 329200 "Turf and Grasses."

1.3 PRE-INSTALLATION MEETINGS

A. Convene minimum one week prior to commencing work of this section.

1.4 ACTION SUBMITTALS

A. Submit, within 10 days after award of Contract, technical product literature for all commercial products.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

C. Certificate: Certified statement as specified in “Erosion Control Blanket” Article.

1.5 INFORMATIONAL SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPPP) as specified in “Quality Assurance” article.

B. Copy of EPA NPDES Notice of Intent to Discharge submitted to the EPA as specified in "Quality Assurance" article.

1.6 QUALITY ASSURANCE

A. Adhere to EPA document "Stormwater Management for Construction Activities – Developing Pollution Prevention Plans and Best Management Practices" document number EPA 832-R-92-005, dated 1992, or most recent edition. State or appropriate Conservation Commission standards can be substituted for the EPA standard if the State or Conservation Commission standard is equal to, or more detailed than, the EPA standard.

B. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) General Permit applicable to this work) document number EPA 832-R-92-005, dated 1992, or most recent edition.

C. Prepare and submit the EPA NPDES Notice of Intent to Discharge to the applicable EPA office in accordance with EPA regulations.

D. Perform Work in accordance with Connecticut Guidelines for Soil Erosion and Sediment Control.

E. Maintain one copy of each document on site.

PART 2 - PRODUCTS

2.1 SILT FENCE

A. Silt fence filter fabric shall be a woven, polypropylene, ultraviolent resistant material meeting minimum requirements below:

Fabric Properties	Min. Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D4632/ D4632M
Elongation at Failure (%)	20	ASTM D4632/ D4632M
Mullen Burst Strength	300 psi	ASTM D3786/ D3796M
Puncture Strength (lbs)	60	ASTM D4833/ D4833M
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D4533/ D4533M
Flow through Rate (gal/min/sf)	25	ASTM D4491/ D4491M
Equivalent Opening Size	40 – 80	US Std Sieve ASTM D4751
Minimum UV Residual (%)	70	ASTM D4355/ D4355M

B. Products: Provide one of the following:

1. "Mirafi FW402," by TenCate Geosynthetics.
2. "Carthage 15%," by Carthage Mills.

3. "HSP2." by ACF Environmental, Inc.
4. American Textile & Supply, Inc.
5. BMP Supplies Inc.
6. Ten Cate Nicolon.
7. US Silt & Site Supply.Or equal.

C. Posts: Constructed of hardwood with minimum diameter thickness of 1.5 inches (38 mm).

D. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32 inch diameter soft aluminum wire.

2.2 FILTER BAGS AND CATCH BASIN FILTERS

A. Filter Bags: Sized with manufacturer recommendations based on pumped discharge rate or catch basin size, as applicable.

B. Geotextile Material for Bags: Meet the following minimum requirements:

Minimum Grab Tensile Strength	200 lbs
Minimum Grab Tensile Elongation	50%
Minimum Trapezodial Tear Strength	80 lbs
Mullen Burst Strength	380 psi
Minimum Puncture Strength	130 lbs
Apparent Opening Size	40-80 US Sieve
Minimum Flow Through	70 gpm/square foot

C. Bags used for pumped discharge shall have opening large enough to accommodate discharge hose for pumped discharge.

D. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:

1. Atlantic Screen & Mfg., Inc.
2. Filtrexx.
3. L & M Geo-Fabrics, Inc.
4. Palcon, LLC.
5. The Cary Company.

2.3 EROSION CONTROL BLANKET

A. Erosion control blankets: 100 percent agricultural straw fiber matrix, 0.5 lbs / sq yd, stitch bonded with degradable thread between two photodegradable polypropylene nettings.

1. Product: Provide Model S150 Double Net Short-Term Blanket (12 months) by North American Green, Evansville, IN, or equal.

a. Curex II, DeWitt.
b. Permier Double Side, American Excelsior Company.
c. Excel SS-2AN, Western Excelsior Company.

d. ETRS-2-BN, MKB Company, LLC.
e. Lanlok ECB S2-ENS2, Propex.

B. Prior to start of work, provide a certified statement as to the number of pounds of materials to be used per 100 gallons of water. Specify the number of square feet of seeding that can be covered with the quantity of solution in the Contractor's hydroseeder.

2.4 COMPOSITE FILTER SOCK

A. Composite sock shall be a mesh tube, oval to round in cross section, 12 inches in diameter. Sock shall have a minimum durability of one year after installation. Sock shall be composed of biodegradable jute, sisal, burlap, or coir fabric. Fabric shall be clean, evenly woven, and free of encrusted concrete or other contaminating materials and free from cuts, tears, broken or missing yarns and thin, open, or weak places.

B. Composite sock shall be securely anchored by wood stakes driven 5 feet on center. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber, and shall be straight and free of loose or unsound knots and other defects which would render the stakes unfit for use. Stake shall be pointed on the end to be driven into the ground, and at least 1” x 1” x 24” in size.

C. Composite sock shall be filled with compost derived from any single, or mixture of the following feedstock material: green material consisting of chipped, shredded, or ground vegetation, or clean recycled wood products, biosolids, manure, or mixed food waste. Compost feedstock material to reduce weed seeds, pathogens and deleterious materials to comply with state and local regulations. Compost shall not be derived from mixed municipal solid waste and be reasonably free of visible contaminants. Compost shall not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal like or plant growth. Compost shall not possess objectionable odors.

PART 3 - EXECUTION

3.1 SILT FENCE

A. Silt fence shall be used if directed by Engineer in lieu of composite filter sock. Position sediment fences as indicated on the Drawings and to prevent off site movement of sediment produced by construction activities as directed by the Engineer. Areas beyond limits of silt fence shall be undisturbed or stabilized.

B. Dig trench approximately 6 inch wide and 6 inch deep along proposed fence lines.

C. Drive stakes, 10 feet on center (maximum) at back edge of trenches. Drive stakes 2 feet (minimum) into ground.

D. Hang filter fabric on posts carrying to bottom of trench with about 4 inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and maintain secure both ways.

E. Backfill trench with excavated material and tamp.

F. Install pre-fabricated silt fence according to manufacturer's instructions.

3.2 CONSTRUCTION ENTRANCE

A. Construct entrance with minimum of 6 inch of course aggregate at all points of ingress/egress.

B. Width: Minimum 20 feet, increased as needed for typical construction vehicles.

C. Minimum Length: 50 feet.

D. Install filter fabric below aggregate.

E. Maintain entrance throughout construction, adding more aggregate or increasing length as needed.

3.3 FILTER BAGS AND CATCH BASIN FILTERS

A. Locate filter bag for pumped dewatering discharge at least 50 feet from all wetlands, streams or other surface waters. Locate catch basin filter bags **in all catch basins** in vicinity of disturbed area throughout the project site.

B. Install filter bag on a 2 inch gravel bed or 4 inch thick straw mat to allow water to flow in all directions.

C. Bag is full when remaining flow area is reduced by 75 percent. Replace full bags with new bags.

3.4 EROSION CONTROL BLANKETS

A. Install erosion control blankets onto all exposed slopes to be loamed and seeded that are steeper than 4(Horizontal) to 1(Vertical) as shown on the Drawings. Erosion control blankets shall also be installed in all seeded drainage swales and ditches, and as directed by the Engineer in accordance with manufacturer's instructions.

B. The area to be covered shall be properly prepared, fertilized and seeded with permanent vegetation before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow and stapled.

C. Place blankets and stapled together in accordance with manufacturer's instructions. Side overlaps shall be 4 inch minimum. The staples shall be made of wire, 0.091 inch in diameter or greater, "U" shaped with legs 10-inch in length and a 1-1/2-inch crown. Commercial biodegradable stakes may also be used with prior approval by the Engineer. The staples shall be driven vertically into the ground, spaced approximately two linear feet apart, on each side, and one row in the center alternately spaced between each size. Upper and lower ends of the matting shall be buried to a depth of 4-inch in a trench. In swales and ditches, erosion stops shall be created every 25-feet by making a fold in the fabric and carrying the fold into a silt trench across the full width of the blanket. The bottom of the fold shall be 4-inch below the ground surface. Staple on both sides of fold. Where the matting must be cut or more than one

roll length is required in the swale, turn down upper end of downstream roll into a slit trench to a depth of 4-inch. Overlap lower end of upstream roll 4-inch past edge of downstream roll and staple.

D. To ensure full contact with soil surface, roll matting with a roller weighing 100 lbs/ft of width perpendicular to flow direction after seeding, placing matting and stapling. Thoroughly inspect channel after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below. Erosion control blankets for bottom of swales and along edge of pathways.

3.5 COMPOSITE FILTER SOCK

A. Position filter socks as indicated on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the Engineer.

B. Drive wooden stakes, 5 feet on center (maximum) at back edge of filter sock. Drive stakes 2 feet (minimum) into ground.

C. Install pre-fabricated filter sock according to manufacturer's instructions.

3.6 SITE STABILIZATION

A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.

B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2: 1 or flatter.

D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.

1. During non-germinating periods, apply mulch at recommended rates.
2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 329200 "Turfs and Grasses" at 75 percent of permanent application rate with no topsoil.
3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 329200 "Turfs and Grasses" permanent seeding specifications.

E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.7 FIELD QUALITY CONTROL

A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.8 CLEANING

A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.

B. Do not damage structure or device during cleaning operations.

C. Do not permit sediment to erode into construction or site areas or natural waterways.

D. Clean channels when depth of sediment reaches approximately one-half channel depth.

END OF SECTION 312500

©2026 CDM Smith
All Rights Reserved

SECTION 315000 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Temporary excavation and trench support and protection systems.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for recording preexisting conditions and excavation support and protection system progress.
2. Section 014000 "Quality Requirements" for testing and laboratory services.
3. Section 310900 “Geotechnical Instrumentation and Monitoring” for monitoring equipment.
4. Section 312000 "Earthwork" for excavating and backfilling.
5. Section 311000 "Site Clearing" for site stripping, grubbing, stripping topsoil, and removal of above- and below-grade improvements and utilities.
6. Section 312316 "Rock Removal" for excavation of rock and boulders.
7. Section 312319 "Dewatering" for lowering and disposing of groundwater during construction and dewatering excavations.

1.3 ACTION SUBMITTALS

A. Shop Drawings: For excavation support and protection system, prepared by or under the supervision of a qualified professional engineer, meeting the minimum performance requirements in PART 2 of this Section.

1. Include overall system plan, indicating clearances, dimensions, material properties, member sizes, locations, spacing and member penetrations depths, and locations of various types of lateral supports.
2. Show details, layout, arrangement, equipment requirements, and method of construction of proposed excavation support system.
3. Indicate existing and proposed utilities, structures or other obstructions.
4. Show wall elevations and locations of bracing.
5. Show overall installation sequence and removal of bracing. Indicate work levels to be performed before bracing is installed or removed.
6. Submit detailed drawings of connections, jacking supports, and method of shimming.

B. Include procedures for resolving difficulties arising from misalignment of members exposed during excavation and criteria for implementing those procedures.

C. Design Calculations: For excavation support and protection system. Include analysis data prepared, signed, and sealed by professional engineer responsible for their preparation.

1. Include loads on excavation support system for all stages of excavation, bracing removal, and concrete placement, including material and equipment loads on adjacent ground during construction.
2. Include design of wall and bracing members including details for all construction stages.
3. Include theoretical deflections of excavation support system and deformation of structures, pipelines, and other improvements located within areas influencing excavations.

D. Submit to the Engineer for review and acceptance, a plan of action to be implemented in the event any deformation threshold value is reached as specified in Section 310900 “Geotechnical Instrumentation and Monitoring.” Identify positive measures in action plan to further limit wall movement, including but not limited to trenching for struts and wales, placement of granular earth berms against the wall, installation of additional struts, or combinations thereof.

1. Include description and details of mitigating measures, work schedule, location and availability of materials, and structural details for connections to wall and support elements.
2. Be prepared to work 24 hours per day to implement such measures.
3. Perform remedial work and mitigating measures at no additional cost to Owner.

E. Qualifications Statement: Submit qualifications for licensed professional engineer responsible for preparation of support of excavation and protection system.

1.4 INFORMATIONAL SUBMITTALS

A. Submit quality control measures to ensure that performance of excavation support system complies with project requirements.

B. Qualification Data: For land surveyor.

C. Maintain at least one copy of design at job site during excavation that includes a plan indicating sizes, types, and configurations of the materials to be used in protective system. Identify registered Contractor’s Design Engineer who stamped the design.

D. Do not proceed with excavation support or protection activities until submittals have been reviewed and approved by the Engineer.

E. Submit inspection documentation:

1. On-site inspections of excavation support system as the systems are constructed.
2. Review of quality control measures and performance data.
3. Certification that excavation support system is constructed per applicable design following completion of each support system and following Contractor modifications during construction.

1.5 QUALITY ASSURANCE

A. Contractor Qualifications: Minimum 5 years' experience compatible to indicated Work, and who employs labor and supervisory personnel similarly experienced in Work of this Section.

B. Contractor's Design Engineer: Professional Engineer registered in the State of Connecticut with at least 5 years' professional experience in design and construction of support of excavation systems and having completed a minimum of 5 successful excavation support projects of equal type, size, and complexity to specified work.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by inadequate performance of excavation support and protection systems. Submit before Work begins.

D. Regulatory Requirements: Comply with authorities having jurisdiction, including OSHA requirements.

E. Record Drawings: Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions.

1.6 FIELD CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Contact utility companies and other responsible authorities to locate and mark underground utilities.
2. Notify the Engineer and Owner no fewer than two days in advance of proposed interruption of utility.
3. Do not proceed with interruption of utility without the Owner's written permission.

B. Project-Site Information: Geotechnical data for this project is available for information only. The geotechnical data is valid only for the sampling locations at the time of sampling. The Contractor is responsible for their own interpretations and conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for excavation support and protection according to the performance requirements.
2. Groundwater levels may vary during the work and should not be assumed to be accurately represented by groundwater level readings reported in the geotechnical data.
3. The geotechnical data is included as an appendix to the specifications.

C. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; and establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Provide, design, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting earth and hydrostatic pressures and superimposed and construction loads.

1. Contractor Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified Professional Engineer
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Install excavation support and protection systems to minimize horizontal and vertical movements without damaging existing buildings, structures, and site improvements adjacent to excavation.
4. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

B. Do not permit excavations below the level of the base of adjacent existing foundations unless excavation design and bracing includes an analysis of stability of structure supported by foundation and if necessary, incorporates required bracing or underpinning of foundation.

C. For support systems in which bracing is installed between opposite sides of the excavation, design excavation support of both sides to be nearly the same as feasible.

D. Where necessary to resist point loads, fill pipe piles used as soldier piles with concrete. Neglect concrete strength in design of pipe pile for bending stress.

E. Design, install, operate, and maintain groundwater control system to control groundwater inflows, prevent piping or loss of ground, and maintain stability of the excavation. Refer to the requirements of Section 312319 "Dewatering."

F. Design review and field monitoring activities by Owner or the Engineer does not relieve Contractor of its work responsibilities.

2.2 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A36/A36M, ASTM A690/A690M, or ASTM A992/A992M.

C. Steel Pipe Used as Soldier Piling: ASTM A252, Grade 45 or better.

D. Steel Sheet Piling: ASTM A328/A328M, ASTM A572/A572M, or ASTM A690/A690M; with continuous interlocks.

1. Steel sheet piling conforming to ASTM A572, Grade 50 or better.
2. Corners: Site-fabricated mechanical interlock.

E. Wood Lagging: Lumber, mixed hardwood, minimum nominal rough thickness of 3 inches with minimum allowable flexural strength of 1,100 psi .

F. Cast-in-Place Concrete: ACI 301, with minimum compressive strength of 3,000 psi, unless a higher strength is required for application.

G. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

PART 3 - EXECUTION

3.1 PREPARATION

A. Obtain permits from local authority having jurisdiction prior to initiating excavation work.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

C. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Install fencing, gates, lights, and signs around excavations and staging areas to provide for public safety.

D. Locate excavation support and protection systems clear of permanent construction so that construction and finishing of other work is not impeded.

3.2 GENERAL

A. Install excavation support systems in accordance with the shop drawings and applicable permits.

B. Fill voids between excavation support system and earth with materials acceptable to the Engineer.

C. If unstable material is encountered during excavation, take immediately measures to contain it in place and prevent ground displacement.

D. If settlement or deflections of supports indicate that support system requires modification to prevent excessive movements, redesign and resubmit revised shop drawings and calculations to the Engineer without additional compensation.

E. Maintain sufficient quantity of material on site for protection of work and for use in case of accident or emergency.

3.3 TRENCH BOXES

A. Use portable trench boxes or sliding trench shields only for worker protection.

B. Additional excavation, backfilling, and surface restoration required as result of trench box use shall be provided without additional compensation.

C. Design, construct, and maintain trench boxes or shields to meet acceptable engineering and industry standards.

D. Install shields in a manner to restrict lateral or other hazardous movement of the shield in the event of sudden lateral loads.

E. Maintain a written copy of trench box manufacturer's specifications, recommendations, and limitations at job site during excavation work.

3.4 SOLDIER PILES AND LAGGING

A. Install steel soldier piles before starting excavation.

1. Install soldier piles in predrilled holes.

    a. Provide casing or other methods of support to prevent caving of holes and loss of ground.
    b. Backfill with concrete from elevation of bottom excavation to pile tip elevation. Backfill remainder of predrilled hole with lean concrete or sand.
    c. Predrill hole of sufficient diameter allowing for proper alignment and concrete backfilling of pile.

B. Extend soldier piles below excavation grade level to depths shown on reviewed Shop Drawings. Space soldier piles at regular intervals not to exceed allowable flexural strength of wood lagging. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

C. Install wood lagging within flanges of soldier piles as excavation proceeds. Trim excavation as required to install lagging.

1. Install lagging so ground loss does not occur between adjacent or below lowest board. As excavation proceeds, do not maximum height of 4 feet for unlagged face of excavation.
2. Do not exceed unlagged face of 2 feet, if water seeps or flows from excavation face or excavation face becomes unstable.

D. As installation progresses, pack voids between excavation face and lagging with materials such as hay, burlap, or geotextile filter fabric to allow drainage of groundwater without loss of ground.

E. Install wales at locations indicated on Drawings and secure to soldier piles.

3.5 STEEL SHEET PILING

A. Sheet piles shall be cleaned and inspected for defects and proper interlock dimensions prior to installation. Provide a tool for checking interlock dimensions.

B. Before starting excavation, drive one-piece sheet piling lengths in plumb position and tightly interlock vertical edges for its entire length to form a continuous barrier. Form a continuous diaphragm throughout length of each run of wall, bearing tightly against original ground.

1. Exercise care in driving so interlocking members can be extracted without damaging adjacent structures or utilities.
2. Use driving, cutting, and splicing methods conforming to approved Shop Drawings.
3. Use templates or other temporary alignment facilities to maintain piling line.

C. Accurately place piling, using templates and guide frames unless otherwise recommended in writing by sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 5 feet Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

D. Install each sheet pile having sufficient clearance in interlocks to slide under its own weight into interlock of previously placed sheet pile.

E. Do not excavate in advance of steel sheet piling installation.

F. Where obstructions are anticipated, pre-excavate or pre-drill along sheet pile wall alignment without additional compensation. Do not extend pre-excavation and pre-drilling below lowest excavation level or into bearing soils for existing or future structures.

G. Remove obstructions encountered before the specified embedment for piles. Where obstructions cannot be removed, re-evaluate sheet pile system by Contractor’s Design Engineer show reduced embedment and additional toe stability measures to be implemented for sheet pile wall realignment. Submittal proposed design measures to the Engineer for review.

H. Withdraw damaged or faulty aligned pilings with provide new piling, driven properly in its place without additional compensation.

I. Cut tops of sheet piling to uniform elevation at top of excavation.

3.6 FIELD QUALITY CONTROL

A. Survey-Work Benchmarks: Resurvey benchmarks regularly during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Engineer if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.

C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.7 REMOVAL

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.
   1. Remove excavation support and protection systems at to a minimum depth of 48 inches below overlying construction and abandon remainder.
   2. Fill voids immediately with flowable fill or approved backfill compacted to density specified in Section 312000 "Earthwork."
   3. Repair or replace, as approved by Engineer, adjacent work damaged or displaced by removing excavation support and protection systems.

B. Do not remove vertical support members that were installed within zone of influence of new or existing structures. Cut off support members installed within this zone at 5 feet below finished grade and abandon in place.

C. Do not remove internal bracing or transfer loads to permanent structure without prior acceptance of the Engineer.

D. Begin removal at excavation bottom and progress upward. Slowly release members noting indication of possible failure of remaining members or possible cave-in of excavation sides.

E. Progress backfilling together with removal of support systems from excavations.

F. Remove all portions of excavation support, unless otherwise indicated by approved Shop Drawings.

   1. Zone of Influence Definition: Zone extending down and away from outer edge of the structure at 1 horizontal to 1 vertical.

G. Do not leave untreated wood as part of abandoned portion of the work.

H. When removing excavation support system, do not disturb or damage adjacent buildings, structures, waterproofing material, or utilities. Fill voids immediately with lean concrete or well-graded cohesionless sand or as directed by the Engineer.

I. Immediately remove excavation support system material from site.

END OF SECTION 315000

©2026 CDM Smith
All Rights Reserved

SECTION 321123 - AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Aggregate subbase.
2. Aggregate base course.

B. Related Sections:

1. Section 312000 "Earthwork" for preparation of site for base course.
2. Section 312000 "Earthwork" for compacted fill under base course.
3. Section 321216 "Asphalt Paving" for Binder and finish asphalt courses.
4. Section 330513 "Manholes and Structures" for Manholes including frames.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Geotextile fabric and herbicide.
2. Initial aggregate test reports.

B. Samples: Submit, in air-tight containers, 10 lb sample of each type of aggregate fill to testing laboratory.

C. Materials Source: Name of aggregate materials suppliers.

1.4 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work according to Connecticut Department of Transportation (CTDOT) Standard Specifications for Roads, Bridges, Facilities and Incidental Construction Form 819.

C. Maintain one copy of each document on site.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Materials and Resources Characteristics:

1. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.

2.2 MATERIALS

A. Subbase Aggregate: CTDOT Standard Specifications for Road, Bridges, Facilities and Incidental Construction Form 819: Division III Materials Section, Section M.02.02 Subbase.

B. Base Aggregate: CTDOT Standard Specifications for Road, Bridges, Facilities and Incidental Construction Form 819: Division III Materials Section, Section M.05.01 Subbase.

1. Percent Passing per Sieve Size:

Sieve Size	Percent Passing by Weight		
2 1/2 inches	100		
2 inches	95	to	100
3/4 inches	50	to	75
1/4 inches	25	to	45
No.40	5	to	20
No. 100	2	to	12

C. Aggregate Quality Requirements:

1. All aggregate must meet the requirements of CTDOT Standard Specifications for Road, Bridges, Facilities and Incidental Construction Form 819 Sections M.02 and M.05.

2.3 INITIAL TESTS

A. Perform all of the following tests on the proposed material to demonstrate that it meets all specified requirements when furnished. Submit the initial test results to the Engineer for approval prior to commencement of construction.

1. Sieve Analysis.
2. Liquid limit and plasticity index.
3. Moisture-density relationship.
4. Wear Resistance to Degradation (ASTM C131/C131M).

B. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Clean the underlying course or subgrade of all foreign substances prior to constructing the subbase base course(s).

B. Do not construct base/subbase course(s) on underlying course or subgrade that is frozen.

C. Prepare the surface of the underlying course or subgrade to meet specified compaction and surface tolerances.

D. Correct ruts or soft yielding spots in the underlying courses.

E. Correct areas having inadequate compaction, and deviations of the surface from the specified requirements:

1. Loosen and remove soft or unsatisfactory material and add approved material
2. Reshape to line and grade,
3. Recompact to specified density requirements.

F. For cohesion-less underlying courses or subgrades containing sands or gravels:

1. Stabilize the surface prior to placement of the base course(s):

a. Mix aggregate into the underlying course
b. Compact by approved methods.
c. Do not allow traffic or other operations to disturb the finished underlying course
d. Maintain underlying course until the base course is placed.

G. Verify that the underlying surface has been inspected, gradients and elevations are correct.

3.2 AGGREGATE PLACEMENT

A. Install geotextile fabric over subgrade according to manufacturer's instructions.

1. Lap ends and edges minimum 6 inches.
2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

B. Place aggregate equal thickness layers to total compacted thickness within 1/2 inch of the thickness indicated on the drawings.

1. Maximum lift Compacted Thickness: 6 inches.
2. Minimum lift Compacted Thickness: 3 inches.

C. Level and compact the base and subbase course to within ½ inch of the thickness indicated.

D. Degree of Compaction:

1. Compact aggregate lifts to 95 percent of laboratory maximum dry density.
2. Except as noted below, degree of compaction is expressed as a percentage of the maximum laboratory dry density obtained by the test procedure presented in ASTM D1557.
3. Degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve will be expressed as a percentage of the laboratory maximum dry density in accordance with AASHTO T 180 Method D and corrected with AASHTO T 224.

E. Maintain optimum moisture content of material as necessary to achieve the specified degree of compaction.

3.3 ERECTION TOLERANCES

A. Maximum Variation from Flat Surface: 1/4 inch measured with 10 foot straight edge.

B. Maximum Variation from Thickness: 1/4 inch.

C. Maximum Variation from Elevation: 1/2 inch.

3.4 FIELD QUALITY CONTROL

A. Field Density Measurements: Measure field density in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: One test for every 1000 square yards of each layer compacted aggregate.

END OF SECTION 321123

©2026 CDM Smith
All Rights Reserved

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Asphalt and aggregate for trench paving.
2. Asphalt and aggregate for milling and overlay of roads, if authorized.

B. Related Requirement:

1. Section 321123 "Aggregate Base Courses": Compacted subbase for paving.
2. Section 330513 "Manholes and Structures": Manholes including frames.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Submit product information for asphalt and aggregate materials.
2. Submit mix design with laboratory test results supporting design.
3. Submit information on equipment and procedures for pavement placement and compaction, including milling if authorized.

1.4 QUALITY ASSURANCE

A. Mixing Plant: Conform to Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.

B. Obtain materials from same source throughout.

C. Perform Work in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing work of this Section with minimum five years documented experience.

1.6 AMBIENT CONDITIONS

A. Do not place asphalt mixture between October 15 and April 30 unless approved by the Engineer.

B. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 ASPHALT PAVING

A. Performance / Design Criteria:

1. Paving: Design for light duty commercial vehicles, residential streets and movement of trucks up to 30,000 lbs.

B. Asphalt Materials:

1. Asphalt Binder: AASHTO M320; performance grade PG 64S-22.
2. Tack Coat: In accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Indicental Construction Form 819 M.04.01.05.
3. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling or full depth removal of existing asphalt paving.
4. Oil: In accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Indicental Construction Form 819 M.04.01.05.

C. Aggregate Materials:

1. Coarse and Fine Aggregate: Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Indicental Construction Form 819

D. Aggregate Base: Specified in Section 321123 "Aggregate Base Courses."

2.2 MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Asphalt Paving Mixtures: ASTM D3515; designed in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Indicental Construction Form 819 Section M.04.02.02.

1. Binder Course, or Single Course for Trench Paving: CTDOT HMA Superpave S1.0.
2. Wearing Course: CTDOT HMA Superpave S.0375 Mixture.

2.3 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

B. Sealant: ASTM D6690, Type II or Type III; hot applied type.

2.4 SOURCE QUALITY CONTROL

A. Submit proposed mix design of each class of mix for review prior to beginning of Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.

B. Verify compacted subbase is dry and ready to support paving and imposed loads.

1. Proof roll subbase with 50-ton roller in minimum two perpendicular passes to identify soft spots.
2. Remove soft subbase and replace with compacted fill as specified in Section 312323 "Aggregate Base Courses."

C. Verify gradients and elevations of base are correct.

D. Verify manhole frames are installed in correct position and elevation.

3.2 PREPARATION

A. Prepare subbase in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.

3.3 DEMOLITION

A. Saw cut and notch existing paving.

B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.

C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.4 INSTALLATION

A. Trench pavement shall be placed at least once per week over all trenches in Town roads.

B. Aggregate Gravel Base:

1. Aggregate Base: Install as specified in Section 321123 "Aggregate Base Courses."

C. Primer:

1. Apply primer in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.

D. Tack Coat:

1. Apply tack coat in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.
2. Apply tack coat to contact surfaces of curbs, gutters and pavement surfaces that have been exposed to traffic.
3. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

E. Single Course Asphalt Paving:

1. Install Work in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819.
2. Place asphalt within 24 hours of applying primer or tack coat.
3. Place asphalt to thickness indicated on Drawings.
4. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
5. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

F. Double Course Asphalt Paving, if directed:

1. Place asphalt binder course within 24 hours of applying primer or tack coat.
2. Place binder course to thickness indicated on Drawings.
3. Place wearing course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
4. Place wearing course to thickness indicated on Drawings.
5. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
6. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

G. Asphalt Paving Mill and Overlay:

1. Mill existing pavement to a minimum depth of 2 inches using equipment specifically designed for asphalt milling. Remove millings from site.
2. Mechanically sweep entire milled area and uniformly apply tack coat to entire milled area including edges.
3. Place wearing course to minimum 2 inch thickness; match existing grades unless otherwise directed.
4. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
5. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

H. Curbs:

1. Install extruded asphalt curbs to match existing conditions if damaged during construction.

3.5 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from Indicated Elevation: Within 1/4 inch.

3.6 FIELD QUALITY CONTROL

A. Take samples and perform tests in accordance with Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 819 .

B. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

C. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1000 square yards compacted paving.

D. Asphalt Paving Density: ASTM D2950 nuclear method; test one location for every 1000 square yards compacted paving.

3.7 PROTECTION AND MAINTENANCE

A. Immediately after placement, protect paving from mechanical injury for a minimum of 4 hours or until surface temperature is less than 140 degrees F.

B. Maintain all trench pavement for a period of one year following the date of Substantial Completion. During this time, any pavement that has settled more than 1.5 inches shall be removed and repaved at no cost to the Owner.

©2026 CDM Smith
All Rights Reserved

END OF SECTION 321216

©2026 CDM Smith
All Rights Reserved

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Erosion-control materials for newly seeded areas.

B. Related Requirements:

1. Section 310515, “Soils and Aggregates for Earthwork” for topsoil.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging:

1. Certification of each seed mixture for. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment:

1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or.
2. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:)

    a. Landscape Industry Certified Technician - Exterior.
    b. Landscape Industry Certified Lawncare Manager.
    c. Landscape Industry Certified Lawncare Technician.

5. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in the Turfgrass Producers International's (TPI) "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion:

1. Spring Planting: May 1 to June 15.
2. Fall Planting: September 15 to November 1.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with Association of Official Seed Analysts (AOSA's) "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species:
1. Quality: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
2. Lawn Areas (Disturbed areas on private property) : Kentucky bluegrass (Poa pratensis), a minimum of three cultivars.
3. Natural Areas Sun and Partial Shade: Proportioned by weight as follows:

a. 50 percent Kentucky bluegrass (Poa pratensis).
b. 30 percent chewings red fescue (Festuca rubra variety).
c. 10 percent perennial ryegrass (Lolium perenne).
d. 10 percent redtop (Agrostis alba).

4. Natural Areas Shade: Proportioned by weight as follows:

    a. 50 percent chewings red fescue (Festuca rubra variety).
    b. 35 percent rough bluegrass (Poa trivialis).
    c. 15 percent redtop (Agrostis alba).

2.2 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 LIME

A. Description: Agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent.

B. Comply with ASTM C602.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.

C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 Deci siemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

G. Asphalt Emulsion: ASTM D977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

C. Erosion-Control Mats: Cellular, nonbiodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work:

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Engineer and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations:

1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LIMING AND FERTILIZING

A. Apply lime at application rate recommended by soil analysis.

B. Work lime into top 6 inches of soil.

C. Apply fertilizer at application rate recommended by soil analysis.

D. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.

E. Apply fertilizer no more than 48 hours before laying sod.

F. Mix fertilizer thoroughly into upper 4 inches of topsoil.

G. Lightly water soil to aid dissipation of fertilizer.

3.4 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil .

B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.5 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Turf Area Preparation" Article in PART 3.

B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.

C. Fill cells of erosion-control mat with planting soil and compact before planting.

D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.6 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph:

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft.

C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets and 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.

F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment:

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

G. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.7 HYDROSEEDING

A. Hydroseeding: Mix specified seed, commercial fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application:

1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.8 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow to a height of 1-1/2 to 2 inches.

D. Turf Postfertilization: Apply commercial fertilizer after initial mowing and when grass is dry:

1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.9 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Engineer:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.10 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove nondegradable erosion-control measures after grass establishment period.

3.12 MAINTENANCE SERVICE

A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

1. Seeded Turf: 60 days from date of planting completion:

a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

B. Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Meadow Maintenance" Article. Begin maintenance

immediately after each area is planted and continue until acceptable meadow is established, but for not less than maintenance period below:

1. Maintenance Period: 60 days from date of planting completion.

END OF SECTION 329200

©2026 CDM Smith
All Rights Reserved

SECTION 330513 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Modular precast concrete manhole and structures with tongue-and-groove joints covers, anchorage, and accessories.
2. Bedding and cover materials.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for erecting forms and bracing them against movement.
2. Section 033000 "Cast-in-Place Concrete" for installation of reinforcing steel.
3. Section 033000 "Cast-in-Place Concrete" for concrete type for manhole and structures base pad construction.
4. Section 310515 "Soils and Aggregates for Earthwork" for soil and aggregates for backfill in trenches.
5. Section 312000 "Earthwork" for excavating for manholes and structures.
6. Section 312333 "Trenching and Backfilling" for trench excavation and back for manholes and structures.
7. Section 315000 "Excavation Support and Protection" for excavation support systems.
8. Section 333113 "Public Sanitary Utility Sewerage Piping" for piping, valves, and appurtenances.
9. Section 333126 “Sanitary Pressure Sewer Piping” for low- pressure sewer system.
10. Section 333219 "Public Utility Wastewater Pumping Station" for package pumping station requirements

1.3 ACTION SUBMITTALS

A. Product Data: Submit cover and frame construction, features, configuration, and dimensions.

1.4 DELEGATED DESIGN SUBMITTALS

A. Product Data: Provide structure frame and cover, access hatch, rungs and or ladders product data with notarized certificate indicating compliance with the specified ASTM standard and Class designation.

B. Shop Drawings: Indicate manhole and structure locations, elevations, piping, conduit, and sizes and elevations of penetrations.

C. Submit for review, structural calculations (including assumptions and design references) and drawings for all precast structures and their precast (or cast-in-place) footing foundations as indicated on the Drawings. Structural design calculations and drawings shall be prepared and stamped by a professional engineer registered in the State of Connecticut.

D. Submit for review, buoyancy calculations, and if required by buoyancy calculations submit design calculations and details for hold-down slab and anchorage to the precast manholes and precast structures including assumptions and design references. Calculations shall be prepared and stamped by a professional engineer registered in the State of Connecticut.

E. Submit for review, structural calculations (including references and design references) and drawings for precast manhole top slab and base slab. Calculations shall be prepared and stamped by a professional engineer registered in the State of Connecticut.

F. Submit shop drawings showing details of construction, reinforcing, joints, pipe connection to manhole, manhole rungs, and manhole frames and covers for precast manholes and precast structures.

G. Concrete design mix data and concrete test cylinder reports from an approved concrete testing laboratory certifying that the concrete used in the precast structures conforms with the strength requirements specified herein for precast manholes and precast structures.

H. Delegated design engineer qualifications in accordance with “Quality Assurance” Article.

I. All design data in accordance with ASTM C478 for precast manholes.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Products meet or exceed specified requirements.

B. Manufacturer Instructions: Detailed instructions on installation requirements, including storage and handling procedures.

C. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

D. Qualifications Statements: Qualifications for manufacturer.

E. Submit results of leakage tests and/or visual inspection.

1.6 QUALITY ASSURANCE

A. Perform Work according to standards set by authorities having jurisdiction.

B. Maintain a copy of each standard affecting Work of this Section on Site.

C. The quality of all materials, the process of manufacture, and the finished sections are subject to inspection and approval by the Engineer, or other representative of the Owner. Such inspection

may be made at the place of manufacture, at work site, or at both places. Rejected materials shall be replaced at no cost to the Owner.

D. Delegated Design Engineer Qualifications: Engage a professional engineer registered in the State of Connecticut to be the Registered Design Professional responsible for the design and construction of the precast structure, precast manholes, hold down tabs, anchorage, and foundation supports.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Unload, store, and handle precast manholes and structures according to manufacturer instructions.

B. Storage: Store precast concrete manholes and structures as to prevent damage to Owner's property or other public or private property.

1. Repair property damaged from materials storage.

1.9 AMBIENT CONDITIONS

A. Subsequent Conditions: Maintain materials and surrounding air temperature at minimum 50 degrees F prior to, during, and 48 hours after completion of masonry Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Precast concrete: conform to ACI 350.

B. Cement: ASTM C150/C150M, Type II.

C. Deformed concrete reinforcing bars shall confirm to ASTM A615, Grade 60.

D. Precast concrete is to have a minimum compressive strength of 5,000 psi at 28 days. Water to be kept to a minimum to obtain concrete which is as dense and watertight as possible. The maximum water-to-cement ratio to be 0.40 by weight and the minimum cement content to be 600 lbs. of cement per cubic yard of concrete.

E. Precast concrete sections shall be properly cured prior to shipping. Precast concrete sections shall not be shipped or subject to loading before concrete has attained 4,000 psi compressive strength and not before 5 days after fabrication and/or repair, whichever is longer.

F. Design of Lifting Devices for Precast Components: According to ASTM C913.

G. Design of Joints for Precast Components:

1. According to ASTM C913.
2. Maximum Leakage: 0.025 gal. per hour per foot of joint at 3 feet of head.

H. Shaft Construction: Concentric with concentric cone top section; lipped male/female joints; sleeved to receive pipe sections.

I. Shape: Cylindrical.

J. Clear Inside Dimensions: As indicated on Drawings.

K. Design Depth: As indicated on Drawings.

L. Clear Cover Opening: As indicated on Drawings.

M. Pipe Entry: Furnish openings as indicated on Drawings.

2.2 MANHOLES

A. Manhole Sections: Reinforced precast concrete according to ASTM C478.

B. Gaskets: According to ASTM C923.

C. Design the precast top slab and base slab to support their own weight, the weight of the soil above at 120 pcf, and a live load equal to an AASHTO HS-20 highway loading applied to the top slab.

D. Floatation: Prevent floatation, with groundwater level at finished ground surface, by dead weight of manhole or catch basin and soil load above manhole or catch basin. Do not consider skin friction, soil friction, or weight of equipment or contents in manhole.

1. Floatation Safety Factor: Not less than 1.15. If required, provide reinforced concrete “hold-down” slab firmly anchored to the base of the manhole or catch basin with Type 316 stainless steel bolts.

E. The wall thickness shall not be less than 5 inches for 48-inch diameter reinforced barrel sections and 6 inches for 60-inch diameter reinforced barrel sections.

F. The thickness of the bottom slab of the precast bases shall be no less than that of the manhole barrel section or top slab, whichever is greater.

G. Clay Brick Units:

1. Bricks for the channels and shelves shall comply with ASTM C32 for Sewer Brick, Grade SS (from clay or shale) except that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent.
2. Bricks for building up and leveling manhole frames shall conform to ASTM C62, Grade SW solid units.

3. Bricks shall be good, sound, hard and uniformly burned, regular and uniform in shape and size, of compact texture and satisfactory to the Engineer. Underburned or salmon brick will not be acceptable and only whole brick shall be used unless otherwise permitted. In case bricks are rejected by the Engineer, they shall be immediately removed from the site of the work and satisfactory bricks substituted therefor.

H. Mortar and Grout:

1. Type S.
2. Mortar used in the brickwork shall be composed of one part Type II portland cement conforming to ASTM C150 to two parts sand to which a small amount of hydrated lime not to exceed 10 lbs to each bag of cement shall be added.
3. The sand used shall be washed, cleaned, screened, sharp and well graded as to different sizes and with no grain larger than will pass a No. 4 sieve. It shall be free from vegetable matter, loam, organic or other materials of such nature or of such quantity as to render it unsatisfactory.

2.3 PRECAST STRUCTURES (WET WELL AND VALVE VAULT):

A. Provide structural design calculations for structures prepared and sealed by a licensed Professional Engineer in the State of Connecticut. Submit the sealed drawings and calculations for approval prior to fabrication.

B. Calculate stress in reinforcement closest to a surface in tension at service loads so that it does not exceed the value given in Article 10.6.4.2 of ACI 350-06 and shall not be greater than 50 percent of the specified yield strength fy.

C. Provide minimum concrete thickness of walls and slabs of 8-in. Provide minimum reinforcing of #5 at 12-in, each face, each way. Provide additional reinforcing around all openings.

D. Cast base slab and walls together to form a monolithic base section.

E. Design the precast structure’s elements to support their own weight, the weight of the soil above at 120 pcf, and a live load equal to an AASHTO HS-20 highway loading applied to the top slab.

F. Design structure walls that withstand an equivalent lateral fluid pressure of 60 pcf above groundwater and 90 pcf below groundwater. Design groundwater elevation is at finished grade. Originate pressure diagram at finished ground surface. Design structure walls for an additional surcharge load from adjacent structures and approaching vehicles in accordance with AASHTO. Use a minimum uniform lateral surcharge pressure equal to 120 psf. Maximum gross allowable bearing pressure of 2 tons per square foot (4000 psf).

G. Design structure for leakage test loading condition, structure full of no soil backfill in place.

H. Consider discontinuities in structure produced by openings and joints. Provide additional reinforcing around openings. Frame openings to carry full design loads to support walls.

I. Prevent flotation, with groundwater level at finished ground surface, by dead weight of structure and soil load above structure. Do not consider skin friction, soil friction, or weight of equipment

or contents in structure. Provide concrete slab if required to prevent flotation. Submit slab design and details and provide anchorage of the structure to the slab with Type 316 stainless steel anchor bolts. Safety factor for floatation is 1.15 when groundwater is at finished grade. Buoyancy calculations and anchorage design calculations and details shall be prepared and stamped by a professional engineer registered in the State of Connecticut.

J. Locate horizontal wall joints 18 in. minimum from horizontal centerline of wall openings.

K. Design structures with minimum number of joints. Maximum number of structure sections, including top slab, shall be four sections.

L. Locate access openings and pipe penetrations as indicated.

M. Mechanical Sleeve Seals:

1. Mechanical sleeve seals shall be used to secure and seal the annular space around all new sleeved and core-drilled penetrations.
2. Dual sleeve seals shall be provided for all penetrations on this project.
3. Galvanized steel wall sleeves and concrete core diameter shall be sized sufficiently larger to accommodate the modular elements, per the manufacturer's recommendations.
4. Bolts and hardware shall be carbon steel, zinc-plated, Pressure plates shall be corrosion-resistant acetal resin.
5. Mechanical sleeve seals shall consist of modular bolted, synthetic rubber sealing elements, Link Seal by Thunderline Corp. or equal.

2.4 FRAMES AND COVERS

A. Manufacturers: Campbell Foundry Company, East Jordan Iron Works, or approved equal

1. Products: Campbell Foundry Model No. 1203B (8" frame) or 1203A (4" low-profile frame where approved by the Engineer); or approved equal.
2. Construction: ASTM A48, Class 35B gray cast iron.
3. Surface: Machined flat bearing for uniform fit.
4. Cover Design: Closed with two non-penetrating pick holes, molded with the words BROOKFIELD SEWER.
5. Live Load Rating: AASHTO HS20-44.
6. Made in the United States.

2.5 ACCESS HATCHES

A. Manufacturers: Halliday, Bilco, EJ Company, or approved equal.

1. Construction Aluminum, welded.
2. Size: As indicated on the drawings.
3. Door: Single or Double.
4. Cover: Diamond plate, reinforced with welded structural stiffeners to support H-20 live load. Water-tight as indicated on the drawings.
5. Frame:

a. 1/4-inch minimum aluminum channel frame, with integral seat to support cover stiffeners.
b. Anchor flange around frame perimeter.
c. EPDM gasket.

6. Hinges: Stainless steel.
7. Lift Handle: Flush drop handle, non-removable type mounted in cover.
8. Lifting Mechanism:

a. Stainless steel compression springs with automatic hold-open and dead stop to retain cover in open position.
b. Cover springs to prevent contact by personnel entering utility structure.

9. Latch Mechanism: Stainless steel lock with removable external handle and permanent internal release mechanism.
10. Hardware: Type 316 stainless steel.
11. Finishes: Factory mill finish for aluminum doors and frames with bituminous coating on the exterior of the frames in contact with concrete.
12. Watertight and have a 1 1/2 -inch drainage coupling to the channel frame.
13. Provide hinged fall protection grating for all hatches.
14. Recessed padlock hasp feature with lock with shroud over lock.

2.6 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
2. Cover: Fill Type, as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
3. Backfill from Above Pipe to Finish Grade:

a. Fill Type, as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
b. Subsoil: No rocks over 6 inches in diameter, frozen earth, or foreign matter.

2.7 FINISHES

A. Steel Galvanizing: ASTM A123. Hot dip galvanize after fabrication.

B. Exterior Coating: Outer surfaces of precast and cast in place manholes and structures shall be given two coats of bituminous dampproofing at the rate of 30 to 60 square feet per gallon as directed by the Engineer and in accordance with manufacturer's instructions.

C. Interior Coating of wet well and valve vault shall be as specified in Section 333219.

2.8 ACCESSORIES

A. Manhole Steps:

1. Manhole steps shall be composed of a 1/2-inch Grade 60, ASTM A615 steel reinforcing bar completely encapsulated in Grade 49108, ASTM D2146 polypropylene copolymer compound, Campbell Foundry Pattern No. 2593, 2254, similar by M.A. Industries, Inc., or equal.
2. Formed integral with manhole sections.
3. Width: 15.875 inches.
4. Spacing: 16 inch o.c. vertically, set into manhole wall.

B. Safety Platforms

1. Provide safety platforms in compliance with OSHA standards for all manholes greater than 20 feet deep, measured from top of frame to lowest invert.

C. Internal Drop Bowl Connection:

1. Reliner Inside Drop System, A6 bowl, contoured to inside face of manhole, with force line hood or equal.
2. As Shown on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that items provided by other Sections of Work are properly sized and located.

B. Verify that built-in items are in proper location and ready for roughing into Work.

C. Verify correct size of manhole and structure excavation.

3.2 PREPARATION

A. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.

B. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.

C. Do not install structures where Site conditions induce loads exceeding structural capacity of structures.

D. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage; remove and replace damaged units.

3.3 INSTALLATION

A. Excavation and Backfill:

1. Excavate manholes and structures as specified in Section 312000 "Earthwork" in location and to indicated depth.
2. Provide clearance around sidewalls of structure for construction operations.
3. When groundwater is encountered, prevent accumulation of water in excavations; place manholes and structures in dry trench.
4. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation as approved by Engineer.

B. Base Pad:

1. Place base pad.
2. Trowel top surface level.

C. Place manhole and structure sections plumb and level, trim to correct elevations, and anchor to base pad.

D. Backfill excavations for manholes and structures as specified in Section 312000 "Earthwork."

E. Place manhole and structures cylinder plumb and level and to correct dimensions and elevations.

F. Grout base of shaft sections to achieve slope to exit piping, trowel smooth, and contour as indicated on Drawings.

G. Set cover frames and covers level without tipping and to correct elevations.

H. Coordinate with other Sections of Work to provide correct size, shape, and location.

I. Precast Concrete Manholes and Structures:

1. Lift precast components at lifting points designated by manufacturer.
2. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure that interior of pipeline and structure remains clean.
3. Set precast structures bearing firmly and fully on crushed stone bedding, compacted as specified in Section 312000 "Earthwork" or on other support system as indicated on Drawings.
4. Assemble multi-section structures by lowering each section into excavation; set level and firmly position base section before placing additional sections.
5. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.
6. Maintain alignment between sections by using guide devices affixed to lower section.
7. Joint sealing materials may be installed on Site or at manufacturer's plant.
8. Verify that installed manholes and structures meet required alignment and grade.
9. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe; fill annular spaces with mortar.
10. Cut pipe flush with interior of structure.
11. Shape inverts through manhole and structures as indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Test concrete manhole and structure sections according to ASTM C497.

B. Test cast-in-place concrete as specified in Section 033000 "Cast-in-Place Concrete."

C. Vertical Adjustment of Existing Manholes and Structures:

1. If required, adjust top elevation of existing manholes and structures to finished grades as indicated on Drawings.
2. Reset existing frames, grates, and covers that were carefully removed and cleaned of mortar fragments to required elevation according to requirements specified for installation of castings.
3. When removal of existing concrete wall is required, remove concrete without damaging existing vertical reinforcing bars, clean concrete from vertical bars, and bend into new concrete top slab or splice to required vertical reinforcement as indicated on Drawings.
4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete as specified in Section 033000 "Cast-in-Place Concrete."

D. Leakage Tests:

1. Performed on every manhole with Engineer observing.
2. Preparation:

    a. Prior to placing the shelf and invert, and pointing the horizontal joints, fill all lifting holes within 6 feet of ground surface with approved non-shrinking mortar.
    b. Lower groundwater table as required.
    c. Plug all pipes and other openings into manhole.

3. Test:

    a. Fill water to top of cone section.
    b. Observe for visible water in the excavated area.
    c. If area around manhole is backfilled or the test is unsatisfactory, repeat the test allowing for suitable time for absorption of water in the excavated area.
    d. At the end of the absorption period, refill manhole and wait 8 hours.
    e. Refill the cone at the end of 8 hours, measuring the amount required to refill.
    f. Extrapolate to determine 24-rate of leakage. Do not allow leakage to exceed 1 gallon per vertical foot in a 24-hour period.
    g. Engineer will perform visual inspection along with the Contractor.

4. Repair:

    a. If leakage is less than 3 gallons per vertical foot per 24 hours, make approved repairs to the manhole and retest, if it is determined the leakage is due to defects in the joints or sections.
    b. If leakage is 3 gallons or more, then replace the entire manhole, including all joints and sections at the Contractor’s expense. Retest the new manhole as described above.

E. A vacuum test may be substituted for a leakage test as follows:

1. The filling and pointing of exterior joints are not required where the excavation has not been backfilled.
2. Inflate to affect a seal between the vacuum base and the top of the manhole.
3. Connect the vacuum pump to the outlet port with the valve open and a vacuum of 10" Hg (20" of Hg absolute) drawn.
4. Close the valve.
5. The following test criteria shall apply to 4-ft and 5-ft diameter manholes:

    a. Allowable drops in pressure:

        1) Manholes 0 – 10 feet deep:

            a) Drop of 1 inch Hg over 2 minutes.

        2) Manholes 10 -15 feet deep:

            a) Drop of 1 inch Hg over 2-1/2 minutes.

        3) Manholes 15 - 30 feet:

            a) Drop of 1 inch Hg over 3 minutes.

6. If the pressure drop exceeds the acceptable limits, make necessary repairs as approved by the Engineer, and:

    a. Re-test the manhole.
    b. If the manhole fails to meet the minimum requirements of the vacuum test retest using the leakage test.

7. Upon completion of a successful vacuum test, the interior and exterior joints shall be filled and pointed.

3.5 CLEANING

A. Clean all new manholes to be free of silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION 330513

©2026 CDM Smith
All Rights Reserved

SECTION 330526 - UTILITY IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Plastic ribbon tape for placement above direct-buried utility.
2. Trace wire for placement above direct-buried utility.

B. Related Requirements:

1. Section 312333 "Trenching and Backfilling."
2. Section 312000 "Earthwork."
3. Section 333113 "Public Sanitary Utility Sewerage Piping" for piping, valves, and appurtenances requiring identification marking.
4. Section 333126 “Sanitary Pressure Sewer Piping” for low- pressure sewer system.
5. Section 333400 "Sanitary Utility Sewerage Force Mains" for piping, valves, and appurtenances requiring identification marking.

1.3 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's catalog information for each product required.

B. Samples: Submit one, 10 feet of ribbon tape.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Qualifications Statement:

1. Submit qualifications for manufacturer.

1.5 QUALITY ASSURANCE

A. Conform to APWA Uniform Color Code, ANSI Z535.1, and ASME A13.1 for color scheme for identification of piping systems and accessories.

PART 2 - PRODUCTS

2.1 RIBBON TAPE

A. Manufacturers:

1. Berntsen International Inc.
2. Pipemarker.com; Brimar Industries, Inc.
3. Substitutions: In accordance with paragraph 7.06 of the Conditions of the Contract.

B. Description:

1. Material: Polyethylene.
2. Brightly colored, continuously printed.
3. Minimum Size: 3 inches wide by 4 mils thick.
4. Manufactured for direct burial service.
5. Imprint: “Caution Buried Sewer” in large letters.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Ribbon Tape:

1. Install ribbon tape continuously buried 12 inches below finish grade, above piping.
2. If multiple pipes occur in common trench, locate tape above centerline of trench.
3. Place Ribbon Tape in the correct orientation, and anchor as necessary to prevent dislocation during placement of backfill.
4. Backfill above Ribbon Tape taking care to avoid dislocation. Compaction equipment shall not directly contact the Ribbon Tape.
5. Coordinate with trench Work as specified in Section 312333 "Trenching and Backfilling."

END OF SECTION 330526

©2026 CDM Smith
All Rights Reserved

SECTION 333113 - PUBLIC SANITARY UTILITY SEWERAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sanitary sewerage gravity pipe and fittings.
2. Pipe markers.
3. Connection to manholes.
4. Wye branches and tees.
5. Sanitary laterals.
6. Bedding and cover materials.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for requirements for concrete reinforcement.
2. Section 036000 "Grouting" for non-shrink grout.
3. Section 310515 "Soils and Aggregates for Earthwork" for soils and aggregate for backfill in trenches.
4. Section 312333 "Trenching and Backfilling" for product and execution requirements for excavation and backfill required by this Section.
5. Section 330513 "Manholes and Structures" for concrete manholes, frames, and grates for sanitary sewer.
6. Section 330526 "Utility Identification" for pipe markers.

1.3 COORDINATION

A. Coordinate Work of this Section with authority having jurisdiction.

B. Notify affected utility companies at least 72 hours prior to construction.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section. At the pre-installation meeting, discuss at a minimum, construction schedule, coordination with others, known deviations from the specifications, communication protocols and quality control / testing procedures and system start-up procedures.

B. Attendance Roster: Include affected utility companies and appropriate local and county officials.

1.5 ACTION SUBMITTALS

A. Product Data: Submit manufacturer catalog cuts and other information indicating proposed materials to be used, accessories, details,, and construction information.

B. Shop Drawings:

1. Drawings showing layout and details of pipe, reinforcement, joints, gaskets, special fittings and the name of the pipe manufacturer.

C. Permits: Submit two copies of all permits including local roadway opening permit and soil erosion permit.

1.6 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Products meet or exceed specified requirements.

B. Test and Evaluation Reports: Documenting field tests made and results obtained.

C. Manufacturer Instructions: Procedures required to install specified products.

D. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

E. Qualifications Statements:

1. Qualifications for manufacturer and installer.
2. Manufacturer's approval of installer.

1.7 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record invert elevations and actual locations of pipe runs, connections, and manholes.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

A. Perform Work according to standards set by authorities having jurisdiction.

B. Maintain a copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer’s original packaging and inspect for damage.

B. Storage: Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Block individual and stockpiled pipe lengths to prevent moving.
3. Provide additional protection according to manufacturer instructions.
4. Protect materials from weather and UV exposure.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Field verify fit-up to existing infrastructure prior to fabrication.
3. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 SANITARY SEWERAGE PIPE AND FITTINGS

A. Ductile-Iron Pipe: Per AWWA C150 or AWWA C151.

1. Minimum Special Thickness Class: 52.
2. End Connections: Bell and spigot.
3. Outside Coating Type: Asphaltic coating, minimum 1 mil uniform thickness. Per AWWA C151.
4. Lining: double thickness cement mortar lining.
5. Polyethylene encasement: Per AWWA C105 for all buried ductile iron pipe.
6. Fittings: Ductile iron, Class 52 or greater. Per AWWA C153.

B. Plastic Pipe: Polyvinyl chloride (PVC) per ASTM D3034, SDR-35.

1. Inside Nominal Diameter: 6 or 8 inches.
2. End Connections: Bell and spigot style, with rubber-ring-sealed gasket joint.
3. Fittings: PVC.

a. All fittings and accessories for sewers shall have bell and/or spigot configurations compatible with the pipe.

4. Joints: Elastomeric gaskets per ASTM F477.

2.2 FLEXIBLE COUPLINGS

A. Manufacturers: Fernco, Mission Rubber Company, Calder, or approved equal.

1. Furnish materials according to standards set by authorities having jurisdiction.

B. Description: Resilient chemical-resistant elastomeric polyvinyl chloride (PVC) coupling.

1. Attachment: Two Series 300 stainless-steel clamps, screws, and housings.

2.3 FLEXIBLE PIPE BOOT FOR MANHOLE PIPE ENTRANCES

A. Manufacturers: A-Lok Products, Press-Seal Corporation, Dura Tech Inc., Dual-Seal Gaskets, or approved equal.

1. Furnish materials according to standards set by authorities having jurisdiction.

B. Description: Ethylene propylene rubber (EPDM) per ASTM C923.

1. Attachment: Series 300 stainless-steel clamp and hardware.

2.4 CONCRETE ENCASEMENT AND CRADLES

A. Concrete: As specified in Section 033000 "Cast-in-Place Concrete."

1. Strength: 4,000 psi at 28 days.
2. Finish: Rough troweled.
3. Air entrained.
4. Concrete Reinforcement: As specified in Section 033000 "Cast-in-Place Concrete."

2.5 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."

2. Cover: Fill Type as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."

3. Backfill from Above Pipe to Finish Grade:

   a. Fill Type as shown on Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
   b. Subsoil with no rocks over 6 inches in diameter, frozen earth, or foreign matter.

2.6 MIXES

A. Grout: As specified in Section 036000 "Grouting."

2.7 FINISHES

A. Galvanizing: Hot-dip galvanize after fabrication per ASTM A123.

2.8 ACCESSORIES

A. Pipe Markers: As specified in Section 330526 "Utility Identification."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that trench cut and excavation base is ready to receive Work.

B. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Correct over-excavation with coarse aggregate screened gravel as specified in Section 310515 "Soils and Aggregates for Earthwork."

B. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.

C. Protect and support existing sewer lines, utilities, and appurtenances.

D. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with other utilities to eliminate interference.
3. Notify Engineer if crossing conflicts occur.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312333 "Trenching and Backfilling."
2. Excavate to lines and grades as indicated on Drawings, or as required to accommodate installation of encasement.
3. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
4. Provide sheeting and shoring as specified in Section 312333 "Trenching and Backfilling" and 315000 “Excavation Support and Protection.”
5. Placement: Place bedding material at trench bottom.
    a. Level materials in continuous layer not exceeding 8 inches compacted depth.
    b. Compact to 95 percent of maximum density.

B. Piping:

1. Install pipe, fittings, and accessories according to ASTM D2321, and seal joints watertight.
2. Lay pipe to slope gradients as indicated on Drawings.
3. Maximum Variation from Indicated Slope: 1/8 inch in 10 feet.
4. Begin at downstream end and progress upstream.
5. Assemble and handle pipe according to manufacturer’s instructions, except as may be modified on Drawings or by Engineer.
6. Keep pipe and fittings clean until Work has been completed and accepted by Engineer.
7. Cap open ends during periods of Work stoppage.
8. Lay bell and spigot pipe with bells upstream.
9. Backfill and compact as specified in Section 312333 "Trenching and Backfilling."
10. Do not displace or damage pipe when compacting.
11. Connect pipe to existing sewer system, using doghouse manhole connection.
12. Pipe Markers: As specified in Section 330526 "Utility Identification."

C. Wye Branches and Tees:

1. Concurrent with pipe-laying operations, install wye branches and pipe tees at locations indicated on Drawings.
2. Use standard fittings of same material and joint type as sewer main.
3. Maintain minimum 5 feet separation distance between wye connection and manhole.
4. Use saddle wye or tee with stainless-steel clamps for taps into existing piping.
5. Mount saddles with solvent cement or gasket and secure with metal bands.
6. Lay out holes with template and cut holes with mechanical cutter.

D. Sanitary Laterals:

1. Construct laterals from wye branch to terminal point at right-of-way.
2. Where depth of main pipeline warrants, construct riser-type laterals from wye branch.
3. Minimum Depth of Cover over Piping: 4 feet.
4. Minimum Separation Distance between Laterals: 5 feet.
5. Install watertight plug, braced to withstand pipeline test pressure thrust, at termination of lateral.

6. Hammer tapping into the sewer main is not permitted.
7. Marker Stake:

    a. Install temporary marker stake extending from end of lateral to 12 inch above finished grade.
    b. Paint top 6 inch of stake with fluorescent orange paint.

E. Backfilling: Maintain optimum moisture content of bedding material as required to attain specified compaction density

1. Backfill around sides and to top of pipe as specified in Section 312333 "Trenching and Backfilling."

3.4 FIELD QUALITY CONTROL

A. Request inspection by Engineer prior to and immediately after placing bedding.

B. Testing: If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.

C. Testing of Gravity Sewer Piping:

1. Low Pressure Air Testing:

    a. Test each reach of gravity sewer piping between manholes.
    b. Introduce air pressure slowly to approximately 4 psig.

        1) Determine ground water elevation above spring line of piping.
        2) For every foot of ground water above spring line of piping, increase starting air test pressure by 0.43 psi.
        3) Do not increase pressure above 10 psig.

    c. Allow pressure to stabilize for at least five minutes.
    d. Adjust pressure to 3.5 psig or to increased test pressure as determined above when ground water is present.
    e. Testing: Determine test duration for reach of sewer with single pipe size from following table; do not make allowance for laterals.

NOMINAL PIPE SIZE, INCHES	MINIMUM TESTING TIME, MINUTES/ 100 FEET
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0

NOMINAL PIPE SIZE, INCHES	MINIMUM TESTING TIME, MINUTES/ 100 FEET
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0

1) Record drop in pressure during testing period.
2) Test Acceptance: If 1.0 psi air pressure drop has not occurred during testing period, piping is acceptable; discontinue testing.
3) Test Failure: If air pressure drops more than 1.0 psi during testing period, piping has failed.

a) If piping fails, test reach of piping in incremental stages until leaks are isolated, repair leaks, and retest entire reach between manholes.

2. Deflection Testing of Plastic Sewer Piping:

a. Vertical Ring Deflection Testing: On PVC and acrylonitrile butadiene styrene sewer piping after backfilling has been in place for 30 days but not longer than 12 months.
b. Allowable Maximum Deflection: For installed plastic sewer pipe; not greater than 5 percent of original vertical internal diameter.
c. Deflection Testing: Using properly sized rigid ball or "go, no go" mandrel.

1) Furnish rigid ball or mandrel with diameter not less than 95 percent of base or average inside diameter of pipe, as determined by ASTM standard to which pipe is manufactured.
2) Measure pipe diameter in compliance with ASTM D2122.

d. Perform testing without mechanical pulling devices.
e. Locate, excavate, replace, and retest piping that exceeds allowable deflection.

3. Compaction Testing:

a. Comply with ASTM D1557.
b. Testing Frequency: weekly.

D. Cleaning:

1. At the conclusion of the work, thoroughly clean all pipelines by flushing or power jetting with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Remove debris cleaned from the lines from the low end of the pipeline. If after this cleaning obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the Engineer will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired at the Contractor’s expense.

3.5 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 333113

©2026 CDM Smith
All Rights Reserved

SECTION 333126 - SANITARY PRESSURE SEWER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Low-pressure sewer piping for grinder/ low-pressure sewer system alternative.
2. Valves for low-pressure sewer system alternative.

B. Related Requirements:

1. Section 026110 “Excavation and Management of Soils.”
2. Section 028110 “Transportation and Disposal of Excavated Material.”
3. Section 033000.01 "Cast-in-Place Concrete for Infrastructure" for concrete material requirements.
4. Section 310515 "Soils and Aggregates for Earthwork" for aggregates and backfill materials.
5. Section 312000 “Earthwork” for general earthwork requirements.
6. Section 312319 “Dewatering” for dewatering requirements.
7. Section 312333 "Trenching and Backfilling" for trenching and backfilling requirements.
8. Section 315000 “Excavation Support and Protection” for excavation support requirements.
9. Section 330513 “Manholes and Structures” for precast concrete manholes and structures.
10. Section 330526 "Utility Identification" for pipe marking.
11. Section 333216 “Packaged Sewage Grinder Pumping Units” for grinder pumps.

1.2 COORDINATION

A. Coordinate Work of this Section with connection to existing municipal sewer utility service.

1.3 PREINSTALLATION MEETINGS

A. Convene minimum two weeks prior to commencing Work of this Section.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Low-pressure sewer piping.
2. Valves.

B. Shop Drawings showing detailed layout of piping, fittings, valves, cleanouts, etc. Design shall be generally as shown on the Drawings, but subject to modifications if recommended by grinder pump system manufacturer.

C. Complete description of pipe installation methods including joint restraint and quality control.

1.5 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports: For piping and valves.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record centerline elevations and actual locations of pipe runs, all service connections, fittings, size transitions, and valves.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Manufacturer certification that the system as designed and submitted will operate as intended regardless of number of service connections active at any time, and that the pipe sizes, number and location of valves, cleanouts, and service connections has been reviewed and approved by the system manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Storage:

1. Store materials according to manufacturer instructions.
2. Do not store materials on private property without written permission of property owner.
3. Do not stack pipe higher than recommended by pipe manufacturer.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Perform Work according to:
1. Brookfield Water Pollution Control Authority and Town of Brookfield standards and applicable State of Connecticut requirements.

2.2 LOW-PRESSURE HDPE SEWER PIPING

A. High-Density Polyethylene (HDPE) Pressure Sewer Pipe and Fittings, 1.25 to 4 -Inch:

1. Comply with ASTM D3035 (up to 3-inch diameter) or F714 (3.5-inch and larger diameter) as applicable
2. Minimum pressure class shall be 200 psi; maximum DR shall be 11.
3. Joints: butt-fusion welded
4. Pipe color shall be black with green striping for sewer service
5. Manufacturers: ISCO, JM Eagle, or approved equal.

2.3 VALVES

A. PVC Valves:

1. Comply with ASTM D1785, Class 12454.

2. Isolation Ball Valves:

   a. Type: "True union," double entry.
   b. Base Material: Fluorocarbon.
   c. Seals: O-rings.
   d. Seats: PTFE.
   e. Pressure Rating: minimum 150 psig.

3. Check Valves:

   a. Gravity-operated, flapper type that provides full-ported passageway when open.
   b. Hinge Pin: Stainless steel.
   c. Seal: Elastomeric.
   d. Pressure Rating: 150 psig

B. Combination Air /Vacuum Valves:

1. Body and Cover: Ductile iron.
2. Stem and Float: Stainless steel.
3. Trim: Stainless steel.
4. Orifice Seats: Buna-N.
5. Backflushing and Cleaning Accessories:

   a. Shutoff valve at bottom inlet.
   b. Blowoff valve near bottom of valve body.
   c. Clear-water inlet valve with quick-disconnect coupling.
   d. Air inlet with quick-disconnect in valve cover.
   e. Hose with quick-disconnect couplings.
6. Working pressure: 150 psig

2.4 ACCESSORIES

A. Sanitary Valve Boxes:

1. Manufacturers:

a. Campbell Co. No. 4155, similar by Star Pipe Products, Tyler Union, orr approved equal

2. Valves 12 Inches (300 mm) and Smaller:

a. Type: Two-piece screw.
b. Material: Domestic cast iron.

3. Valves Larger Than 12 Inches (300 mm):

a. Type: Three-piece screw.
b. Material: Domestic cast iron.
c. Base: Round.

4. Lid: Cast iron.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify that excavation base is ready to receive Work.

C. Verify that excavations, dimensions, and elevations are as indicated on layout drawings.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Correct over-excavation with fine aggregate or coarse aggregate.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

C. Remove large stones or other hard matter that could damage pipe or impede consistent backfilling or compaction.

D. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

3.3 INSTALLATION OF LOW-PRESSURE SEWER PIPING

A. Bedding:

1. Excavate pipe trench as specified in Section 312333 "Trenching and Backfilling"
2. Place bedding material at trench bottom.
3. Level materials in continuous layer not exceeding 6 inches (150 mm).
4. Maintain optimum moisture content of bedding material to attain required compaction density.

B. Piping:

1. Install pipe, fittings, and accessories according to ASTM D2321, manufacturer instructions,, and seal joints watertight.
2. Lay pipe to slope gradients as indicated on layout drawings.
3. Maximum Variation from Indicated Slope: 1/8 inch (3 mm) in 10 feet (3 m).
4. Install bedding at sides and over top of pipe to minimum compacted thickness as shown on the Drawings or as otherwise recommended by the manufacturer.
5. Backfilling and Compacting:

    a. As specified in Section 312333 "Trenching and Backfilling"
    b. Do not displace or damage pipe while compacting.

3.4 INSTALLATION OF VALVES

A. Valves: Install at locations as indicated on Drawings and according to manufacturer instructions.

B. Valve Boxes: Install at all valve locations and according to manufacturer instructions.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Inspection: Request inspection prior to placement of bedding.

C. Pressure Testing:

a. Hydrostatic Pressure Test: Per Section 9.3 of AWWA C605.

1) Hydrostatic pressure test methods and procedures must be approved by Engineer.
2) Submit testing plan to Engineer 10 days before testing.
3) Subject pressure pipelines to a hydrostatic pressure no greater than 50 percent above normal operating pressure in lowest portion and no less that 25 percent above normal operating pressure in highest portion of pipeline segment being tested.
4) Maintain test pressure a minimum of 2 hours.
5) Furnish gauges, meters, pressure pumps and other equipment needed to fill line slowly and perform required hydrostatic pressure tests.

6) Contractor shall arrange and pay for a supply of water as required to fill and test lines. Maintain an air break at all times between Owner's distribution system and Contractor's equipment to prevent cross-connection.

D. Compaction Testing:

1. Comply with ASTM D1557 and as required in Section 312333.
2. Prepare test and inspection reports.

3.6 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 333126

©2026 CDM Smith
All Rights Reserved

SECTION 333216.13 - PACKAGED SEWAGE GRINDER PUMPING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes providing, not installing, the following:

1. On-lot sewage grinder pumping units and high-density polyethylene (HDPE) wet well (to be supplied and delivered to location designated by Owner; not installed).
2. Control panel for each grinder pumping unit
3. Valves and accessories integral to grinder pumping units
4. Lateral connection kits including check valve, ball valve, cleanout and curb box

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete": Requirements for anti-flotation collar if required.
2. Section 333126 "Sanitary Pressure Sewer Piping": Low-pressure HDPE sewer system piping and appurtenances.

1.3 ACTION SUBMITTALS

A. Product Data: Submit manufacturer information concerning materials of construction and fabrication.

1. Submit the following:

a. Manufacturer's catalog data for wet well, wet well accessories, discharge piping, valves, instrumentation, and control panel.
b. Manufacturer's pump catalog data, including performance curves, breakaway fittings data, and access frame data.

B. Shop Drawings and Technical Data:

1. Indicate station layout designed by station manufacturer and show all important details of construction, dimensions and anchor bolt locations.

2. Provide a complete bill of materials for all equipment provided as part of this packaged station.
3. Indicate size, weight and materials of all components of the system.
4. Indicate wet well dimensions, inlet and discharge locations, cover dimensions, vent location, lifting cable location, check valve locations, ball valve locations, pump locations, discharge piping location, level control locations, and ballast support flange dimensions.
5. Provide complete wiring diagrams and schematics of all controllers, control panels, control devices and operators furnished under this Section.
6. Provide complete wiring diagrams and schematics of all power and control systems including connections to work of other Sections.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures, anchoring, and layout.

C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

D. Qualifications Statements:

1. Submit qualifications for manufacturer and installer.
2. Submit manufacturer's approval of installer.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual items and accessories delivered with date and location.

1.6 QUALITY ASSURANCE

A. Perform Work according to applicable standards.

B. Maintain one copy of each standard affecting Work of this Section on Site.

C. Qualifications:

1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.
2. Provide evidence of an established service support program.
3. Submit an installation list of not less than 10 installations of this type that have been in operation for at least five years. Provide contact person, phone numbers and dates of installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Handling:

1. Handle materials to prevent damage to interior or exterior surfaces.
2. Prepare pumps and accessories for shipment in such a manner as to prevent entry of foreign matter into product body.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Store products in areas protected from weather, moisture, or possible damage.
3. Do not store products directly on ground.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide temporary end caps and closures on piping and fittings, and maintain in place until installation.
3. Protect materials from heat and UV damage.
4. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 PROGRESSING-CAVITY SOLIDS-HANDLING PUMPS

A. Manufacturers:

1. Design is based on Environment One Corporation Model DH071 (simplex/single pump) for residential properties and DH152 (duplex/2 pumps) for municipal properties. Pump packages by Crane or equal will also be considered for approval.

B. Description:

1. Provide a pump that a custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with a single mechanism seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier.

C. Performance Requirements:

1. Provide a pump that is capable of conveying 8 gallons per minute (gpm) against a total dynamic head (TDH) of 170 feet; 10 gpm against a TDH of 115 ft and 12 gpm at a TDH of 70 ft.

2. At pump runout (zero head) the pump output must be 14 gpm maximum.
3. Pumps shall be capable of operating at negative total dynamic head without overloading the motors.

D. Materials:

1. Provide castings that are cast iron, fully epoxy coated to 8 – 10 mil Nominal dry thickness, wet applied.
2. Provide a rotor that is thorough-hardened, highly polished, precipitation hardened stainless steel.
3. Provide a stator that is specifically compounded ethylene synthetic elastomer.
4. Provide materials that are suitable for domestic wastewater service.

E. Pump:

1. The pump shall be an electric motor driven, vertical rotor, solids handling pump of the progressing cavity type. It shall be specifically designed for sewer service.
2. The rotor shall be thorough-hardened, highly polished, precipitation hardened stainless steel.
3. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer with physical properties including high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, aging properties and wear resistance.

F. Grinder Assembly:

1. Rotating type with stationary hardened and ground chrome-steel shredding ring spaced in accurate close annular alignment to two rotating stainless-steel cutter bars constructed of hardened Type 400 series stainless steel.
2. Grinder impeller assembly firmly fastened to pump motor shaft.
3. The grinder shall be positioned immediately below the pumping elements and shall be direct driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece 4140 cutter wheel of rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50-60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for the capacity to perform in the intended environment as they are materials with wear and corrosion resistant properties.
4. The grinder shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of operating pressures. The grinder shall be constructed to minimize clogging and jamming under all normal operating conditions including start-up. Sufficient vortex action shall be created to scour the wet well free of deposits or sludge banks which would impair the operation of the pump. These restrictions shall be accompanied by the following in conjunction with the pump:

    a. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.

b. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming.
c. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their ability to maintain the specified 4 feet per second maximum inlet velocity which, by design, prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
d. The impeller mechanism shall rotate at a nominal speed of no greater than 1800 rpm.

5. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of "foreign objects", such as paper, wood, plastic, glass, rubber and the like, to finely divided particles which will pass freely through the passages of the pump and the 1-1/4-in diameter HDPE discharge pipe.

G. The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces prevision lapped and held in position by a stainless-steel sprig.

H. Motors shall come equipped with inherent protection against running overloads or locked rotor conditions:

1. Pump motor shall be a maximum 1 hp, 1725 rpm, 240 Volt, single phase, 60 Hz.
2. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. This motor protector combination shall have been specifically investigated and listed by Underwriters Laboratories, Inc for this application. Non-capacitor start motors or permanent split capacity motors will not be accepted because of their reduced starting torque and diminished grinding capability. The wet portion of the motor armature must be 300 series stainless. Oil filled motors will not be accepted.

I. Integral Check Valve:

1. Equip pump with gravity-operated, flapper-type, integral check valve built into discharge pipe.
2. Passageway: Full ported when open.
3. Materials:

a. Working Parts: Type 300 series stainless steel and fabric-reinforced synthetic elastomer.
b. Valve Body: High-gloss, injection-molded PVC.

J. Provide internal nonmetallic hinge for flapper assembly to give maximum degree of freedom for assured seating at low backpressure.

K. Anti-Siphon Valve:

1. Equip pump with integral anti-siphoning air relief valve in discharge piping below main check valve to ensure pump cannot lose prime, even under negative-pressure conditions in discharge piping system.
2. The anti-siphon port diameter shall be no less than 60 percent of the inside diameter of the pump discharge piping.
3. Arrange valve to automatically close when pump is running and to open when pump is de-energized.

2.2 POWER AND CONTROLS

A. All grinders shall be provided with a local disconnect switch for all power and control functions; the disconnect shall be able to be located either at the pump or remotely mounted on the nearest house face in a power and controls enclosure. The enclosure shall be manufactured of UL approved materials to ensure water tightness and corrosion resistance. If the disconnect switch is located remotely on the house face, the Contractor shall coordinate location of the Alarm/Disconnect Panel and local disconnect switch with the homeowner. Remote disconnect switches shall be located in the same enclosure as the manual transfer switch and monitoring and status equipment. The disconnect switch and power cable shall be installed ready in all respects for connection to the homeowner's power supply.

B. A **75-foot** power cable shall be supplied with each unit. Power cable shall be sized by the manufacturer and all connections shall be watertight.

C. Necessary controls, motor contact(s), terminal blocks and complete multi-alarm circuitry shall be integral with the grinder pump and shall be located in the dry well or top housing of the core unit inside a waterproof access cover. The cover will be attached with stainless steel fasteners.

D. Non-fouling wastewater level detection for controlling pump operation shall monitor the pressure changes in an integral air-bell level sensor connected through air-tight tubing to a pressure switch, by non-contact, solid state, continuous ultrasonic level measurement or by another method approved by the Engineer. Level control sensors shall meet NEMA requirements for electrical enclosures and connectors for operation in Class I, Group D, Division 1 environments. Level control sensor shall be readily removable. Electrical maintenance and changes to level settings shall be done at surface level without exposure to wetwell.

E. For air bell level sensors, each level control shall have its own built-in fail-safe design which will prevent the entrance of moisture into the controls in case of switch diaphragm failure.

F. To assure reliable operation of pressure sensitive switches, each core shall be equipped with a quick disconnect breather assembly, complete with check valve to prevent accidental entry of water into motor compartment in the event of accessway flooding.

2.3 ELECTRONIC MONITORING AND STATUS

A. Each grinder pumping station shall include monitoring and status controls which can be wired to the power and controls enclosure. The panel shall include the following features at a minimum:

1. Stationary red beacon indicator for grinder pump alarm conditions
2. Audible alarm for grinder pump alarm conditions
3. Acknowledgement button for conditions (two) above.

B. The status sequence and control shall be as follows:

1. Grinder pump alarm for any of the conditions listed below shall initiate the rotating red beacon and audible alarm.
2. On alarm condition acknowledgment, audible alarm will silence but the red beacon will remain lit until alarm condition is rectified.

C. For each grinder pump, the homeowner will be responsible for installing the circuit breaker rated for use with the pumping unit power circuit.

D. A power and controls enclosure must also be provided with a standby power receptacle and a manual transfer switch to disconnect the normal power source and reconnect the load to an emergency portable generator for standby power. Both the power receptacle and the transfer switch shall be incorporated in the enclosure with two standard circuit breakers with interlocks or a horsepower rated rotary switch. Double throw switches are not acceptable. The receptacle shall be compatible with the mating plug of a standard portable generator as identified by the Owner. The manual transfer switch shall be able to prevent cross-connection of the two power sources. Separate enclosures for the power receptacle and the transfer switch will be acceptable providing the enclosure is of similar dimension, grade, and quality as the monitoring and status panel.

2.4 PUMP DISCHARGE PIPING

A. Material: Schedule 80 PVC (ASTM D1785).

B. Diameter: 1.25 inch.

C. End Connections: Threaded.

2.5 LATERAL CONNECTION KITS

A. Provide and install a Lateral Connection Kit at each property as shown on the Drawings. Lateral connection kits shall be 1.25” diameter and shall include stainless steel check valve, ball valve, and cleanout in a single module. Lateral connection kits shall be full-port design, constructed of Type 316 stainless steel, and designed for service pressure of at least 200 psi. Lateral connection kits shall be provided with cast iron curb box, minimum 4” diameter or larger as required to operate the valves, and with appropriate length to reach from the lateral connection kit to grade.

2.6 PUMP WET WELL / DRY WELL

A. Wet Well / Dry Well:

1. The tank shall be a wet well / dry well design.
2. Material: high density polyethylene with a grade selected to provide the required environmental stress cracking resistance:

    a. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth. The corrugations of the outside wall are to be minimum of 1.5-inch to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250-inch thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to 150 percent of maximum external soil and hydrostatic pressure.
    b. The tank shall be furnished with one EPDM grommet fitting to accept a 4.5-inch OD DVW or Schedule 40 pipe.
    c. Tank shall be minimum 70 gallons for single pump/simplex models and 150 gallons for two-pump/duplex models.

3. The drywell accessway shall be an integral extension of the wetwell assembly and shall include a lockable cover assembly providing low profile mounting and watertight capability. The accessway design and construction shall enable field adjustment of the station height in increments of 4-inches or less without the use of any adhesives or sealants requiring cure time before installation can be completed.
4. The station shall have all required penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable.
5. All discharge piping shall be constructed of 304 stainless steel. The discharge shall terminate outside the accessway bulkhead with a stainless steel 1.25-inch female NTP fitting. The discharge piping shall include a stainless-steel ball valve rated for 235 psi WOG; PVC ball valves or brass ball / gate valves will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.
6. The accessway shall include a single NEMA 6P Electrical Quick Disconnect for all power and control functions, factory installed with accessway penetrations warranted by the manufacturer to be watertight. The disconnect will be supplied with 75-feet of useable electrical supply cable outside the station to connect to the alarm panel. The cable shall be installed in the basin by the manufacturer. Field assembly of the cable into the basin is not acceptable. The disconnect shall require no tools for connecting, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable. A junction box shall not be permitted in the accessway. The disconnect shall be designed to be conducive of field wiring as required. The accessway shall include an integral 2-inch vent to prevent sewage gasses from accumulating in the tank.

B. Anti-Flotation Ring:

1. If required as determined by the manufacturer, precast anti-flotation ring shall be formed integral with the wet well.

C. Inlet: The tank shall be furnished with one EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe.

D. Each pump shall be provided with a 4-foot-long flexible connector to the pump discharge, 1.25-inch SDR HDPE IPS piping. The tank side shall have a 304 stainless steel, multi-level mechanical transition piece hydraulically compressed onto the polyethylene pipe and shall be 1.25-inch male NPT threads. The street side shall be plain end pipe, SDR 11 IPS.

E. The pump station shall have a cartridge type, easily removed core assembly consisting of pump, motor, grinder and motor controls, check valve, anti-siphon valve, level controls, electrical disconnect and wiring. The core unit shall be installed in the basin by the manufacturer. Field assembly for the pump and controls into the base is not acceptable. The core unit shall seal to the tank deck with a stainless-steel latch assembly. The latch assembly must be actuated utilizing a single quick release mechanism requiring no more than a half turn of a wrench. The watertight integrity of each core unit shall be established by a factory test at a minimum 5 psig. The core unit shall have lifting eyes provided in the top housing which can be used to facilitate easy removal of the core unit from the tank when necessary.

2.7 OPERATION

A. Electrical Characteristics:

1. Pump shall be equipped with 1 hp motor.
2. Voltage: 120/240 volts, single phase, 60 Hz.

B. Motors:

1. Type: air-cooled induction type with Class F insulation.
2. Windings: Air cooled
3. Motor Leads: Pot in epoxy compound to form leakproof seal.
4. Shaft Seals:

    a. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.
5. Bearings:

    a. Upper and lower ball bearings to support rotor.
    b. Ball bearing to take radial loads from impeller.
    c. Ball Bearings: Minimum ABMA 9, L-10 life of 15,000 hours.

C. Control Panel:

1. All motor starting controls shall be located in the enclosure of the core unit secured by stainless fasteners. The wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. The level sensor housing must be sealed via a radial type seal. The level sensing control housing must be integrally attached to the pump assembly so it may be removed from the station with the pump and in such a way to minimize the potential for accumulation of grease and debris. The level sensing housing

must be a high impact thermoplastic copolymer over-molded with thermos plastic elastomer. The use of PVC for the level sensing housing is not acceptable.

2. All fasteners shall be 300 series stainless steel.

D. Liquid-Level Controls:

1. Non-clog wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and pressure switch. Any connections are to be sealed radially with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single readily exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.

E. All fasteners shall be 300 series stainless steel. High level sensing will be accomplished in the manner detailed above by the separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump on circuit. For increased reliability, pump on/off and high-level alarm functions shall not be controlled by the same switch. Float switches, including float trees, will not be accepted due to periodic need to maintain such devices. To assure reliability operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank-mounted junction boxes provide pressure switch equalization will not be permitted. The grinder will be furnished with a 6 conductor, 14-gauge, type SJOW cable, prewired and watertight to meet UL requirements with a factory installed NEMA 6P EQD half attached.

1. Contractor shall supply additional cable, as described above to connect the pump to control box at no additional expense to the Owner. This cable shall extend a minimum 2 feet beyond the accessway cover.

F. Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufacturer of thermoplastic polymer to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock. The enclosure shall not exceed 12 inches wide x 14 inches high.

1. The alarm panel shall contain one 15-amp, double pole circuit breaker for the pump core's power circuit and one 15-amp single-pole circuit breaker for the alarm circuit. The panel shall also contain a push to run feature, an internal run indicator and complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuses.
2. The alarm panel shall include the following features: external audible and visual alarms, push to runs switch, push to silence switch, redundant pump start; and high-level alarm capacity. The alarm sequence is to be as follows:

a. When the liquid level rises above the alarm level, audible and visual alarms are activated, the contacts on the alarm pressure switch activate and the redundant pump starting system is energized.

b. The audible alarm may be silenced by means of the externally mounted push-to-silence button.
c. Visual alarms remain illuminated until the sewage level drops below the offsetting of the alarm pressure switch.

3. The visual alarm lamp shall be inside a red, oblong lens at least 3.75-in x 2.38-in x 1.5-in. Visual alarms shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure and capable of 93 dB at 2 feet. The audible alarm shall be capable of being deactivated by pressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure.
4. For duplex stations, in addition to the above, two high level indicator lights shall be mounted within the enclosure on the panel's alarm control board. During the high-level alarm indication, the appropriate indicator light will illuminate to indicate which core requires service.

G. A separate internal breaker, which has been rated and approved for use as service equipment, will be used as the service disconnect for the pump station.

H. Provide a run-time or hour meter to display the total run time or operational time for the pump core.

I. Provide an event or cycle counter to display the number of operations of the pump core.

J. Operation Sequences:

1. Simplex Control Sequence:

a. As wet well liquid level increases to PUMP START setting, PUMP START switch energizes pump.
b. When sump liquid level decreases to PUMP STOP setting, PUMP STOP switch de-energizes pump.
c. If wet well liquid level continues to rise, HIGH-LEVEL alarm switch energizes alarm signal when liquid level reaches HIGH-LEVEL setting.

2. Duplex Control Sequence:

a. As wet well liquid level increases to LEAD PUMP START setting, LEAD PUMP START switch energizes lead pump.
b. When wet well liquid level decreases to PUMPS STOP setting, PUMPS STOP switch de-energizes lead pump.
c. When lead pump is de-energized, alternating relay indexes such that lag pump starts on next rise in wet well liquid level.
d. If wet well liquid level continues to rise to LAG PUMP START setting, LAG PUMP START switch energizes lag pump.
e. When wet well liquid level decreases to PUMPS STOP setting, PUMPS STOP switch de-energizes both pumps.
f. If wet well liquid level continues to rise, HIGH-LEVEL alarm switch energizes alarm signal when liquid level reaches HIGH-LEVEL setting.

PART 3 - EXECUTION

3.1 DELIVERY

A. Deliver all pump units and control panels to the job completely assembled, tested and ready for installation. Provide certified factory test reports for every unit. Coordinate delivery location and receipt with representative of Owner. Deliver up to 20 units per week, and deliver all units to Owner within an 8-week span. Grinder pump units will not be installed under this contract.

B. INSTALLATION

1. Lateral piping to property line including lateral connection kits will be installed under this contract. Install lateral connection kit at the property line of each property intended to be serviced by a grinder pump. Install lateral connection kits per manufacturer recommendations including compacted sand or gravel bedding. Install curb box at each lateral connection kit and finish at grade.

3.2 MANUFACTURER SERVICE AND DEMONSTRATION

A. Within one year of pump delivery, manufacturer shall provide a 4-hour in-person service demonstration for Owner’s personnel. Demonstrate equipment startup, shutdown, routine maintenance, alarm condition responses, and emergency repair procedures to Owner’s personnel.

END OF SECTION 333216.13

©2026 CDM Smith
All Rights Reserved

SECTION 333219 - PUBLIC UTILITY WASTEWATER PUMPING STATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Packaged public wastewater pumping station.
2. Initial operation of packaged public pumping station.

B. Furnish all labor, materials, equipment and incidentals required and furnish and install the wastewater pumping stations with all related interior piping and electrical work as shown on the Drawings and as specified herein, complete with all connections made, tested and ready for use.

C. Furnish all labor, materials, equipment and incidentals required to completely install, put in operation and field test the non-clog submersible pumping stations.

D. This Section is intended to give a general description of what is required but does not purport to cover all of the details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, shop testing, delivery and complete installation and field testing of all materials, equipment and appurtenances to complete the pumping stations whether specifically mentioned in these specifications or not.

E. The Contractor shall coordinate his operations and those of the supplier of the pumping stations materials such that the sites are excavated and the stations materials delivered and installed in accordance with the Contractor's Schedule. No extension of Contract time will be allowed due to failure of the subcontracting supplier to furnish the equipment.

F. Any reference to a specific manufacturer or model number is for the purpose of establishing a quality or parameter for specification writing and not to be considered proprietary. In all cases any source or device is acceptable that has the quality and operating capabilities specified.

G. Furnish one complete spare pump with motor, power and signal cable, attachments to the guide rails, and pipe connection adaptor for each wastewater pumping station. Each spare pump shall meet the criteria indicated in this Section.

H. Related Requirements:

1. Section 033000 “Cast-In-Place Concrete”: Requirements for cast-in-place concrete pad, anti-

flotation collar, and concrete cover.
2. Section 036000 “Grouting”: Pipe penetration sealing in concrete wet wells.
3. Section 050519 “Post-Installed Anchors” for anchor installation.
4. Section 260510 “Limited Electrical for Small Projects”: Electrical requirements.
5. Section 263213.13 “Diesel-Engine-Driven Generator Sets”: Requirements for generator.
6. Section 310515 “Soils and Aggregates for Earthwork”: Soil and aggregate for backfill.
7. Section 312000 “Earthwork”: Excavation and backfill for wet well and valve vault.
8. Section 312316 “Rock Removal”: Removal of rock to facilitate wet well and valve vault installation.
9. Section 312319 “Dewatering”: Excavation dewatering to facilitate wet well and valve vault installation.
10. Section 312333 “Trenching and Backfilling”: Requirements for direct-burial piping to be placed by this Section.
11. Section 315000 “Excavation Support and Protection”: Excavation support for structure excavations.
12. Section 330513 “Manholes and Structures”: Material and installation requirements for wet well and valve vault, including delegated design of precast components for pumping station.
13. Section 333103 “Public Sanitary Utility Sewerage Piping”: Connections to sanitary sewerage system.
14. Section 333400 “Sanitary Utility Sewerage Force Mains”: Connections to force mains.

1.3 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section. At the pre-installation meeting, discuss at a minimum, construction schedule, coordination with others, known deviations from the specifications, communication protocols and system testing procedures and system start-up procedures.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Manufacturer catalog data for wet well, cover, hinged door, slide rail assembly, discharge piping, valves, junction box, level controls, and control panel.
2. Manufacturer pump catalog data, performance curve, breakaway fittings data, and access frame data.
3. Control panel data and panel wiring schematic.

B. Shop Drawings and Technical Data:

1. Provide a scaled layout of pumping station.
2. Literature and drawings describing the equipment in sufficient detail, including materials of construction and parts list, to indicate full conformance with the detail specifications.
3. Provide a complete bill of materials for all equipment provided as part of this pump station.
4. Show size, weight, materials, and components of system.
5. Shop drawings and materials of construction and performance of electric motors, pumps, controls, pipes, valves and fittings, equipment, conduit, wiring, wiring devices, transformer

and access manhole, rails and bracket.

6. Indicate wet well size, inlet and discharge location, cover dimensions, vent location, lifting cable location, valve pit and valve locations, pump locations, discharge piping location, junction box locations, guide rail assembly location, level control locations, and ballast support flange dimensions.
7. Verify size and orientation of access hatch and guide rails such that the pumps can be removed from the wet well without needing to remove the hatch or disassemble the pump.
8. Confirm fit and detailed design of all connections associated with the packaged wastewater pump station. Confirm fit and connection to existing piping systems.
9. Provide structural information for the wet well structure, cover and hatches. Identify the rated loads that can be placed on the structure.
10. Provide pipe support design and calculations for all piping in the wet well and valve vault.
11. Certification of design calculations and plan to prevent flotation of pumping chamber and valve vault.
12. Confirm required minimum submergence of submersible pumps to meet the pumps' cooling requirements during routine operation and cycling.
13. Provide hydraulic computations showing the system losses, static losses and pump curves plotted on a common figure. System and static losses shall reflect the configuration of the packaged pump station provided under this Specification.
14. Certified pump test data.
15. Manufacturer's rating curves as specified showing pump characteristics of pressure, capacity, brake horsepower, efficiency, and allowable NPSH. This information shall be prepared specifically for the pumps proposed. Catalog sheet showing a family of curves will not be acceptable.
16. Provide complete wiring diagrams and schematics of all controllers, control panels, control devices and operators furnished under this Section.
17. HVAC design may not be required. Discuss ventilation requirements and code considerations with a mechanical designer. Omit if HVAC systems are not required.
18. Motor data such as Hp, Volts, RPM, FLC, Efficiency, and p.f. as described herein.
19. Complete wiring diagrams and schematics of all power and control systems.
20. Details of electrical control panel, alarm system and wiring diagrams.

C. In the event that it is impossible to conform with certain details of the specifications due to different manufacturing techniques, describe completely all nonconforming aspects.

D. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions.

E. Test and Evaluation Reports: Submit written report showing that factory pump inspections and tests have been successfully performed.

F. Manufacturer Instructions: Submit manufacturer's instructions for wet well, pump, panel systems, and installation procedures.

G. Source Quality-Control Submittals: Indicate results of shop or factory tests and inspections.

H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

I. Manufacturer Reports:

1. Submit report of each visit of manufacturer’s representative to provide technical assistance during installation.
2. Submit startup report before final acceptance of pumps to document that pumping station operation meets performance requirements.

J. Qualifications Statements:

1. Submit qualifications for manufacturer, installer, and licensed professional
2. Submit manufacturer's approval of installer.

K. CLOSEOUT SUBMITTALS

L. Project Record Documents: Record actual locations of packaged pumping stations, including wet wells and control panel.

M. Submit executed certification of pumping stations after performance testing.

N. Operation and Maintenance Data: Submit operating and maintenance requirements for pumping station and schedule of recommended maintenance.

1.5 QUALITY ASSURANCE

A. The equipment shall be the product of manufacturers who are fully experienced and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

B. The system shall be furnished by a single supplier who shall be responsible for the coordination of the system design and who shall assume complete responsibility for the proper operation of each system. The packaged pumping stations shall be as supplied by United Concrete, Oldcastle; Excel Fluid Group; Williamson Pump & Motor; or equal.

C. Should equipment of a different type, weight, size or location or should equipment which otherwise differs from this Section be offered and determined to be the equal to that specified, the equipment will be acceptable only on the basis that any revisions in the design and/or construction of the structural work, piping, electrical work, etc required to accommodate such a substitution shall be made at the Contractor's expense and responsibility and be as approved by the Engineer.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum five years' documented experience.

C. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Connecticut.

1.7 DELIVERY, STORAGE, AND HANDLING

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

B. All equipment and parts shall be properly protected against any damage during a prolonged period at the site.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Engineer.

D. The finished surfaces of all exposed flanges shall be protected by wooden blind flanges, strongly built and securely bolted thereto.

E. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

F. No shipment shall be made until approved by the Engineer in writing.

G. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

H. Support wet well with nylon slings to structural lift points during handling.

I. Store materials according to manufacturer instructions.

J. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide temporary end caps and closures on piping and fittings, and maintain in place until installation.
3. Protect materials from heat and UV damage.
4. Provide additional protection according to manufacturer instructions.

1.8 AMBIENT CONDITIONS

A. Do not install concrete wet well base when bedding is wet or frozen.

B. Follow cold weather concreting requirements per the American Concrete Institute when working in cold weather.

C. Dewater to keep excavations dry.

1.9 WARRANTY

A. Furnish five-year prorated manufacturer's warranty for pump seals.

B. Furnish 30-year non-prorated manufacturer's warranty for wet well and valve chamber structures.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Furnish and install a complete automatic, underground pumping systems. The principal equipment included in the pumping systems shall include two non-clog submersible pumps; piping; valves within a separate valve chamber; control panel; level monitoring equipment; and emergency generator.

B. Pumping Station:

1. Configuration: Duplex.
2. Assembly: Field.
3. Wet well: Precast concrete.
4. Pump Type: Submersible Non-clog Centrifugal.
5. Controls:
    a. Automatic.

C. Package Pump Station Suppliers/Manufacturers:

1. United Concrete Products.
2. Excel Fluid Group.
3. Williamson Pump & Motor.
4. GA Fleet
5. Or equal.

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Pumping System:

1. Design Flow Conditions

    a. Design Flow Rate: 130 gpm.
    b. Design Flow Total Dynamic Head: 130 feet.
    c. Minimum Efficiency at Design Flow Rate: 40 percent.
2. Shutoff Head Minimum: 155 feet
3. NPSH Available: approximately 35 feet
4. Service Liquid: Municipal sewage
5. Specific Gravity: 1.01
6. Maximum Pump Speed: 3600 rpm
7. Maximum Motor Speed: 3600 rpm
8. Maximum Motor Horsepower: 15
9. Minimum Motor Horsepower: 10
10. Capable of passing spheres of at least 3-in diameter

11. Minimum suction opening of 3 inch and minimum discharge opening of 3 inch
12. Discharge Connection Elbow: Permanently installed in chamber with discharge piping
13. Connection: Automatic to discharge connection elbows when lowered into place, and easily removed for inspection or service
14. Capable of continuous submergence underwater without loss of watertight integrity to depth of 20 feet
15. Capable of regular operation with a water level of 6 feet from the bottom of the wet well base

B. Operation Sequence:

1. General:

   a. Elevations for level transducer start/stop settings and floats are shown on Drawing M-1. The intent is to have floats at elevations outside of the range of the level transducer start/stop settings to indicate operating under an emergency condition.
   b. The two pumps cannot operate at the same time.

2. Primary Duplex Control Sequence:

   a. Only one pump will operate at a time. If the duty pump fails to start and the level continues to rise, the standby pump will start.
   b. Primary pump control will be based on the 4-20mA signal from the submersible pressure transducer.
   c. As wet well liquid level increases to DUTY PUMP START setting, DUTY PUMP START switch energizes duty pump.
   d. When wet well liquid level decreases to PUMP STOP setting, PUMP STOP switch de-energizes duty pump.
   e. If wet well liquid level continues to decrease, LOW LEVEL alarm switch energizes alarm signal when liquid level reaches LOW-LEVEL setting.
   f. When duty pump is de-energized, alternating relay indexes such that standby pump starts on next rise in wet well liquid level.
   g. If wet well liquid level continues to rise and the duty pump fails to run, STANDBY PUMP START switch energizes standby pump.
   h. When wet well liquid level decreases to PUMP STOP setting, PUMPS STOP switch de-energizes both pumps.

3. Back-up Float Control Sequence:

   a. A total of 3 (three) floats shall be used as backup liquid level sensors.
   b. If wet well level continues to rise and HIGH LEVEL float is activated, the emergency back-up controls are activated. DUTY PUMP START switch energizes duty pump This activates BACKUP CONTROL (i.e., float mode) until reset.
   c. If wet well level continues to rise and HIGH-HIGH LEVEL float is activated, the emergency back-up controls are activated. DUTY PUMP START switch de-energizes duty pump and STANDBY PUMP START switch energizes standby pump. This activates BACKUP CONTROL (i.e., float mode) until reset.
   d. When wet well liquid level decreases to LOW-LOW LEVEL float, PUMP STOP switch de-energizes running pump.

e. There shall be a manual local reset push button to end BACKUP CONTROL once submersible pressure transducer is restored.

C. Sound, Vibration, and Thermal Control:

1. The pump manufacturer shall be fully responsible for the design, arrangement and operation of all connected rotating components and the supporting structure for the assembled pumping unit to ensure that neither harmful or damaging vibrations shall occur at any speed within the specified operating range.
2. Dampen or suppress noise.
3. Absorb vibration.
4. Accommodate thermal expansion and stresses.
5. Adjust or correct for misalignment in piping systems.

2.3 WET WELL SYSTEM

A. Description:

1. Submersible duplex wet well system, including cover with vent and door, rail assemblies, discharge and fittings, junction box, and level controls.
2. Inlet Size: 8 inches.
3. Discharge Size: 4 inches.

B. Concrete Wet well:

1. Description: Precast reinforced concrete wet well, as specified in Section 33 05 13 “Manholes and Structures”.
2. Minimum wall thickness: 8 inches.
3. Diameter: 96 inches .

C. Concrete Cover: Reinforced concrete as specified in Section 330513 “Manholes and Structures”.

D. Interior Wet Well Coating

1. Source Limitations: Obtain monolithic epoxy or polyurethane lining materials from single source from single manufacturer.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. APM/PermaForm.
b. Epoxytec.
c. Raven Lining Systems.
d. Sauereisen.
e. Sprayroq.
f. Warren Environmental.
g. WBE Dorcas Inc.
h. Or equal.

3. Description: A 100 percent epoxy resin or 100 percent polyurethane resin system suitable for use as a spray- or spin-applied monolithic lining in wet well. When cured, a continuous, tight-fitting, hard, impermeable lining, suitable for sewer system service and chemically resistant to any chemicals or vapors normally found in domestic sewage.

    a. Solids Content: 100%
    b. Bonding: To brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside sewer manhole. Provide bond strength data on cured monolithic lining system based on ASTM C882 test method.
    c. Total Cured Thickness: Minimum 125 mils. Continuous with proper sealing connections to unsurfaced areas; designed by an engineer for specific loads on each manhole.
    d. Materials: Ensure suitable for specified design conditions and chemical sealants or grouts used to seal active manhole leaks, to patch cracks, to fill voids or to prepare manhole surfaces, are compatible.

4. Performance Requirements: Lining system shall:

    a. Bond continuously to sewer manhole being rehabilitated after being placed and cured.
    b. Cover complete interior of existing sewer manhole including benches (shelves), inverts (channels or troughs) and pipe connections.
    c. Provide a continuous watertight seal or barrier.
    d. Effectively seal interior surfaces of sewer manhole and prevent any penetration or leakage of groundwater infiltration.
    e. Provide water resistance data based on ASTM Standards D870 and D2247 test methods.
    f. Be compatible with thermal condition of existing sewer manhole surfaces.
    g. Surface temperatures will range from 20 degrees F to 100 degrees F. Provide test data on lining system thermal compatibility based on ASTM C884.
    h. Separated from manhole frame by a suitable joint. Seal joint with joint sealing tape.
    i. Service Life: Minimum 25 years.
    j. Meet or exceed the following requirements:

Physical Properties		
Adhesion	ASTM D 7234	Substrate Failure
Abrasion Resistance	ASTM D 4060	< 90 mg (CS-17, 1,000 g, 1,000 cycles)
Compressive Strength	ASTM D 695	15,000 psi
Elongation Percent	ASTM D 638	4%
Flexural Modulus	ASTM D 790	590,000 psi
Flexural Strength	ASTM D 790	7,600 psi
Tensile Strength	ASTM D 638	5,600 psi

E. Access Hatch: as specified in Section 330513 “Manholes and Structures”

F. Rail System: Slide rail assembly consisting of Type 304 stainless-steel upper and lower rail brackets and pump guide brackets.

1. The station shall be supplied with pump mounting plates with upper and lower rail supports attached to the concrete station with stainless steel expansion bolts. Two 2-in (wastewater pumping station) stainless steel pipe rails shall be installed between the mounting plates. The rails shall be used to raise and lower the pumps into the stations. A stainless steel lifting cable shall be attached to the top of each station chamber and to the top of each pump assembly. Plates, rails and lifting cables to be provided for two pumps.

G. Junction Box: NEMA 250 Type 6, with cable grips for incoming direct-burial cable.

H. Electrical:

1. Provide cable grips for direct-burial cable for field installation.
2. Provide explosion-proof equipment, supplies, and fittings.

I. Level Controls:

1. Description: Submersible transducer to function as primary level control. Three mechanical-float pilot duty liquid-level controls for emergency operation.
2. Cable: AWG 18-2 SJOW-A in polypropylene housing for mounting to PVC float pole.

J. Float Pole:

1. Material: Schedule 40 PVC.
2. Conform to ASTM D1785.
3. Diameter: 1/2 inch.

2.4 PUMPS

A. The pumps shall be by Flygt meeting the design conditions enumerated herein; Flygt is the standard manufacturer for the BPWCA and no alternate manufacturers will be considered.

B. The non-clog pumps and motors shall be designed and manufactured so they can operate completely submerged in the sewage or groundwater and with motor unsubmerged indefinitely without overheating.

C. The centrifugal pump impeller unit shall be attached to a common motor and pump shaft of stainless steel. Pump and motor housings shall be high quality gray iron castings. Impeller shall be single vane cast iron. All fasteners shall be of Type 316 stainless steel.

D. The pump-motor shaft shall be sealed by two mechanical tungsten carbide faced seals within an oil filled chamber to provide clean, constant lubrication. The shaft shall be supported by an upper ball radial and thrust bearing and a two row angular contact lower bearings both grease lubricated. The upper bearing shall be supported by an O-ring sealed, movable cap so that impeller clearance may be adjusted externally for most efficient operation.

E. The shaft shall be supported by an upper ball radial and thrust bearing and a two-row angular contact lower bearings both grease lubricated. The upper bearing shall be supported by an O ring sealed, movable cap so that impeller clearance may be adjusted externally for most efficient

operation.

1. Pump and motor bearings shall be anti-friction type with a B-10 life of 20,000 hours minimum.

F. The motor winding and rotor shall be mounted in a sealed, submersible type housing which is able to transmit heat from motor winding to outer housing. Motor winding shall be Class F insulated and securely held in the housing with machine screws so that it may be removed in the field without the use of heat or a press.

G. Pump motors shall be inverter duty rated and shall be air filled and have cooling characteristics suitable to permit continuous operation in a totally, partially or non-submerged condition. Jacket water cooling shall not be required. The pump and motor shall be capable of running without damage for extended periods. Pump and motor shall be explosion-proof, suitable for Class 1, Division 1, Group C or D applications. Motor shall be provided with pilot thermal sensors embedded in the stator windings. Pumps shall have factory installed moisture detectors (seal failure probes) in the seal chamber.

H. The power cable shall be suitable for submersible pump and Class 1, Division 1, Group C or D applications. Cable sizing shall conform to National Electrical Code specifications for pump motors. Cable entry to each pump motor shall be designed for submersible pump applications. The cable entry junction box and motor shall be separated by a stator load sealing gland which shall isolate the motor interior from foreign materials gaining access through the pump top. The electrical power cords shall be sealed by use of a cord grip, with individual conductors additionally sealed into the cord cap assemblies with epoxy sealing compound. The cord grip shall have a male tapered pipe thread, threaded into a female tapered pipe thread in a cord cap. The cord cap shall be sealed into the motor housing with an O-ring. The pumps shall be supplied with a sufficient length of cord to connect to junction boxes inside the station. A minimum of 10 feet of additional power cord shall be provided with each pump to facilitate future removal of each pump and re-installation of seal-offs.

I.

I. The manufacturer shall submit rating curves and details of construction for the pumps to the Engineer for approval. The curves shall indicate head, discharge, efficiency, and horsepower characteristics throughout the full operating range.

J. The impellers shall be of the semi-open, single vane, non-clog type with the forward ends of the blades generously rounded to avoid catching trash. The blades shall be tapered toward the periphery of the impeller to generate the maximum possible shutoff head, and the outer tips of the blades shall occupy only a negligible portion of the area of the impeller throat or periphery. The impellers shall be accurately balanced before assembling.

K. Each pump discharge elbow connection shall be permanently installed in the wet well along with the discharge piping. Each pump shall be automatically connected and sealed to its discharge connection elbow when lowered into place and shall be easily removable. Each pump shall be mounted on a sliding guide bracket which is used to guide the pump into place with the discharge connection elbow. The sliding guide bracket and the pump casing shall have a machined angle connection with yoke to connect with the cast iron discharge connection, which shall be bolted to the floor of the wet well and so designed as to receive the pump angle connection without the need

of any bolts or nuts. Provide Type 316 stainless steel anchor bolts for attachment to the floor.

L. Sealing of a pumping unit to its discharge connection shall be accomplished by a simple linear downward motion of the pump with the entire weight of the pumping unit guided to the wedging tightly against the angled discharge connection; no portion of the pump shall bear directly on the sump floor and no rotary motion of the pump shall be required for sealing. Sealing at the discharge connection by means of a diaphragm or similar method of sealing will not be accepted as an equal to a metal contact of the pump discharge and mating discharge connection as specified and required.

M. The lower guide holders shall be integral with the discharge connection. Each pump shall ride on dual guide bars when raised and lowered in the sump. Guide bars shall be of standard weight 2-in Type 304 stainless steel pipe. The discharge connection elbow shall have a flanged connection to the discharge piping. Guide bars shall be furnished with intermediate and upper supports per manufacturer's recommendations.

N. Seal:

1. Design: Tandem mechanical, oil-filled reservoir.
2. Materials:

    a. Rotating Faces: tungsten-carbide .
    b. Stationary Faces: tungsten-carbide .
    c. Elastomer: Buna-N.
    d. Hardware: Type 300 stainless steel.
    e. Each pump shall be provided with a tandem double mechanical seal running in an oil reservoir, composed of two separate lapped seal faces. Each seal face shall consist of one stationary and one positively driven rotating tungsten-carbide ring with each pair held in contact by a separate spring, so that the outside pressure assists spring compression in preventing the seal faces from opening. The compression spring shall be protected against exposure to the pumped liquid. The pumped liquid shall be sealed from the oil reservoir by one face seal and the oil reservoir from the air-filled motor chamber by the other. The seals shall require neither maintenance nor adjustment and shall be easily replaced. Conventional double mechanical seals with a single spring between the rotating faces, requiring constant differential pressure to effect sealing and subject to opening and penetration by pumping forces shall not be considered equal to tandem seal specified and required. No seal damage shall result from operating without water, nor shall the sealing system rely on the pumped media for lubrication.

O. Motors:

1. The motors shall be submersible, vertically mounted induction type, suitable for a service as called out on the electrical plans with a 1.15 service factor. They shall have adequate starting torque and low starting current characteristics. The motor shall not be overloaded beyond the nameplate rating at any point on the pump head capacity curve. The motor shall be of adequate strength and stiffness for the service intended. It shall be supported on heavy grease- lubricated ball bearings.
2. Motors shall have encapsulated windings with void free slot penetration and be capable of

passing water immersion test as outlined in NEMA MGI 20.48 to provide protection against moisture ingress and condensation when the motor is not running.

3. Type: Squirrel cage, induction.
4. Design: Shell type.
5. Housing: Air-filled, watertight chambers.
6. Insulation: Class B.
7. Nonoverloading throughout entire pump performance range based on 1.0 service factor.
8. Duty: Continuous, capable of sustaining minimum of 10 starts per hour.
9. Indefinite operation without overheating when unsubmerged and operating in air.
10. Stators:

    a. Dipped and baked three times in Class F varnish.
    b. Heat-shrink-fitted into stator housings.
    c. Furnish thermal sensors to monitor stator temperatures.
    d. Include three thermal switches embedded in end coils of stator winding, for one switch in each stator phase.
    e. Stator Windings and Leads: Insulated with moisture-resistant Class F insulation capable of resisting temperature of 311 degrees F.

11. Cooling System:

    a. Water jacket encircling stator housing.
    b. Furnish cooling media channels.

12. Junction Chamber:

    a. Terminal board.
    b. Sealed from motor by elastomeric compression seal (O-ring).
    c. Connection cable conductors and stator leads with threaded, compressed-type binding post permanently affixed to terminal board.

13. The motors shall be suitable for 230 Volt, 3 Phase, 60 Hz service, with a 1.15 service factor. They shall have adequate starting torque and low starting current characteristics. The motor shall not be overloaded beyond the nameplate rating at any point on the pump head capacity curve. The motor shaft shall be of adequate strength and stiffness for the service intended. It shall be supported on heavy grease lubricated ball bearings.
14. Motors shall have encapsulated windings with void free slot penetration and be capable of passing water immersion test as outlined in NEMA MGI-20.48 to provide protection against moisture ingress and condensation when the motor is not running. Threaded condensate drain holes shall be suitably positioned in the lower external surface of all motors to expel any moisture that may have accumulated.
15. Electrical Cable:

    a. Length: 30 feet.
    b. Provide pressure grommet for sealing and strain relief.

16. Speed: 3450 rpm, nominal.
17. Bearings (General Requirements)

a. The pumps shall be provided with bearings both radial and thrust, of the anti-friction type and of ample size to carry all loads imposed under continuous service without overheating. Bearings shall be designed and guaranteed to withstand runaway motor speed.
b. All bearings shall be accessible while the pump is in operation. The bearings shall be grease lubricated and a relief shall be provided so that excessive grease pressure will not damage the bearings.
c. During shipment and installation, the bearings shall be properly processed with Exxon "Rust Bane" No. 392, similar by Mobil; Texaco or equal. Each bearing frame shall be designed so that the complete rotating element can be removed from its casing without disconnecting the piping.
d. The bearing frame shall contain external provision for axial adjustment of the rotating element when necessary, to provide proper clearance between the impeller and suction cover wearing rings.

18. Upper Bearing:

a. Design: Single row, ball.
b. Lubrication: Oil.
c. Load: Radial.

d. Minimum ABMA 9 L-10 Life: 40,000 hours.

19. Intermediate Bearing:

a. Design: Single row, ball.
b. Lubrication: Oil.
c. Load: Radial and thrust.
d. Minimum ABMA L-10 Life: 40,000 hours.

20. Lower Bearing:

a. Design: Sleeve.
b. Lubrication: Oil.
c. Load: Radial.
d. Minimum ABMA L-10 Life: 40,000 hours.

21. Operation:

a. Electrical Characteristics:

1) Voltage: 208V, three phase, 60 Hz.
2) Full-Load Ampacity: 24.2 A
3) Minimum Power Factor: 85 percent at rated load.
4) Controls: Mount double electrode in seal chamber to actuate remote alarm when water is detected in seal chamber.

2.5 PUMP CONTROL PANEL

A. Pump Controller:

1. Manufacturers:

a. Primex Controls PC-3000XC Controller.

2. Description.

a. Factory fabricated, self-contained.
b. Pump Controller needs to be built to operate the pumps in accordance with section 2.2.B Operation Sequence.

3. Function/Performance:

a. Input Power: 24VDC
b. Minimum of 11 digital inputs.
c. Minimum of 6 relay outputs.
d. Minimum of 1 analog input.
e. Allows for control with continuous level monitoring and float control.

4. Accessories:

a. Include battery backup.

B. Main Control Panel Enclosure:

1. Rating: NEMA 4/12, painted steel.
2. Size: 36” by 24” by 12” inches maximum.
3. Mounted in pedestal cabinet.
4. Door:

a. Padlock hasp/staple with captive stainless screws for door closure.
b. Concealed hinges and clamped fastening.

C. Intrinsically Safe Relay Panel Enclosure:

1. Rating: NEMA 4/12, painted steel.
2. Size: 16” by 12” by 8” inches maximum.
3. Mounted in pedestal cabinet.
4. Door:

a. Padlock hasp/staple with captive stainless screws for door closure.
b. Concealed hinges and clamped fastening.

D. Power Distribution:

1. The input power to pump control panel is 208 V, 3 Phase, 60 Hz. Provide Main and Branch Circuit Breakers. Provide circuit breakers and components fully rated for 65 kAIC.
2. Provide all stepdown transformers including primary and control (secondary) transformers.

3. Provide motor starters for two 7.5HP motors (208V Size 2).

E. Pilot Type Indicating Lights:

1. Manufacturers:

a. Allen Bradley.
b. General Electric.
c. Schneider Electric.
d. Or Equal.

2. Function/Performance:

a. Low voltage LED lamps suitable for the voltage supplied.
b. Integral reduced voltage transformers for 120VAC powered lights.
c. Replaceable lamps from the front of the unit.

3. Physical:

a. Lens caps: 30 mm diameter.
b. Provide legend faceplates engraved to indicate the required function of each device.

F. Ball Float Switches:

1. Manufacturers:

a. Contegra FS 90.
b. Siemens Water Technologies Model 9G-EF.
c. Or equal.

2. Type:

a. Mercury free ball float switch.

3. Function/Performance:

a. Differential: Less than 8-inch.
b. Type of Switch: SPDT snap switch
c. Switch Rating: 1A at 120 VAC or 100 VA @ 120 VAC.

4. Physical:

a. Type 316 stainless steel, Teflon or non-stick coating, minimum 5 in diameter.
b. Totally encapsulated switch.
c. Heavy-duty cable, PVC or equivalent jacketed integral to float.

G. Submersible Level Measurement Devices:

1. Manufacturers:

a. Keller Ameria
b. Blue Ribbon - BR313L model.
c. GE - PTX/PDCR1830.
d. SOR - Model 510 LT.
e. Or equal.

2. Type:

a. Submersible, hydrostatic pressure type level transmitter.

3. Function/Performance:

a. Temperature Compensation: Provided over a range of 32 to 122 degrees F.
b. Accuracy: Plus or minus 0.25 percent of range.
c. Over Pressure: Protected for over pressure of 1.5 times the span.
d. Output: 4-20 mA proportional to the calibrated span.

4. Physical:

a. Provide an assembly with a Type 316 stainless-steel or titanium body with a bottom diaphragm.
b. Provide sensor with integral cable. Provide a vent tube as part of the cable for the transducer.
c. Provide a tension-relieving mounting clamp from a 4-inch flange. Provide Type 316 stainless-steel material for both clamp and flange.

5. Required Accessories:

a. Signal cable as recommended by the manufacturer, for installation between the sensor and transmitter as shown on the drawings. Provide reinforced cable to support the weight of the transducer and cable.
b. Cable clamp for suspending instrument provided by instrument supplier.
c. All fittings required for pressure calibration of the instrument.

2.6 RECORDING TELEMETRY UNIT

A. Manufacturers:

1. Mission Communications MyDro 150.

B. Type:

1. Recording Telemetry Unit collecting real-time data and triggering remote alerts.

C. Function/Performance:

1. Minimum of 2 Analog Inputs.
2. Minimum of 8 Digital Inputs.

3. Minimum of 2 Analog Outputs.
4. Minimum of 3 Relay Outputs.
5. Cellular to provide remote monitoring.

D. Power:

1. Powered by 120VAC. Integral battery backup to provide power in the event of utility loss.

E. Requirements:

1. Cellular reception at site to be tested before installation of equipment to determine necessary antenna length and placement required.
2. Owner has existing mission systems, this unit is to be programmed to closely match owner standards. Minimum requirements for signals are shown on Drawing I-2. Contractor to coordinate final list of signals with owner.

2.7 PIPING

A. Ductile iron pipe shall conform to the physical and chemical requirements of AWWA C151 and shall have dimensions and wall thickness in accordance with the Cast Iron Pipe Research Association Standard for flanged pipe with threaded flanges, Thickness Class 53.

B. Pipe joints shall be flanged unless flange-to-plain joints are specified.

C. Fittings shall be ductile iron or cast-iron conforming with AWWA C110, 150 psi minimum pressure rating.

D. Flanged joints shall be with factory applied screwed 125 lb long hub companion flanges conforming to ANSI B16.1. Flanges shall be faced and drilled after being threaded to pipe, be true 90 degrees with the pipe axis and shall be flush with the end of the pipe. Flanged pipe shall be cut true to length. Ring gaskets shall be rubber with cloth insertion. Gaskets shall be 1/16-in thick. Flanged joints shall be made with bolts, bolt studs with a nut on each end or studs with nuts if the flange is tapped. The number and size of bolts shall conform to the same American Standard as the flanges. Bolts and nuts shall conform to ANSI B18.2 and shall be of material conforming to ASTM A307, Grade B. Bolt studs and studs shall be of the same quality as machine bolts.

E. All pipe and fittings shall have a cement mortar lining and bituminous seal coat on the inside in accordance with AWWA C104, except that cement mortar lining shall be 1/8-in in thickness for pipe 2-in to 12-in diameter and 3/16-in thickness for pipe 14-in to 24-in diameter. A plus tolerance of 1/8-in will be permitted. The bituminous seal coat shall be 8 to 10 mil thick.

F. Suction and discharge piping shall be equipped, with cast iron flanged to plain end flexible adaptors, of locking type, capable of withstanding the pressure equivalent of AWWA C115, thickness Class 53, ductile iron pipe with threaded flanges.

2.8 PLUG VALVES

A. Manufacturers:

1. DeZurik.
2. M&H Valve
3. Clow Valve Company; a subsidiary of McWane, Inc.
4. Henry Pratt Company; a Mueller brand.
5. Kennedy Valve Company; a division of McWane, Inc.
6. Val-Matic Valve & Manufacturing Corp.

B. Description:

1. Type:

a. Offset disc type
b. Non-lubricated
c. Serviceable (able to be repacked) under full line pressure
d. Eccentric.
e. Capable of sealing in both directions at the rated pressure
f. unobstructed flow path when open
g. Drop tight shut-off to the full valve rating with pressure on either side of the plug.

2. Body:

a. 30,000-psi tensile strength
b. Top entry, bolted bonnet
c. Body shall be cast with integral piping connections

3. Plug:

a. To be removable without removing the valve from the line.
b. To have an integral upper and lower shaft:

1) seals on the upper and lower journals to prevent entrance of solids into the journals.

c. one piece for all valves.

4. Bearings:

a. Permanently lubricated

5. Working Pressure: 150 psig at 100 deg. F.

a. At the above rated minimum working pressures, certified by the manufacturer as permitting zero leakage for a 5-minute duration with full pressure applied in either direction.

6. Maximum Process Fluid Temperature: 100 deg. F.
7. Ports:

a. Configuration: Rectangular.

b. Minimum Port Area: 80 percent of nominal pipe area.

8. Seats:

a. Full 360 degree seating by contact of a resilient seating material on the plug mating with welded-in seating surface in the body.
b. Screw in body seats not acceptable.
c. Resilient and of the continuous interface type having consistent opening and closing torques.
d. Non-jamming in the closed position.

9. Stem Bearings: Self-lubricating.
10. Stem Seals:

a. Type: V-ring.
b. Externally adjustable and repackable without removing the bonnet from the valve, or self adjusting.

11. Packing and Gland: Accessible and externally adjustable.
12. End Connections:

a. Mechanical Joint: Comply with ANSI/AWWA C111/A21.11
b. Flanged: Comply with ASME B16.1 and B16.42.

C. Operation:

1. A suitably sized steel actuator mounting bracket shall be provided to provide an air gap between the actuator and the valve stem seal. Under no circumstance shall the gear box be mounted directly to the top body flange such that leakage could directly enter the gear box.

2. Provide adjustable limit stops for both opening and closing and a clearly marked position indicator.
3. 4 Inches and Smaller: Manual, provided with its own securely attached lever.
4. Furnish chain wheel operators for valves mounted over 7 feet above floor.

D. Materials:

1. Body:

a. Ductile iron, ASTM A536.

b. Lining: Elastomer, as recommended by valve manufacturer for service conditions.

2. Plug:

a. Ductile iron, ASTM A536, Grade 65-45-12.
b. Lining: Resilient coating, as recommended by valve manufacturer for service conditions.

3. Seats: High Nickel.
4. Stem: Type 316 stainless steel.
5. Stem Bearings: Bronze.
6. Seals: PTFE.
7. Connecting Hardware: Type 316 stainless steel
8. Finishes: AWWA C550, Epoxy, 4-mil minimum thickness.

2.9 CHECK VALVES

A. Rubber Flapper Swing Check Valves (3-in and larger):

1. Description:

a. Comply with AWWA C508.
b. Type: Swing, rubber encapsulated metal disc, movement provided via flexing of reinforced rubber tab.
c. Seat: Resilient, integral with rubber disc encapsulation.
d. Minimum Working Pressure: 175 psig.
e. Maximum Fluid Temperature: 100 deg. F
f. Mounting: Horizontal
g. End Connections: ASME B16.1, ASME B16.5 and ASME B16.42, flanged.

2. Materials:

a. Body and Cover: ASTM A536 Ductile Iron.
b. Disc: Steel encapsulated with reinforced EPDM rubber.
c. Seat: Integral to disc encapsulation.
d. Cover Hardware: Type 316 stainless steel.
e. Connecting Hardware: Type 304 stainless steel.

3. Finishes:

a. Body, Internal and External: AWWA C550, Epoxy, 4-mil minimum thickness.

B. “Duckbill” Elastomeric Check Valves

1. Description:

a. Check Valves are to be all rubber of the flow operated check type with a slip-on connection. The Check Valve is designed to slip over the specified pipe outside diameter and attached by means of vendor furnished stainless steel clamps (Type 316). The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The valve shall be one piece rubber construction with nylon reinforcement.
b. Manufacturer must have available flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, valve size and serial number shall be bonded to the check valve. Valves shall be manufactured in

the USA.

c. When line pressure inside the valve exceeds the backpressure outside the valve by a certain amount, the line pressure forces the bills of the valve open, allowing flow to pass. When backpressure exceeds the line pressure by at the same amount, the bills of the valve are forced closed. The flat bottom allows the valve to be installed where minimal bottom clearance exists.

d. The check valves to be at locations shown on the drawings shall be Tide Flex Series TF-2 by Tideflex Technologies, CLA-VAL Series DBO, or approved equal.

2.10 SURFACE PREPARATION AND SHOP PRIME PAINTING

A. Equipment and piping within the pump chamber shall be blast cleaned in accordance with SSPC-SP-6, immediately prior to priming.

B. Equipment and piping shall be shop coated as specified below.

1. Primer: 1 coat Tnemec 66-1211 Expoxoline Primer (3.0 to 4.0 mil minimum dry film thickness) or equal by Carboline
2. Finish: 2 coats Tnemec 66 (2.0 to 3.0 mils per coat minimum dry thickness) or equal by Carboline

C. Gears, bearing surfaces and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during all periods of storage and erection and shall be satisfactory to the Engineer up to the time of the final acceptance test.

2.11 ACCESSORIES

A. Pipe Penetration Sealant: Grout as specified in Section 03 60 00 “Grouting” for use in concrete wet wells.

B. Anchor Bolts, Nuts, and Washers:

1. Bent Anchor Bolts: Comply with ASTM A709, Grade 36.
2. Nuts: Comply with ASTM A307, Grade A.
3. Washers: Comply with ASTM A126.
4. Galvanized bolts, nuts, and washers according to ASTM A153.

C. Fencing and Security Gate: As specified in Section 323113 “Chain Link Fences and Gates.”

D. Fresh Water Supply: As indicated on Drawings.

2.12 SOURCE QUALITY CONTROL

A. Testing shall comply with Hydraulic Institute Standards including

1. Rotodynamic Submersible Pumps: for Hydraulic Performance, Hydrostatic Pressure, Mechanical and Electrical Acceptance Tests (ANSI/HI 11.6-2017)

B. Inspection:

1. Verify that motor voltage and frequency are as shown on nameplate.
2. Verify that motor and cable insulation test for moisture content or insulation defects comply with UL 83.

C. Testing:

1. Submerged Pump Run: Test to determine that pump meets hydraulic performance requirements.
2. Document and certify testing results in written report.

D. Owner Inspection:

1. Make completed pump assembly available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least seven days before inspection is allowed.

E. Owner Witnessing:

1. Allow witnessing of factory inspections and test at manufacturer's test facility.
2. Notify Owner at least seven days before inspections and tests are scheduled.

F. Certificate of Compliance:

1. If fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that inlet and discharge piping connections are size, location, and elevation as indicated on Drawings.

3.2 PREPARATION

A. Establish elevations of packaged pumping station as shown on the Drawings.

B. Protect piping from entry of foreign materials and water by using temporary covers, completing sections of Work, and isolating parts of completed system.

3.3 INSTALLATION

A. Earth excavation and backfill are specified under Section 312333 “Trenching and Backfilling”, but are to be done as a part of the work under this Section, including any necessary sheeting and bracing. The Contractor shall be responsible for dewatering to provide firm, dry undisturbed subgrade for the structures, shall prevent water rising on new concrete within 24 hours after placing, and shall guard against flotation or other damage resulting from ground water or flooding.

B. Anchor bolts previously set shall be used to secure the station to the concrete base to prevent flotation. Stainless steel bolts shall be protected by painting with two coats of heavy bituminous coating.

C. Ensure against flotation of the station as specified herein. If additional concrete is required to prevent flotation, based on the manufacturer's approved calculations, the Contractor shall furnish and place such concrete as approved by the Engineer. All such additional concrete shall be considered a part of, and incidental to, the station installation, and no additional compensation will be made.

D. All pumps shall be installed by the station manufacturer during fabrication of the station at the manufacturer’s facility. All installation procedures shall be in strict accordance with the instructions of the pump manufacturer and as shown on the Drawings. In addition, the pumps shall be installed under the supervision of a representative of the manufacturer supplying the equipment. Installation shall include the supply of oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer’s instructions. Anchor bolts shall be set in accordance with the manufacturer’s instructions.

E. Field tests shall not be conducted until such time that the entire installation is complete and ready for testing.

F. Submit a certificate from the equipment manufacturer stating that the installation is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

3.4 FIELD QUALITY CONTROL

A. Pre-operational Checks:

1. Check pump and motor alignment.
2. Check for proper motor rotation.
3. Check pump and drive units for proper lubrication.

B. Startup and Performance Testing:

1. Notify Engineer, three days prior to flow rate testing.
2. Startup and Initial Testing: Coordinate and operate pumps in conjunction with construction of gravity sewer.
3. Hydraulically test station to performance requirements by receiving, pumping, and discharging 500 gal of water to and from wet well.

4. Confirm general sequencing of pump and float operations at wet well and control panel are according to performance requirements.
5. Document and certify startup results in startup report.

C. Conduct in the presence of the Engineer such tests as necessary to indicate that the pumps conform to the head and capacities specified. A 14-day operating period of the pumps will be required before acceptance. If pump performance does not meet the Specifications, corrective measures shall be taken by the Contractor or the pumps shall be removed and replaced with pumps which satisfy the conditions specified. All test procedures shall be in accordance with factory test procedures and certified results of tests shall be submitted. Provide, calibrate and install all temporary gauges and meters, shall make necessary tapped holes in the pipes, and install all temporary piping and wiring required for the field acceptance tests. Written test procedures shall be submitted to the Engineer for approval 30 days prior to testing. All costs associated with the field tests or any required corrective action shall be borne by the Contractor. The decision of the Engineer shall be final.

D. Equipment Acceptance:

1. Adjust, repair, modify, or replace system components failing to perform as specified and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.
3. Document adjustments, repairs, and replacements in manufacturer’s field services certification.

E. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than five days on Site for installation, inspection, field testing, startup, and instructing Owner's personnel in maintenance of equipment.

F. Furnish installation certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

G. Document and certify startup and testing results in written report.

3.5 ADJUSTING

A. Adjust wet well, pump, and control panel systems such that station operates to performance requirements and according to Specifications.

3.6 DEMONSTRATION

A. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 333219

©2026 CDM Smith
All Rights Reserved

SECTION 333400 - SANITARY UTILITY SEWERAGE FORCE MAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Force Main.
2. Air, Vacuum, and Combination Valves on Force Main including at pump station.
3. Bedding and cover materials.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete": Concrete material requirements.
2. Section 310515 "Soils and Aggregates for Earthwork": Aggregate for pipe bedding and backfill.
3. Section 312333 "Trenching and Backfilling": Excavation, backfilling, and compacting,.
4. Section 330526 “Utility Identification”: Pipe markers.
5. Section 333113 "Public Sanitary Utility Sewerage Piping": Connections to sanitary sewerage system.

1.3 COORDINATION

A. Coordinate Work of this Section with connection to existing municipal sewer utility service.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.5 ACTION SUBMITTALS

A. Product Data: Manufacturer information indicating pipe material used, pipe accessories, valves, restrained joint details and materials.

B. Shop Drawings:

1. Pipe layout including all fitting and valve locations.

1.6 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Products meet or exceed specified requirements.

B. Manufacturer Instructions: Special procedures required to install specified products.

C. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

D. Qualifications Statements:

1. Qualifications for manufacturer, installer, and licensed professional.
2. Manufacturer's approval of installer.

1.7 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record invert elevations and actual location of pipe runs and connections.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

A. Design polyvinyl-chloride pipe restrained joints according to DIPRA standards.

B. Perform Work according to standards set by authorities having jurisdiction.

C. Maintain a copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience.

C. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Connecticut.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Where applicable, deliver materials in manufacturer's packaging including application instructions.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Do not place materials on private property without written permission of property owner.
3. Do not stack pipe higher than recommended by pipe manufacturer.

D. Handling:

1. Avoid dragging pipe over hard or sharp objects.
2. Avoid cutting of pipe's exterior. Any cut or gouge deeper than 5 percent of pipe's wall thickness shall be removed from site.
3. Avoid undue stress in pipe caused by bending.

E. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Store gaskets for mechanical and push-on joints in cool and dry location, out of direct sunlight, and not in contact with petroleum products.
3. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 FORCE MAIN

A. Ductile-Iron Pipe:

1. Comply with AWWA C151 and AWWA C104.
2. Interior Coating: double thickness cement mortar lining.
3. Exterior Coating: bituminous coating.
4. Pressure Classes:

    a. Sizes 3 to 12 Inches: 350 psig.

B. Ductile-Iron Fittings:

1. Comply with AWWA C110.
2. Pressure Rating: 350 psig.
3. Interior Coating: double thickness cement mortar lining.

4. Exterior Coating: bituminous coating

C. Joints:

1. Comply with AWWA C111.
2. Type: Mechanical or push on.

D. Rubber Gaskets, Lubricants, Glands, Bolts, and Nuts: Comply with AWWA C111.

2.2 PVC PIPE

A. PVC Pressure Sewer Pipe and Fittings, 4- to 60-Inch:

1. Comply with AWWA C900.
2. Class: 200 psi.
3. DR: >21.
4. Joints: restrained
5. Pipe and gaskets shall be suitable for burial in proximity to impacted soil including compounds detected and tabulated in Appendix B.

2.3 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type, as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
2. Cover: Fill Type, as shown on the Drawings and specified in Section 310515 "Soils and Aggregates for Earthwork."
3. Backfill from above Pipe to Finish Grade: Fill Type, as specified in Section 310515 "Soils and Aggregates for Earthwork."
4. Subsoil: No rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.4 MIXES

A. Concrete: As specified in Section 033000 "Cast-in-Place Concrete."

2.5 ACCESSORIES

A. Pipe Markers: As specified in Section 330526 "Utility Identification."

2.6 AIR VALVES

A. Description: Valves shall be designed for wastewater service, fully automatic, float-operated, and comply with AWWA C512.

B. Air/Vacuum Valves shall be designed to release large amounts of air during pipeline filling, release small amounts of air accumulated during pipeline operation, and allow large volume of air entry during pipeline drainage or pipe break to prevent vacuum. Valves shall incorporate two stainless steel floats directly connected by a stainless steel stem to maintain air gap between the bottom concave float and the top shutoff float. Air gap shall prevent waste solids from fouling the floats. Valve internals shall be able to be removed through the top cover without removing the main valve from the line. Valve internal baffle shall be fitted with a guide bushing and act to protect the shutoff float from direct air flow. Valves shall remain closed when the system is full and under positive pressure. Valves shall have an intake orifice area equal to nominal size of valve. Air/Vacuum Valves shall be Apco Model 401 or approved equal.

C. Combination Air Valves shall be single body valve with double orifice, to allow large volumes of air to escape or enter when filling or draining a pipeline. When the pipeline is filled and pressurized, the large orifice shall stay closed. The valve's large orifice shall shut off when the free floating, center-guided plug is raised into the orifice by the lifting force of the concave bottom float. The valve's small diameter air release orifice shall remain operative and open during normal system operation to allow small pockets of air accumulation to escape automatically and independently of the large orifice. Valve seat shall be resilient material and fastened to the valve cover without distortion for drop tight shutoff. Valve float shall be heavily constructed stainless steel, hermetically sealed, an have a concave bottom impact area to provide immediate resistance to flow and instant upwards movement to shut off the large orifice without spilling. Combination Air Valves shall be Apco Model 440 or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that trench cut and excavation base is ready to receive Work.

B. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Correct over-excavation with coarse aggregate.

B. Remove large stones or other hard matter capable of damaging pipe or of impeding consistent backfilling or compaction.

C. Thoroughly clean pipe and fittings before installation.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312333 "Trenching and Backfilling."

2. Place bedding material at trench bottom.
3. Level materials in continuous layers not exceeding 8 inches in depth.
4. Maintain +/- 2 percent of optimum moisture content of bedding material to attain required compaction density.

B. Piping:

1. Install pipe, fittings, and accessories as indicated on Drawings.
2. Route piping in straight line.
3. Install bedding at sides and over top of pipe to minimum compacted thickness of 12 inches.
4. Backfilling and Compacting:

   a. As specified in Section 312333 "Trenching and Backfilling."
   b. Do not displace or damage pipe while compacting.

5. Pipe Markers: As specified in Section 330526 “Utility Identification."

C. Thrust Restraints:

1. Pressure pipeline shall be installed with restrained joints. Thrust blocking shall not be considered a substitute for restrained joints on this project.

D. Cradles and Encasements for Pipelines: Where indicated on Drawings and as specified in Section 033000 "Cast-in-Place Concrete."

E. Air/Vacuum Valves and Combination Air Valves shall be installed in accordance with manufacturer instructions, in the pump station valve vault and in manholes at the locations shown on the Drawings and confirmed with shop drawings.

3.4 FIELD QUALITY CONTROL

A. Inspections: Request inspection by Engineer prior to and immediately after placing bedding.

B. Cleaning: As pipe laying progresses and at conclusion of work thoroughly clean all new pipelines by flushing with water or other means to remove dirt, stones, pieces of wood or other material which may have entered during construction period.

C. Testing:

1. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.
2. Pipe Testing:

   a. Hydrostatic Pressure Test: Per Section 9.3 of AWWA C605.

      1) Hydrostatic pressure test methods and procedures must be approved by Engineer.
      2) Submit testing plan to Engineer 10 days before testing.

3) Subject pressure pipelines to a hydrostatic pressure no greater than 50 percent above normal operating pressure in lowest portion and no less that 25 percent above normal operating pressure in highest portion of pipeline segment being tested.
4) Maintain test pressure a minimum of 2 hours.
5) Furnish gauges, meters, pressure pumps and other equipment needed to fill line slowly and perform required hydrostatic pressure tests.
6) Contractor shall arrange and pay for a supply of water as required to fill and test lines. Maintain an air break at all times between Owner's distribution system and Contractor's equipment to prevent cross-connection.

3. Compaction Testing:

a. Comply with ASTM D1557.
b. Testing Frequency: weekly.

3.5 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 333400

APPENDIX A
GEOTECHNICAL INFORMATION



NOTES:

1. THE BASE MAP WAS DEVELOPED FROM AERIAL PHOTOGRAPHS ACCESSED FROM GOOGLE EARTH PRO VERSION 7.3.6.10441 ON NOVEMBER 26, 2025.
2. COORDINATES FOUND IN THE FIELD THROUGH TAPE MEASUREMENTS TO LANDMARKS. THE COORDINATES ARE REFERENCED TO THE CONNECTICUT STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83). ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

LEGEND:

- DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS ON SEPTEMBER 3 THROUGH SEPTEMBER 6, 2024.
- DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS ON MAY 2 THROUGH MAY 19, 2022.
- DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBES PERFORMED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS ON SEPTEMBER 12, 2024.
- DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBES PERFORMED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS ON APRIL 21, 2022.
- (W) INDICATES GROUNDWATER OBSERVATION WELL INSTALLED IN BORING
- PROPOSED 8-INCH PVC GRAVITY SEWER

NOTES:

AERIAL PHOTOGRAPHS SOURCE: GOOGLE EARTH PRO VERSION 7.3.6.10441. ACCESSED NOVEMBER 26, 2025.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:
DRAWN BY:
SHEET CHK'D BY:
CROSS CHK'D BY:
APPROVED BY:
DATE: AUGUST 2024

CDM Smith
101 East River Drive, Suite 1A
East Hartford, Connecticut
Tel: (860) 529-7615

TOWN OF BROOKFIELD, CONNECTICUT

DEAN-POCONO AREA SEWER

SITE LOCATION PLAN

PROJECT NO. 80744-292517
FILE NAME: C001PLPR

PROGRESS SET - NOT CONSTRUCTION

2022 Boring Logs

Geologic - Earth Exploration, Inc.

7 Sherwood Drive
Norfolk, MA 02056
TEL 5083844434
FAX

CLIENT: CDM Smith
PROJECT: Brookfield
LOCATION: Brookfield, CT
Dean-Pocono

BORING #: B-35
PAGE 1 OF 1

File #: 22066
Date Started: 5/18/22
Date Completed: 5/18/22
Driller: J. Mientkiewic
Site Rep.:

	CASING	SAMPLER	CORE BARREL
TYPE	HW	SS	
SIZE	3"	1 3/8	
HAMMER	140#	140#	---
FALL	24"	30"	---

Surface Elevation:
Station:
Groundwater level readings
Date Depth
Date Depth

Depth ft	Sample No.	Sample Depth ft	Pen. in	Rec. in	Blows/6"	Strata Change ft	Sample Description
	S-1	0.0-2.0	24	6	8-10-12-13		S-1 Dry medium dense brown coarse SAND and GRAVEL
5	S-2	4.0-6.0	24	10	19-20-20-19		S-2 Dry medium dense yellow medium to fine SAND and ~~GRAVEL~~ *SILT, trace gravel*
10	S-3	9.0-10.8	21	7	22-32-44 -100/3"		S-3 Dry very dense yellow medium SAND and GRAVEL
15	S-4	14.0-14.8	9	0	47-100/3"	15.3	S-4 No recovery, rock in spoon tip Possible top of rock at 15.3', roller bit to 16.3'
						16.3	Bottom of exploration at 16.3'
20							
25							
30							

Ground Surface to _____ used _____ then _____

Proportions Used		Cohesive Consistency Blows/ft				Cohesionless Density Blows/ft		Sample Type
Trace	0 to 10%	0-2	Very Soft	9-15	Stiff	0-10	Loose	UP = Fixed Piston
Little	10 to 20%	3-4	Soft	16-30	V-Stiff	10-30	M-Dense	UT = Shelby Tube
Some	20 to 35%	5-8	M-Stiff	31+	Hard	30-50	Dense	OE = Open End Rod
And	35 to 50%					50+	V-Dense	* = 300# hammer

Notes:
1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.
2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

Remarks: All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL CDM BROOKFIELD_CT.GPJ GEOLOGIC.GDT 5/25/22

Geologic - Earth Exploration, Inc.

7 Sherwood Drive
Norfolk, MA 02056
TEL 5083844434
FAX

CLIENT: CDM Smith
PROJECT: Brookfield
LOCATION: Brookfield, CT
Dean-Pocono

BORING #: B-36
PAGE 1 OF 1

File #: 22066
Date Started: 5/18/22
Date Completed: 5/18/22
Driller: J. Mientkiewic
Site Rep.:

	CASING	SAMPLER	CORE BARREL
TYPE	HW	SS	
SIZE	3"	1 3/8	
HAMMER	140#	140#	---
FALL	24"	30"	---

Surface Elevation:
Station:
Groundwater level readings
Date Depth
Date Depth

Depth ft	Sample No.	Depth ft	Pen. in	Rec. in	Blows/6"	Sample Description
	S-1	0.0-2.0	24	14	5-17-19-16	S-1 Dry medium dense brown medium to fine SAND and GRAVEL
5	S-2	4.0-6.0	24	7	5-4-6-8	S-2 Wet medium dense yellow medium to fine SAND, trace Gravel
10	S-3	9.0-11.0	24	0	17-24-36-35	S-3 No recovery
15	S-4	14.0-15.3	15	8	22-50-100/3"	S-4 Wet very dense light grey SILT and fine SAND, trace Gravel
20	S-5	19.0-20.2	14	15	57-75-100/3"	S-5 Similar to S-4
						Bottom of exploration at 20.2'
25						
30						

Ground Surface to _____ used _____ then _____

Proportions Used		Cohesive Consistency Blows/ft				Cohesionless Density Blows/ft		Sample Type
Trace	0 to 10%	0-2	Very Soft	9-15	Stiff	0-10	Loose	UP = Fixed Piston
Little	10 to 20%	3-4	Soft	16-30	V-Stiff	10-30	M-Dense	UT = Shelby Tube
Some	20 to 35%	5-8	M-Stiff	31+	Hard	30-50	Dense	OE = Open End Rod
And	35 to 50%					50+	V-Dense	* = 300# hammer

Notes:
1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.
2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

Remarks: All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL CDM BROOKFIELD_CT.GPJ GEOLOGIC.GDT 5/25/22

Geologic - Earth Exploration, Inc.

7 Sherwood Drive
TEL 5083844434
Norfolk, MA 02056
FAX

CLIENT: CDM Smith
PROJECT: Brookfield
LOCATION: Brookfield, CT
Dean-Pocono

BORING #: B-37
PAGE 1 OF 1

File #: 22066
Date Started: 5/12/22
Date Completed: 5/12/22
Driller: J. Mientkiewic
Site Rep.:

	CASING	SAMPLER	CORE BARREL
TYPE	HW	SS	
SIZE	3"	1 3/8	
HAMMER	140#	140#	---
FALL	24"	30"	---

Surface Elevation:
Station:
Groundwater level readings
Date Depth
Date Depth

Depth ft	Sample No.	Sample Depth ft	Pen. in	Rec. in	Blows/6"	Strata Change ft	Sample Description
	S-1	0.0-2.0	24	12	40-50-31-33		S-1 Dry very dense yellow SILT and fine SAND, trace Gravel
5	S-2	4.0-6.0	24	20	19-10-8-8		S-2 Wet medium dense yellow SILT ~~and fine SAND~~ *, trace fine sand*
10	S-3	9.0-11.0	24	18	9-15-15-19		S-3 Wet dense grey SILT and fine SAND
15	S-4	14.0-16.0	24	16	30-8-13-18		S-4 Wet medium dense light grey SILT and fine SAND, some Gravel
						18.0	Possible top of rock at 18', roller bit to 19'
20						19.0	Bottom of exploration at 19.0'
25							
30							

Ground Surface to _____ used _____ then _____

Proportions Used		Cohesive Consistency Blows/ft				Cohesionless Density Blows/ft		Sample Type
Trace	0 to 10%	0-2	Very Soft	9-15	Stiff	0-10	Loose	UP = Fixed Piston
Little	10 to 20%	3-4	Soft	16-30	V-Stiff	10-30	M-Dense	UT = Shelby Tube
Some	20 to 35%	5-8	M-Stiff	31+	Hard	30-50	Dense	OE = Open End Rod
And	35 to 50%					50+	V-Dense	* = 300# hammer

Notes:
1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.
2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

Remarks: All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL CDM BROOKFIELD_CT.GPJ GEOLOGIC.GDT 5/25/22

Geologic - Earth Exploration, Inc.

7 Sherwood Drive
Norfolk, MA 02056
TEL 5083844434
FAX

CLIENT: CDM Smith
PROJECT: Brookfield
LOCATION: Brookfield, CT
Dean-Pocono

BORING #: B-38
PAGE 1 OF 1

File #: 22066
Date Started: 5/13/22
Date Completed: 5/13/22
Driller: J. Mientkiewic
Site Rep.:

	CASING	SAMPLER	CORE BARREL
TYPE	HW	SS	
SIZE	3"	1 3/8	
HAMMER	140#	140#	---
FALL	24"	30"	---

Surface Elevation:
Station:
Groundwater level readings
Date Depth
Date Depth

Depth ft	Sample No.	Sample Depth ft	Pen. in	Rec. in	Blows/6"	Strata Change ft	Sample Description
	S-1	0.0-2.0	24	10	40-26-20-11		S-1 Dry dense grey SILT and fine SAND
5	S-2	4.0-6.0	24	10	10-8-9-6		S-2 Moist medium dense yellow medium to fine SAND
10	S-3	9.0-11.0	24	12	20-23-25-29		S-3 Moist dense grey medium to fine SAND *, some silt, trace fine gravel*
15	S-4	14.0-16.0	24	12	11-23-38-42		S-4 Moist very dense light grey medium to coarse SAND and GRAVEL
						16.5	Possible top of rock at 16.5', roller bit to 17.5'
						17.5	
20							Bottom of exploration at 17.5'
25							
30							

Ground Surface to _____ used _____ then _____

Proportions Used		Cohesive Consistency Blows/ft				Cohesionless Density Blows/ft		Sample Type
Trace	0 to 10%	0-2	Very Soft	9-15	Stiff	0-10	Loose	UP = Fixed Piston
Little	10 to 20%	3-4	Soft	16-30	V-Stiff	10-30	M-Dense	UT = Shelby Tube
Some	20 to 35%	5-8	M-Stiff	31+	Hard	30-50	Dense	OE = Open End Rod
And	35 to 50%					50+	V-Dense	* = 300# hammer

Notes:
1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.
2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

Remarks: All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL CDM BROOKFIELD_CT.GPJ GEOLOGIC.GDT 5/25/22

Geologic - Earth Exploration, Inc.

7 Sherwood Drive
TEL 5083844434
Norfolk, MA 02056
FAX

CLIENT: CDM Smith
PROJECT: Brookfield
LOCATION: Brookfield, CT
Dean-Pocono

BORING #: B-39
PAGE 1 OF 1

File #: 22066
Date Started: 5/19/22
Date Completed: 5/19/22
Driller: J. Mientkiewic
Site Rep.:

	CASING	SAMPLER	CORE BARREL
TYPE	HW	SS	
SIZE	3"	1 3/8	
HAMMER	140#	140#	---
FALL	24"	30"	---

Surface Elevation:
Station:
Groundwater level readings
Date Depth
Date Depth

Depth ft	Sample No.	Sample Depth ft	Pen. in	Rec. in	Blows/6"	Strata Change ft	Sample Description
	S-1	0.0-2.0	24	14	22-44-43-37		S-1 Dry very dense yellow coarse SAND and GRAVEL
5	S-2	4.0-~~6.0~~ 5.2	24	6	35-68-100/2"	6.0	S-2 Dry very dense light grey weathered ROCK Possible top of rock at 6', roller bit to 7'
						7.0	Bottom of exploration at 7.0'
10							
15							
20							
25							
30							

Ground Surface to _____ used _____ then _____

Proportions Used		Cohesive Consistency Blows/ft				Cohesionless Density Blows/ft		Sample Type
Trace	0 to 10%	0-2	Very Soft	9-15	Stiff	0-10	Loose	UP = Fixed Piston
Little	10 to 20%	3-4	Soft	16-30	V-Stiff	10-30	M-Dense	UT = Shelby Tube
Some	20 to 35%	5-8	M-Stiff	31+	Hard	30-50	Dense	OE = Open End Rod
And	35 to 50%					50+	V-Dense	* = 300# hammer

Notes:
1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.
2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

Remarks: All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL CDM BROOKFIELD_CT.GPJ GEOLOGIC.GDT 5/25/22

2022 GeoProbe Logs

Geologic Earth Exploration, Inc.

CDM Smith
Brookfield CT

Boring	Depth (feet)	Penetration (inches)	Recovery (inches)		Location	Groundwater Level	Drill Date
G-32	0-5	60	36	Moist brown coarse to fine SAND, little Silt	Silvermine Rd	11'	4/21
	5-10	60	54	Moist brown coarse to fine SAND, little Silt	Dean-Pocono		
	10-15	60	59	Wet brown coarse to fine SAND, trace Silt			
	15-20	60	57	Moist brown coarse to fine SAND, trace Silt, "till"			
G-33	0-2	24	24	Asphalt 6", Dry brown coarse SAND and medium GRAVEL, Fill	Pocono Rd	9'	4/21
	2-5	60	33	Moist brown coarse to fine SAND, trace Silt	Dean-Pocono		
	5-10	60	55	Moist brown fine SAND, some Silt			
	10-12	24	22	Moist brown fine to coarse SAND and fine GRAVEL, trace Silt, "till", refusal at 12'			
G-34	0-1	12	12	Asphalt 6", Dry dark brown coarse SAND and medium GRAVEL	Dean Rd	7'	4/21
	1-5	60	44	Moist brown coarse to fine SAND and SILT	Dean-Pocono		
	5-10	60	38	Wet light brown fine SAND and GRAVEL			
	10-15	60	47	Wet light brown coarse SAND and fine GRAVEL			
	15-20	60	57	Wet light brown coarse SAND and GRAVEL			
G-35	0-2	24	24	Asphalt 6", Dry brown coarse SAND and medium GRAVEL, Fill	Pocono Rd	10'	4/21
	2-5	60	38	Moist brown coarse to fine SAND, little Silt	Dean-Pocono		
	5-10	60	31	Moist brown coarse to fine SAND, trace Silt			
	10-15	60	29	Moist brown coarse to fine SAND, trace Silt			
	15-20	60	51	Moist brown coarse to fine SAND, trace Silt, "till"			
G-36	0-1	12	12	Asphalt 6", Dry dark brown coarse SAND and medium GRAVEL	Dean Rd	5'	4/21
	1-5	60	41	Moist brown fine to coarse SAND	Dean-Pocono		
	5-10	60	54	Wet brown fine SAND and SILT			
	10-15	60	51	Wet light brown fine SAND and coarse GRAVEL, some Silt			
	15-20	60	58	Wet light brown fine SAND and coarse GRAVEL, some Silt			
G-37	0-1	12	12	Asphalt 6", Dry brown coarse SAND and medium GRAVEL, Fill	Pocono Rd	9'	4/21
	1-5	60	39	Moist brown coarse SAND and medium GRAVEL, trace Silt	Dean-Pocono		
	5-10	60	48	Moist gray SILT, trace sand			
	10-15	60	55	Wet brown fine SAND and SILT			
	15-20	60	59	Wet brown fine SAND into gray fine Sand and Silt, "till"			

2024 Boring Logs

Boring Number: B-60 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Manual/140 lb/30 in./2 in.
Bore Hole Location:
N: 731909.30 **E:** 821982.96
Drilling Date: **Start:** 9/3/2024 **End:** 9/3/2024

Surface Elevation (ft): 330.4
Total Depth (ft): 11.0
Depth to Initial Water Level (ft):

Depth	Date	Time
2.0	9/3/2024	12:33

Abandonment Method: Converted to temporary monitoring well.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	PID readings obtained 1 day after collection. Samples were stored in jars with aluminum foil cover. Bottom of sample S-1 smells of oil.
		SS	S-1	18	87 83 60	8	143	0.0		FILL	Top 5": Moist to wet, very dense, dark brown, fine to medium SAND, some silt, little coarse gravel (SM)[fill].	
		SS	S-2	24	54 33 46 11	12	79	1.0 0.0		SILTY SAND	Bottom 3": Moist, very dense, gray and brown, coarse GRAVEL, little fine sand, little silt (GP-GM). Dry, very dense, brown, fine SAND, little silt (SP-SM).	
326.0	5	SS	S-3	24	23 53 86 74	12	139	0.0			Dry, very dense, brown, fine SAND, some silt (SM).	
321.0	10	SS	S-4	24	60 88 96 100	12	184	0.0			Dry, very dense, brown, fine to coarse SAND and SILT, trace fine gravel (SM).	Installed 10' well: 5' riser, 5' screen.
											Test boring terminated at 11.0 feet bgs.	
316.0												

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-60 (W)

Boring Number: B-61

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 732487.19 **E:** 822094.70
Drilling Date: **Start:** 9/5/2024 **End:** 9/5/2024

Surface Elevation (ft): 316.3
Total Depth (ft): 11.0
Depth to Initial Water Level (ft):

Depth	Date	Time
0.5	9/5/2024	9:06

Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	
		SS	S-1	18	23 43 21	6	64	0.4		FILL	Moist to wet, very dense, dark brown to dark gray, fine SAND, some silt (SM)[fill].	
		SS	S-2	24	12 4 4 5	3	8	0.3		SILTY SAND	Wet, loose, brown, fine SAND, some silt (SM).	
312.0	5	SS	S-3	24	8 13 12 47	4	25	0.0			Wet, medium dense, brown, fine to coarse SAND, some silt, some fine to coarse gravel (SM).	
307.0	10	SS	S-4	24	12 16 12 20	10	28	1.2			Wet, medium dense, brown, fine SAND, some silt, little fine gravel (SM).	
302.0											Test boring terminated at 11.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-61

Boring Number: B-62

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 732925.46 **E:** 821314.93
Drilling Date: **Start:** 9/6/2024 **End:** 9/6/2024

Surface Elevation (ft): 283.5
Total Depth (ft): 16.5
Depth to Initial Water Level (ft):

Depth	Date	Time
0.5	9/6/2024	12:14

Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	
		SS	S-1	18	16 15 9 24/0"	7	24	1.2		FILL	Moist to wet, medium dense, gray, fine to coarse GRAVEL, some fine to coarse sand, little silt (GM).	Sample S-1 smells of oil.
		SS	S-2	24	22 18 21 15	10	39	0.1		SILTY SAND	Moist to wet, dense, gray, fine SAND, some silt (SM).	Sample S-2 smells of oil.
279.0	5	SS	S-3	24	13 9 9 13	7	18	0.2			Moist, medium dense, gray, fine to coarse SAND and SILT, trace fine gravel (SM).	Sample S-3 smells of oil.
274.0	10	SS	S-4	24	11 14 16 17	0	30				No recovery.	
										BOULDER		2' boulder from 12.5 to 14.5' bgs.
269.0											Wet, very dense, gray, fine to coarse GRAVEL and fine to coarse SAND, little silt (GM).	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-62

Boring Number: B-62

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft) / Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
15	SS	S-5	24	15 27 27 32	3	54	0.0		SILTY GRAVEL	Wet, very dense, gray, fine to coarse GRAVEL and fine to coarse SAND, little silt (GM).	
										Test boring terminated at 16.5 feet bgs.	
264.0 / 20											
259.0 / 25											
254.0 / 30											
249.0											

Boring Number: B-63

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Manual/140 lb/30 in./2 in.
Bore Hole Location:
N: 733041.63 **E:** 821821.49
Drilling Date: **Start:** 9/3/2024 **End:** 9/3/2024

Surface Elevation (ft): 298.4
Total Depth (ft): 11.0
Depth to Initial Water Level (ft):

Depth	Date	Time
2.0	9/3/2024	14:53

Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	PID readings obtained 1 day after collection. Samples were stored in jars with aluminum foil cover.
		SS	S-1	18	58 90 100	10	190	0.0		FILL	Top 6": Moist to wet, very dense, dark gray, fine to medium SAND, some silt (SM)[fill].	
		SS	S-2	24	74 30 28 17	8	58	0.0		SILTY SAND	Bottom 4": Moist, very dense, brown, fine SAND, trace silt (SP-SM). Dry, very dense, brown, fine to coarse SAND, some silt, trace fine gravel (SM).	
294.0	5	SS	S-3	24	25 28 50 39	11	78	0.0			Dry, very dense, brown, fine SAND, little silt (SM).	
289.0	10	SS	S-4	24	50 40 45 36	9	85	0.0			Wet, very dense, brown, fine to coarse SAND, little silt, little fine to coarse gravel (SM).	
284.0											Test boring terminated at 11.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-63

Boring Number: B-64 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 733537.11 **E:** 821220.08
Drilling Date: **Start:** 9/5/2024 **End:** 9/5/2024

Surface Elevation (ft): 280.0
Total Depth (ft): 34.5
Depth to Initial Water Level (ft):

Depth	Date	Time
2.0	9/5/2024	14:29

Abandonment Method: Converted to temporary monitoring well.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
~~280.0~~	~~0~~									ASPHALT	6": ASPHALT.	
		SS	S-1	18	36 23 15	8	38	0.2		FILL	Top 5": Wet, dense, black, fine to coarse SAND, little silt (SM)[fill].	
▼								0.2		SILTY SAND	Bottom 3": Moist, dense, brown, fine to coarse SAND, some coarse gravel, trace silt (SP-SM).	
		SS	S-2	24	13 11 16 14	8	27	0.1			Moist, medium dense, brown, fine to coarse SAND, little fine gravel, trace silt (SP-SM).	
275.0	5	SS	S-3	24	14 10 9 16	7	19	0.0			Moist, medium dense, brown, fine to coarse SAND, trace silt (SP-SM).	
270.0	10	SS	S-4	24	10 19 20 20	9	39	0.1			Moist, dense, brown, fine SAND, some silt (SM).	A pond about 100' away suggests water level to be about 10' bgs.
											Moist, dense, brown, fine to coarse SAND, some silt, little fine to coarse gravel (SM).	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):				Fine Grained (Clay):			
V. Loose:	0-4	Dense:	30-50	V. Soft:	<2	Stiff:	8-15
Loose:	4-10	V. Dense:	>50	Soft:	2-4	V. Stiff:	15-30
M. Dense:	10-30			M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-64 (W)

Boring Number: B-64 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
265.0	15	SS	S-5	24	8 12 21 21	10	33	0.3		SILTY SAND	Moist, dense, brown, fine to coarse SAND, some silt, little fine to coarse gravel (SM).	
260.0	20	SS	S-6	24	5 21 28 30	8	49	0.1			Moist to wet, dense, brown, fine SAND, some silt (SM).	
255.0	25	SS	S-7	24	7 28 42 50	10	70	0.0			Moist to wet, very dense, brown, fine SAND, trace silt (SP-SM).	
250.0	30	SS	S-8	24	7 9 21 40	8	30	0.0			Moist, medium dense to dense, brown, fine SAND, trace silt (SP-SM).	
		SS	S-9	18	24 55 100 100/0"	12	155				Wet, very dense, brown, fine to coarse SAND, little silt (SM).	Hole collapsed after termination. Installed 23' well: 8' riser, 15' screen. Filtering sand from 23 to 24' bgs. Collapsed material from 24'

Test boring terminated at 34.5 feet bgs.

Boring Number: B-64 (W)

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
245.0	35											bgs onwards.
240.0	40											
235.0	45											
230.0	50											

Boring Number: B-65 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 734214.38 **E:** 821233.00
Drilling Date: **Start:** 9/4/2024 **End:** 9/4/2024

Surface Elevation (ft): 284.5
Total Depth (ft): 32.5
Depth to Initial Water Level (ft):

Depth	Date	Time
2.0	9/4/2024	14:17

Abandonment Method: Converted to temporary monitoring well.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	
		SS	S-1	18	26 19 10	6	29	0.8			Moist, medium dense, gray, fine to medium SAND, little silt (SP-SM).	
		SS	S-2	24	13 11 10 7	2	21	0.8			Moist, medium dense, gray, fine to coarse SAND, some silt (SM).	
280.0	5	SS	S-3	24	9 18 33 25	12	51	0.4		SILTY SAND	Moist to wet, very dense, brown, fine SAND, some silt, trace fine gravel (SM).	
275.0	10	SS	S-4	24	8 8 12 15	12	20	40.6			Moist to wet, medium dense, brown, fine to coarse SAND, some silt, trace fine to coarse gravel (SM).	Sample S-4 smells of oil.
270.0											Wet, very dense, brown, fine to coarse SAND and SILT, trace fine gravel (SM).	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-65 (W)

Boring Number: B-65 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	15	SS	S-5	24	14 30 22 33	10	52	0.5		SILTY SAND	Wet, very dense, brown, fine to coarse SAND and SILT, trace fine gravel (SM).	
265.0	20	SS	S-6	24	3 13 11 14	9	24	0.1			Wet, medium dense, brown, fine SAND, some silt (SM).	
260.0	25	SS	S-7	24	7 14 14 17	8	28	0.0			Wet, medium dense, brown, fine SAND, some silt, little fine gravel (SM).	
255.0	30	SS	S-8	18	14 6 75 100/0"	4	81	0.9			Wet, very dense, brown, fine to coarse SAND, some silt, some fine gravel (SM).	Tip of spoon for sample S-8 contained weathered rock. Rollerbit through rock from 30.5 to 32.5' bgs. Installed 30' well: 20' riser, 10' screen.
										WEATHERED ROCK		
250.0											Test boring terminated at 32.5 feet bgs.	

Boring Number: B-66

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 734904.06 **E:** 820886.28
Drilling Date: **Start:** 9/5/2024 **End:** 9/5/2024

Surface Elevation (ft): 277.6
Total Depth (ft): 14.0
Depth to Initial Water Level (ft):

Depth	Date	Time
0.5	9/5/2024	10:23

Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0									ASPHALT	6": ASPHALT.	
		SS	S-1	18	31 27 14	8	41	2.5		FILL	Wet, dense, dark brown, fine to coarse SAND, little silt (SM)[fill].	Sample S-1 smells of oil.
		SS	S-2	24	15 15 11 11	7	26	0.4		SILTY SAND	Wet, medium dense, brown, fine to coarse SAND and Silty CLAY, trace fine gravel (SC-SM).	
273.0	5	SS	S-3	24	6 6 5 24	6	11	0.3		SILT	Moist, medium dense, brown, SILT, some fine sand (ML).	
268.0	10	SS	S-4	24	4 6 5 9	12	11	0.2		SILT	Wet, medium dense, brown, SILT, trace fine sand (ML).	
		SS	S-5	24	3 5 6 8	9	11	0.2		SILT	Wet, stiff, gray, Clayey SILT, trace fine sand (CL-ML).	
											Test boring terminated at 14.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-66

Boring Number: B-67 (W)

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic/James Mientkiewicz
Drilling Method/Bore Hole Diameter: Drive and Wash/4 in.
Hammer Style/Weight/Drop Height/Spoon Size: Automatic/140 lb/30 in./2 in.
Bore Hole Location:
N: 735438.41 **E:** 820568.38
Drilling Date: **Start:** 9/6/2024 **End:** 9/6/2024

Surface Elevation (ft): 281.0
Total Depth (ft): 16.0
Depth to Initial Water Level (ft):

Depth	Date	Time
2.0	9/6/2024	9:27

Abandonment Method: Converted to temporary monitoring well.
Logged By: Hong Cai

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
281.0	0									ASPHALT	6": ASPHALT.	
		SS	S-1	18	21 23 13	8	36	0.3		FILL	Top 4": Moist, dense, dark gray, fine to coarse GRAVEL, some fine to coarse sand, little silt (GM).	
		SS	S-2	24	16 13 10 10	8	23	0.1		SILTY SAND	Bottom 4": Moist, dense, brown, fine SAND, little silt (SP-SM). Moist, medium dense, brown, fine SAND, little silt (SP-SM).	
276.0	5	SS	S-3	24	11 6 8 24	4	14	0.1		SILTY SAND	Moist to wet, medium dense, brown, fine SAND, some silt (SM).	
271.0	10	SS	S-4	24	5 8 8 11	1	16	0.0		SILT	Wet, medium dense, gray, SILT, trace fine sand (ML).	
										SILT	Wet, loose to medium dense, gray, Clayey SILT, trace fine sand (CL-ML).	Installed 15' well: 5' riser, 10' screen.

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan **Date:** 10/22/2025 **Boring Number:** B-67 (W)

Boring Number: B-67 (W)

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
266.0	15	SS	S-5	24	3 5 5 6	13	10	0.0		SILT	Wet, loose to medium dense, gray, Clayey SILT, trace fine sand (CL-ML).	
											Test boring terminated at 16.0 feet bgs.	
261.0	20											
256.0	25											
251.0	30											

2024 GeoProbe Logs

Boring Number: G-59

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 282.5
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 11.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
5.0	9/12/2024	16:15

Bore Hole Location:
N: 732287.90 **E:** 821315.80
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Abby Klimowicz

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	Graphic Log	Strata	Material Description	Remarks
	0	GP	GP-1	12		7	N/A		ASPHALT	7" ASPHALT.	
		GP	GP-2	24		16	N/A		FILL	Dry, brown, fine to coarse SAND, some fine to coarse gravel, trace silt (SP).	Composite environmental sample taken from 1 to 3 ft bgs. Discrete environmental sample taken from 1 to 3 ft bgs.
278.0		GP	GP-3	24		16	N/A		SILTY SAND	Dry to moist, gray-brown, fine to coarse SAND and SILT, trace fine to coarse gravel, trace organics (SM).	
	5	GP	GP-4	24		19	N/A			Wet, brown, fine to medium SAND and SILT, trace fine gravel (SM).	Composite environmental sample taken from 5 to 11 ft bgs.
273.0	10	GP	GP-5	48		34	N/A			Wet, brown, fine to coarse SAND, some silt, some fine to coarse gravel (SM).	Discrete environmental sample taken from 8 to 10 ft bgs.
268.0										Test boring terminated at 11.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-59

Boring Number: G-60

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 305.4
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 11.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
4.5	9/12/2024	11:45

Bore Hole Location:
N: 732811.44 **E:** 821939.60
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Abby Klimowicz

Elev. (ft) / Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
0	GP	GP-1	12		8	N/A			ASPHALT	8" ASPHALT.	
	GP	GP-2	12		8	N/A	1.2		FILL	Dry, black, fine to coarse SAND and fine to coarse GRAVEL, little silt (SM).	Composite environmental sample taken from 1 to 5 ft bgs.
	GP	GP-3	12		10	N/A	1.9		FILL	Dry, gray, fine to coarse SAND and SILT, some fine to coarse gravel (SM).	Discrete environmental sample taken from 2 to 4 ft bgs.
301.[illegible]	GP	GP-4	24		22	N/A	2.8 1.6		SILTY SAND	Dry to wet, brown, fine to coarse SAND and SILT, some fine to coarse gravel (SM).	
5	GP	GP-5	24		20	N/A	1.3 1.9		SILTY SAND	Wet, gray-brown, fine to coarse SAND and SILT, some fine to coarse gravel (SM).	Composite environmental sample taken from 5 to 10 ft bgs.
	GP	GP-6	36		28	N/A	1.7 1.8 2.3		SILTY SAND	Wet, gray-brown, fine to coarse SAND and SILT, some fine to coarse gravel (SM).	Discrete environmental sample taken from 8 to 10 ft bgs.
296.0											
10	GP	GP-7	12		8	N/A	0.6		SILTY SAND	Wet, brown, fine to coarse SAND, some silt, little fine gravel (SM).	
										Test boring terminated at 11.0 feet bgs.	
291.0											

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-60

Boring Number: G-61

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Hammer Style/Weight/Drop Height/Spoon Size:
Bore Hole Location:
N: 733339.60 **E:** 821270.08
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024

Surface Elevation (ft): 283.6
Total Depth (ft): 17.0
Depth to Initial Water Level (ft):

Depth	Date	Time
6.0	9/13/2024	9:15

Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Logged By: Joe Forleo

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0							2.1		FILL	12" ASPHALT.	
								3.4		ASPHALT	Dry to moist, brown, fine to coarse SAND, trace silt (SP).	
		GP	GP-1	60		36	N/A	2.5		SILTY SAND	Dry to moist, light brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM).	
								1.5				
279.0								1.1				
	5							10.2			Dry to moist, brown, fine to medium SAND, some silt (SM).	
								2.6			Dry to moist, brown, fine SAND, some silt (SM).	
		GP	GP-2	60		42	N/A	2.9			Wet, brown, fine SAND, some fine to coarse gravel, some silt (SM).	
								2.4			Wet, light brown, fine to coarse SAND, some silt, little fine to coarse gravel (SM).	
274.0								2.1				
	10							2.0			Wet, brown-gray, fine SAND, some silt (SM).	Environmental sample collected from 15 to 17 ft bgs and 10 to 15 ft bgs due to low recovery from the 10 to 15 ft sample interval.
		GP	GP-3	60		24	N/A	2.0				
								2.0				
								1.0				
								1.0				

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-61

Boring Number: G-61

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	15	GP	GP-4	24		24	N/A			SILTY SAND	Wet, brown-gray, fine SAND, some silt (SM).	Environmental sample collected from 15 to 17 ft bgs and 10 to 15 ft bgs due to low recovery from the 10 to 15 ft sample interval.
											Test boring terminated at 17.0 feet bgs.	
264.0	20											
259.0	25											
254.0	30											

Boring Number: G-62

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 278.5
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 15.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
6.0	9/13/2024	8:00

Bore Hole Location:
N: 733785.78 **E:** 821107.44
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Joe Forleo

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0							1.4		ASPHALT	12" ASPHALT.	
								0.3		FILL	Dry to moist, brown, fine to medium SAND, some silt (SM).	Rock fragments observed from 1.5 to 2 ft bgs.
		GP	GP-1	60		60	N/A	0.4		SILTY SAND	Dry to moist, brown, fine SAND and SILT (SM).	
								1.0				Rock fragments observed from 3 to 3.5 ft bgs.
274.0								0.5				
	5							2.0		SILT	Dry to moist, dark brown, SILT and fine to coarse SAND (ML).	Environmental samples collected from 5 to 10 ft bgs.
								1.6				Rock fragments observed from 6 to 6.5 ft bgs.
		GP	GP-2	60		60	N/A	1.4				
								1.8				Rock fragments observed from 7.5 to 8 ft bgs.
269.0								1.3				
	10							1.7			Wet, brown, fine to medium SAND and SILT (SM).	
								1.7				
		GP	GP-3	60		60	N/A	1.4				
								1.6			Wet, gray-brown, Clayey SILT, little fine to medium sand (ML).	
264.0								1.3				

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-62

Boring Number: G-62

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	15									SILT	Wet, gray-brown, Clayey SILT, little fine to medium sand (ML). Test boring terminated at 15.0 feet bgs.	Refusal encountered at 15 ft bgs.
259.0	20											
254.0	25											
249.0	30											
244.0												

Boring Number: G-63

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 285.3
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 12.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
5.0	9/12/2024	9:45

Bore Hole Location:
N: 733822.18 **E:** 821433.64
Abandonment Method: Backfilled with soil cuttings and asphalt patch.

Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Abby Klimowicz

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0	GP	GP-1	12		8	N/A	31.4		ASPHALT	8" ASPHALT.	
		GP	GP-2	12		8	N/A	29.8		FILL	Dry, black, fine to coarse SAND and fine to coarse GRAVEL, trace silt (SP).	Composite environmental sample taken from 1 to 5 ft bgs.
		GP	GP-3	36		32	N/A	9.9 3.0 1.3		SILTY SAND	Dry to moist, brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM). Moist, brown, fine to coarse SAND and SILT, trace fine gravel (SM).	Discrete environmental sample taken from 2 to 3 ft bgs.
281.0	5	GP	GP-4	60		34	N/A	1.8 49.0 15.6 2.6 1.2			Wet, brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM).	Composite environmental sample taken from 5 to 10 ft bgs. Discrete environmental sample taken from 7 to 9 ft bgs.
276.0	10	GP	GP-5	24		24	N/A	1.3			Wet, brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM).	
271.0											Test boring terminated at 12.0 feet bgs.	Refusal encountered at 12 ft bgs.

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-63

Boring Number: G-64

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 279.8
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 19.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
5.0	9/12/2024	13:10

Bore Hole Location:
N: 734660.66 **E:** 821027.40
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Abby Klimowicz

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0	GP	GP-1	12		10	N/A	3.4		ASPHALT	10" ASPHALT.	
		GP	GP-2	12		10	N/A	2.4		FILL	Dry, black, fine to coarse SAND and fine to coarse GRAVEL, trace silt (SP).	Composite environmental sample taken from 1 to 5 ft bgs.
		GP	GP-3	36		28	N/A	2.2 2.2 2.3		SILTY SAND	Dry to moist, brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM).	Discrete environmental sample taken from 1 to 3 ft bgs. Stratified layers of sandy silt and silty sand observed from 2 to 5 ft bgs.
275.9 ▼	5	GP	GP-4	24		24	N/A	0.4 0.5			Wet, brown, fine to coarse SAND, little silt, trace fine to coarse gravel (SM).	Composite environmental sample taken from 5 to 10 ft bgs.
		GP	GP-5	36		36	N/A	0.5 0.8 1.4			Wet, brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM).	Discrete environmental sample taken from 8 to 10 ft bgs.
270.0	10	GP	GP-6	24		10	N/A	2.3 2.8			Wet, gray-brown, fine to coarse SAND and SILT, trace fine to coarse gravel (SM).	Composite environmental sample taken from 10 to 15 ft bgs. Discrete environmental sample taken from 10 to 12 ft bgs.
		GP	GP-7	36		24	N/A	0.7 1.8 0.8			Wet, gray-brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM).	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-64

Boring Number: G-64

Client: Town of Brookfield

Project Name: Candlewood Lake Dean Rd Sewer

Project Location: Brookfield, CT

Project Number: 269061

Elev. (ft) / Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
265.0 / 15	GP	GP-8	48		24	N/A	2.5 3.2 1.5 2.8		SILTY SAND	Wet, gray-brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM). Wet, gray-brown, fine to coarse SAND and SILT, some fine gravel (SM).	Composite environmental sample taken from 15 to 19 ft bgs. Discrete environmental sample taken from 15 to 17 ft bgs.
										Test boring terminated at 19.0 feet bgs.	
260.0 / 20											
255.0 / 25											
250.0 / 30											

Boring Number: G-65

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 276.8
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 11.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
5.0	9/12/2024	15:00

Bore Hole Location:
N: 735191.77 **E:** 820715.53
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Abby Klimowicz

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0	GP	GP-1	18		14	N/A	14.2		ASPHALT	14"ASPHALT.	
		GP	GP-2	18		13	N/A	12.3		FILL	Dry, brown, fine to coarse SAND, some fine to coarse gravel, trace silt (SP).	Composite environmental sample taken from 1.5 to 5 ft bgs. Discrete environmental sample taken from 1.5 to 3 ft bgs.
		GP	GP-3	24		18	N/A	1.5 2.6		SILTY SAND	Moist, dark brown, fine to medium SAND and SILT, trace organics (SM).	
272.8 ▼	5	GP	GP-4	36		30	N/A	2.2 2.1 2.7			Wet, gray-brown, fine to coarse SAND, some silt, some fine gravel (SM).	Composite environmental sample taken from 5 to 10 ft bgs. Discrete environemtnal sample taken from 6 to 8 ft bgs.
		GP	GP-5	24		19	N/A	1.6 2.4			Wet, gray-brown, SILT and fine SAND, trace gravel (ML).	
267.0	10	GP	GP-6	12		12	N/A	0.7			Wet, gray-brown, SILT and fine SAND, trace gravel (ML).	
											Test boring terminated at 11.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-65

Boring Number: G-66

Client: Town of Brookfield
Project Name: Candlewood Lake Dean Rd Sewer
Project Location: Brookfield, CT
Project Number: 269061

Drilling Contractor/Driller: GeoLogic-Earth Explorations Inc./Taylor Grenier/Daniel Christopher
Surface Elevation (ft): 284.6
Drilling Method/Bore Hole Diameter: Direct Push/4 in.
Total Depth (ft): 12.0
Hammer Style/Weight/Drop Height/Spoon Size:
Depth to Initial Water Level (ft):

Depth	Date	Time
6.0	9/13/2024	10:30

Bore Hole Location:
N: 736149.10 **E:** 820218.75
Abandonment Method: Backfilled with soil cuttings and asphalt patch.
Drilling Date: **Start:** 9/12/2024 **End:** 9/12/2024
Logged By: Joe Forleo

Elev. (ft)	Depth (ft)	Sample Type	Sample Number	Sample Length (in)	Blows per 6 inches	Sample Recovery (in)	N-Value	PID (ppm)	Graphic Log	Strata	Material Description	Remarks
	0							3.2		ASPHALT	12" ASPHALT.	Environmental sample collection depths not recorded.
								23.2		FILL	Dry to moist, dark brown, coarse SAND, trace asphalt (SP).	
		GP	GP-1	72		60	N/A	11.9		SILTY SAND	Dry to moist, orange-brown, medium SAND (SP).	
								1.3			Dry to moist, dark brown, fine to coarse SAND, some silt, trace fine gravel (SM).	
280.0	5							1.7				
								1.4				
								12.4			Wet, brown, fine to coarse SAND, some silt, trace fine gravel (SM).	
		GP	GP-2	72		36	N/A	12.4			Wet, light brown, fine to medium SAND, little silt, trace fine gravel (SM).	Petroleum odor observed from 7 to 7.5 ft bgs.
								4.0				
275.0	10							4.0				
								2.1				
								2.1		WEATHERED ROCK	Wet, light brown, fine to coarse SAND, little silt, trace fine gravel (SM)[weathered rock].	Rock fragments observed from 11 to 12 ft bgs.
											Test boring terminated at 12.0 feet bgs.	

Sample Types

AS - Auger/Grab Sample
CS - California Sampler
NQ - 1.9" Rock Core
NX - 2.2" Rock Core
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
GP - Geoprobe

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose:	0-4	Dense:	30-50
Loose:	4-10	V. Dense:	>50
M. Dense:	10-30		

Fine Grained (Clay):

V. Soft:	<2	Stiff:	8-15
Soft:	2-4	V. Stiff:	15-30
M. Stiff:	4-8	Hard:	>30

Burmister Classification

and	50 - 35%
some	35 - 20%
little	20 - 10%
trace	< 10%

moisture, density, color

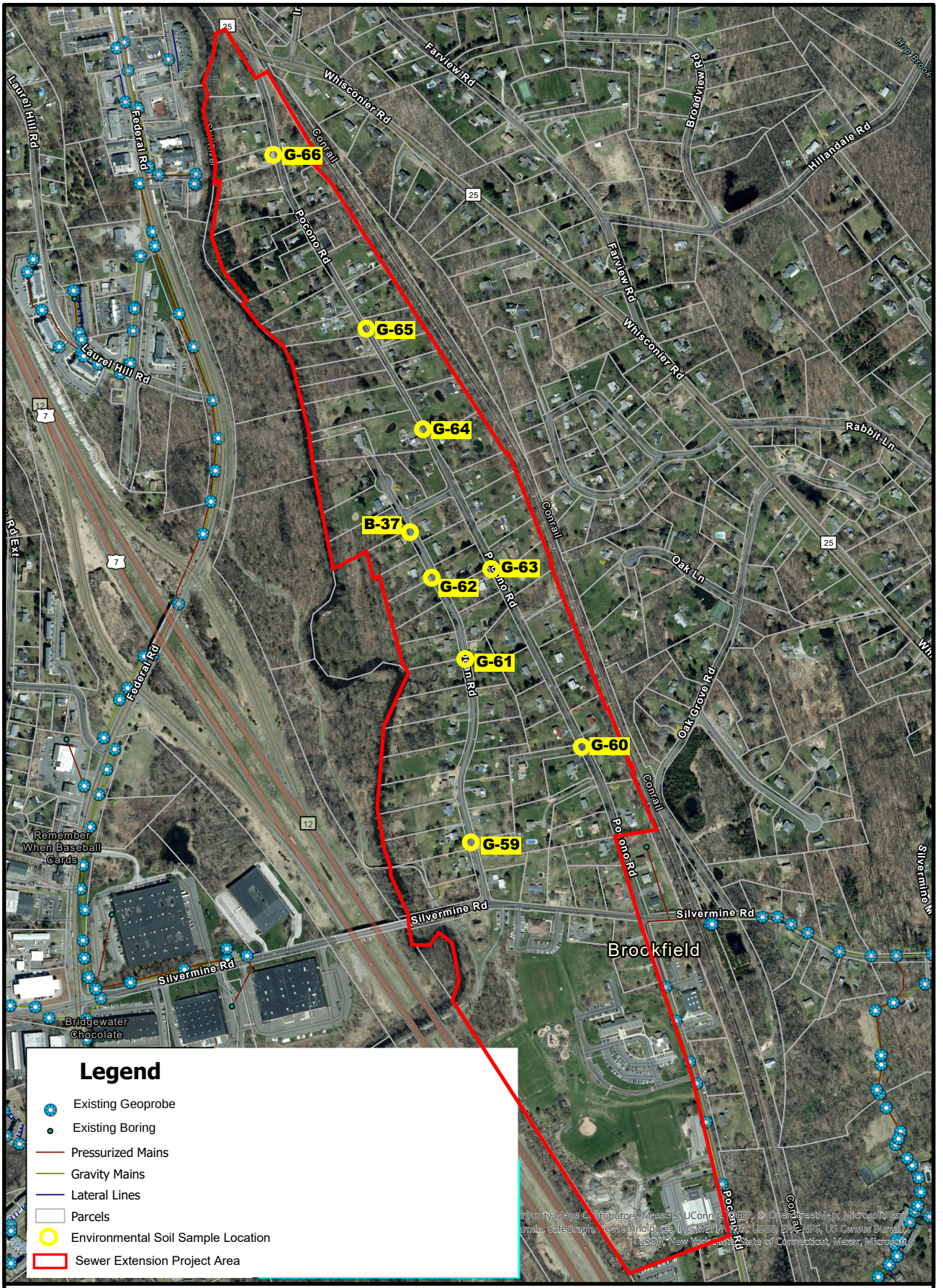
Reviewed by: J. Callinan / H. Al-Qudah **Date:** 10/22/2025 **Boring Number:** G-66

APPENDIX B

SOIL ENVIRONMENTAL DATA

Figure B-1 – Environmental Soil Location Plan

Table B-1 - Soil Characterization Data



Appendix B
Figure B-1
Environmental Soil Location Plan
Dean and Pocono Roads Area
Brookfield, Connecticut
April 2026

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			B-37		G-59		G-59		G-60		G-60		G-61		G-61		G-61		G-62		G-62		G-62		G-62	
	DEC		PMC																								
Field Sample ID	RES DEC	I/C DEC	GA PMC	B-37 (4-6)		G-59-S1 (1-5)		G-59-S2 (5-10)		G-60-S1 (1-5)		G-60-S2 (5-10)		G-61-S1 (0-5)		G-61-S2 (5-10)		G-61-S3 (10-15)		G-62-S1 (0-5)		G-62-S2 (5-10)		G-62-S2 (5-10) DUP-1		G-62-S3 (10-15)	
Sample Depth Interval (ft bgs)				4-6		1-5		5-10		1-5		5-10		0-5		5-10		10-15		0-5		5-10		5-10		10-15	
Lab Sample ID				22E0875		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007	
Sampling Date				5/12/2022		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024	
Sample Location				Dean Rd.		Dean Rd.		Dean Rd.		Pocono Rd.		Pocono Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.	
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Percent Solids by SM 2540G (% Wt)																											
% Solids	~	~	~	**69.5**		**91.6**		**82.5**		**90.5**		**89.2**		**90.2**		**90.6**		**90.1**		**87.6**		**74.2**		**78.3**		**75.3**	
Extractable Total Petroleum Hydrocarbons (ETPH) by CT DEP ETPH Method (mg/Kg)																											
CTDEP ETPH	500	2,500	500	14	U	**470**		**38**		**390**		11	U	**21**		**28**		22	U	11	U	**39**		**66**		26	U
Total Metals by EPA Method 6010D/7471B (mg/Kg)			(mg/L)[1]																								
Arsenic	10	10	0.05	**4.9**		3.6	U	**4.5**		3.6	U	3.7	U	3.7	U	3.5	U	3.6	U	3.7	U	**7.7**		**4.8**		**5.3**	
Barium	4,700	140,000	1	**180**		**33**		**24**		**29**		**20**		**21**		**23**		**27**		**40**		**190**		**110**		**110**	
Cadmium	34	1,000	0.01	0.45	U	0.36	U	0.38	U	0.36	U	0.37	U	0.37	U	0.35	U	0.36	U	0.37	U	0.43	U	0.37	U	0.43	U
Chromium	3,900	51,000	0.05	**35**		**9.4**		**10**		**7.7**		**4.3**		**5.3**		**7.7**		**5.7**		**10**		**31**		**22**		**22**	
Mercury	20	610	0.002	0.035	U	0.027	U	0.03	U	0.027	U	0.027	U	0.027	U	0.027	U	0.026	U	0.029	U	0.033	U	0.032	U	0.033	U
Lead	400	1,000	0.02	**7**		**6.1**		**6.6**		**3.4**		**2.1**		**2.6**		**2**		**2.2**		**3.9**		**8.3**		**5.5**		**5.2**	
Selenium	340	10,000	0.05	4.5	U	3.6	U	3.8	U	3.6	U	3.7	U	3.7	U	3.5	U	3.6	U	3.7	U	4.3	U	3.7	U	4.3	U
Silver	340	10,000	0.04	0.45	U	0.36	U	0.38	U	0.36	U	0.37	U	0.37	U	0.35	U	0.36	U	0.37	U	0.43	U	0.37	U	0.43	U
PCB Aroclors by Method 8082A (mg/kg)			(mg/L)[1]																								
PCB 1016	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1221	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1232	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1242	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1248	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1254	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1260	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1262	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
PCB 1268	1	10	0.0005	NT		0.082	U	NT		0.086	U	NT		0.087	U	NT		NT		0.085	U	NT		NT		NT	
VOCs by Method 8260D (mg/Kg)																											
Discrete VOC Sample Interval (ft bgs)				NM		1-3		8-10		2-4		8-10		NM		NM		NM		NM		NM		NM		NM	
ACETONE	500	1,000	14	0.08	U	3.2	U	0.055	U	0.046	U	0.059	U	0.054	U	0.046	U	0.046	U	0.053	U	0.059	U	0.056	U	0.056	U
ACRYLONITRILE	1.1	11	0.01	0.0048	U	0.32	U	0.0033	U	0.0028	U	0.0035	U	0.0032	U	0.0028	U	0.0028	U	0.0032	U	0.0035	U	0.0033	U	0.0034	U
TERT-AMYLMETHYL ETHER	~	~	~	NT		0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
BENZENE	21	200	0.02	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
BROMOBENZENE	~	~	~	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
BROMOCHLOROMETHANE	~	~	~	NT		0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
BROMODICHLOROMETHANE	*18*	*170*	*0.02*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
BROMOFORM	78	720	0.08	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
BROMOMETHANE	*34*	*1,000*	*0.07*	0.008	U	0.13	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
2-BUTANONE (MEK)	500	1,000	8	0.032	U	1.3	U	0.022	U	0.018	U	0.024	U	0.021	U	0.019	U	0.019	U	0.021	U	0.024	U	0.022	U	0.023	U
N-BUTYLBENZENE	*500*	*1,000*	*7*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
SEC-BUTYLBENZENE	500	1,000	7	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TERT-BUTYLBENZENE	*500*	*1,000*	*7*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TERT-BUTYLETHYL ETHER	~	~	~	NT		0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
CARBON DISULFIDE	*500*	*1,000*	*0.08*	0.008	U	0.32	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
CARBON TETRACHLORIDE	4.7	44	0.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
CHLOROBENZENE	500	1,000	2	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
CHLORODIBROMOMETHANE	7.3	68	0.01	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
CHLOROETHANE	*130*	*1,000*	*0.15*	0.016	U	0.13	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
CHLOROFORM	100	940	0.12	0.0032	U	0.13	U	0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	0.0019	U	0.0021	U	0.0024	U	0.0022	U	0.0023	U
CHLOROMETHANE	*180*	*1,000*	*0.36*	0.008	U	0.13	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
2-CHLOROTOLUENE	*500*	*1,000*	*2.8*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
4-CHLOROTOLUENE	*500*	*1,000*	*2.8*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2-DIBROMO-3-CHLOROPROPANE	0.09	0.82	0.005	0.0016	U	0.32	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2-DIBROMOETHANE (EDB)	0.007	0.067	0.01	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
DIBROMOMETHANE	~	~	~	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2-DICHLOROBENZENE	500	1,000	3.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,3-DICHLOROBENZENE	*500*	*1,000*	*12*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,4-DICHLOROBENZENE	*26*	*240*	*1.5*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TRANS-1,4-DICHLORO-2-BUTENE	~	~	~	0.0032	U	0.13	U	0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	0.0019	U	0.0021	U	0.0024	U	0.0022	U	0.0023	U
DICHLORODIFLUOROMETHANE	*500*	*1,000*	*7*	0.016	U	0.13	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
1,1-DICHLOROETHANE	500	1,000	1.4	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			B-37		G-59				G-60				G-61						G-62					
	DEC		PMC																						
Field Sample ID	RES DEC	I/C DEC	GA PMC	B-37 (4-6)		G-59-S1 (1-5)		G-59-S2 (5-10)		G-60-S1 (1-5)		G-60-S2 (5-10)		G-61-S1 (0-5)		G-61-S2 (5-10)		G-61-S3 (10-15)		G-62-S1 (0-5)		G-62-S2 (5-10)		G-62-S2 (5-10) DUP-1		G-62-S3 (10-15)	
Sample Depth Interval (ft bgs)				4-6		1-5		5-10		1-5		5-10		0-5		5-10		10-15		0-5		5-10		5-10		10-15	
Lab Sample ID				22E0875		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007	
Sampling Date				5/12/2022		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024	
Sample Location				Dean Rd.		Dean Rd.		Dean Rd.		Pocono Rd.		Pocono Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.	
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
1,2-DICHLOROETHANE	6.7	63	0.02	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1-DICHLOROETHYLENE	1	9.5	0.14	0.0032	U	0.064	U	0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	0.0019	U	0.0021	U	0.0024	U	0.0022	U	0.0023	U
CIS-1,2-DICHLOROETHYLENE	500	1,000	1.4	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TRANS-1,2-DICHLOROETHYLENE	500	1,000	2	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2-DICHLOROPROPANE	9	84	0.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,3-DICHLOROPROPANE	~	~	~	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
2,2-DICHLOROPROPANE	~	~	~	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1-DICHLOROPROPENE	~	~	~	0.0016	U	0.13	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
CIS-1,3-DICHLOROPROPENE	3.4	32	0.01	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
TRANS-1,3-DICHLOROPROPENE	3.4	32	0.01	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
DIETHYL ETHER	~	~	~	NT		0.13	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
1,4-DIOXANE	*6.1*	*57*	*0.1*	NT		3.2	U	0.055	U	0.046	U	0.059	U	0.054	U	0.046	U	0.046	U	0.053	U	0.059	U	0.056	U	0.056	U
ETHYLBENZENE	500	1,000	10.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
HEXACHLOROBUTADIENE	*130*	*1,200*	*0.2*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
2-HEXANONE	*340*	*1,000*	*0.7*	0.016	U	0.64	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
ISOPROPYLBENZENE	*500*	*1,000*	*0.5*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
P-ISOPROPYLTOLUENE	*500*	*1,000*	*0.5*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
MTBE	500	1,000	2	0.0032	U	0.064	U	0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	0.0019	U	0.0021	U	0.0024	U	0.0022	U	0.0023	U
METHYLENE CHLORIDE	82	760	0.1	0.016	U	0.32	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
MIBK	500	1,000	7	0.016	U	0.64	U	0.011	U	0.0092	U	0.012	U	0.011	U	0.0093	U	0.0093	U	0.011	U	0.012	U	0.011	U	0.011	U
NAPHTHALENE	*1,000*	*2,500*	*5.6*	0.0032	U	**4.2**		0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	**0.0076**		0.0021	U	0.0024	U	0.0022	U	0.0023	U
N-PROPYLBENZENE	*500*	*1,000*	*1*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
STYRENE	500	1,000	2	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1,1,2-TETRACHLOROETHANE	24	220	0.02	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1,2,2-TETRACHLOROETHANE	3.1	29	0.01	0.0008	U	0.032	U	0.00055	U	0.00046	U	0.00059	U	0.00054	U	0.00046	U	0.00046	U	0.00053	U	0.00059	U	0.00056	U	0.00056	U
TETRACHLOROETHYLENE	12	110	0.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TETRAHYDROFURAN	*61*	*570*	*0.08*	0.008	U	0.64	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
TOLUENE	500	1,000	20	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2,3-TRICHLOROBENZENE	~	~	~	0.0016	U	0.32	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,2,4-TRICHLOROBENZENE	680	2,500	1.4	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1,1-TRICHLOROETHANE	500	1,000	4	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1,2-TRICHLOROETHANE	11	100	0.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TRICHLOROETHYLENE	56	520	0.1	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
TRICHLOROFLUOROMETHANE	*500*	*1,000*	*20*	0.008	U	0.13	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
1,2,3-TRICHLOROPROPANE	~	~	~	0.0016	U	0.13	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	*500*	*1,000*	*20*	0.008	U	0.064	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
1,2,4-TRIMETHYLBENZENE	500	1,000	2.8	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
1,3,5-TRIMETHYLBENZENE	*500*	*1,000*	*2.8*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
VINYL CHLORIDE	0.32	3	0.04	0.008	U	0.13	U	0.0055	U	0.0046	U	0.0059	U	0.0054	U	0.0046	U	0.0046	U	0.0053	U	0.0059	U	0.0056	U	0.0056	U
M/P-XYLENE	*500*	*1,000*	*19.5*	0.0032	U	0.13	U	0.0022	U	0.0018	U	0.0024	U	0.0021	U	0.0019	U	0.0019	U	0.0021	U	0.0024	U	0.0022	U	0.0023	U
O-XYLENE	*500*	*1,000*	*19.5*	0.0016	U	0.064	U	0.0011	U	0.00092	U	0.0012	U	0.0011	U	0.00093	U	0.00093	U	0.0011	U	0.0012	U	0.0011	U	0.0011	U
Total VOCs mg/kg				0.0		**4.2**		0.0		0.0		0.0		0.0		0.0		**0.0076**		0.0		0.0		0.0		0.0	
SVOCs by Method 8270E (mg/Kg)																											
ACENAPHTHENE	1,000	2,500	8.4	0.24	U	**1.7**		0.2	U	0.37	U	0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
ACENAPHTHYLENE	*1,000*	*2,500*	*8.4*	0.24	U	**1.7**		0.2	U	**1.1**		0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
ACETOPHENONE	~	~	~	NT		0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
ANILINE	*110*	*1,000*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
ANTHRACENE	1,000	2,500	40	0.24	U	**7.4**		0.2	U	**0.98**		0.19	U	0.19	U	**0.24**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BENZO(A)ANTHRACENE	1	7.8	1	0.24	U	**17**		**0.29**		**4.1**		0.19	U	**0.24**		**0.35**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BENZO(A)PYRENE	1	1	1	0.24	U	**15**		**0.27**		**5.5**		0.19	U	**0.23**		**0.3**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BENZO(B)FLUORANTHENE	1	7.8	1	0.24	U	**18**		**0.33**		**5.8**		0.19	U	**0.27**		**0.36**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BENZO(G,H,I)PERYLENE	*8.4*	*78*	*1*	0.24	U	**7.4**		0.2	U	**3.3**		0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BENZO(K)FLUORANTHENE	8.4	78	1	0.24	U	**7.7**		0.2	U	**2**		0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
BIS(2-CHLOROETHOXY)METHANE	*200*	*2,500*	*0.42*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
BIS(2-CHLOROETHYL)ETHER	1	5.2	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
BIS(2-CHLOROISOPROPYL)ETHER	8.8	82	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
BIS(2-ETHYLHEXYL)PHTHALATE	44	410	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			B-37		G-59				G-60				G-61						G-62					
	DEC		PMC																						
Field Sample ID	RES DEC	I/C DEC	GA PMC	B-37 (4-6)		G-59-S1 (1-5)		G-59-S2 (5-10)		G-60-S1 (1-5)		G-60-S2 (5-10)		G-61-S1 (0-5)		G-61-S2 (5-10)		G-61-S3 (10-15)		G-62-S1 (0-5)		G-62-S2 (5-10)		G-62-S2 (5-10) DUP-1		G-62-S3 (10-15)	
Sample Depth Interval (ft bgs)				4-6		1-5		5-10		1-5		5-10		0-5		5-10		10-15		0-5		5-10		5-10		10-15	
Lab Sample ID				22E0875		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007	
Sampling Date				5/12/2022		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024		9/13/2024	
Sample Location				Dean Rd.		Dean Rd.		Dean Rd.		Pocono Rd.		Pocono Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.		Dean Rd.	
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
4-BROMOPHENYL PHENYL ETHER	*500*	*1,000*	*8.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
BUTYLBENZYLPHTHALATE	1,000	2,500	20	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
CARBAZOLE	*31*	*290*	*0.2*	0.24	U	**2.6**		0.2	U	0.37	U	0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
4-CHLOROANILINE	*3.1*	*29*	*0.2*	0.95	U	0.71	U	0.78	U	1.4	U	0.72	U	0.72	U	0.72	U	0.72	U	0.74	U	0.88	U	1.6	U	0.87	U
4-CHLORO-3-METHYLPHENOL	*1,000*	*2,500*	*14*	0.95	U	0.71	U	0.78	U	1.4	U	0.72	U	0.72	U	0.72	U	0.72	U	0.74	U	0.88	U	1.6	U	0.87	U
2-CHLORONAPHTHALENE	*500*	*1,000*	*11*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2-CHLOROPHENOL	340	2,500	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
4-CHLOROPHENYLPHENYL ETHER	*500*	*1,000*	*8.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
CHRYSENE	*84*	*780*	*1*	0.24	U	**17**		**0.28**		**4.5**		0.19	U	**0.23**		**0.35**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
DIBENZ(A,H)ANTHRACENE	*1*	*1*	*1*	0.24	U	**1.2**		0.2	U	**0.89**		0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
DIBENZOFURAN	*68*	*1,000*	*0.2*	0.49	U	**2.6**		0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
DI-N-BUTYLPHTHALATE	1,000	2,500	14	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,2-DICHLOROBENZENE	*500*	*1000*	*3.1*	NT		0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,3-DICHLOROBENZENE	*500*	*1000*	*12*	NT		0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,4-DICHLOROBENZENE	*26*	*240*	*1.5*	NT		0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
3,3'-DICHLOROBENZIDINE	*1.4*	*13*	*0.2*	0.24	U	0.18	U	0.2	U	0.37	U	0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
2,4-DICHLOROPHENOL	200	2,500	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
DIETHYLPHTHALATE	*1,000*	*2,500*	*20*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2,4-DIMETHYLPHENOL	*1,000*	*2,500*	*2.8*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
DIMETHYLPHTHALATE	*1,000*	*2,500*	*20*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
4,6-DINITRO-2-METHYLPHENOL	*20*	*610*	*0.3*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2,4-DINITROPHENOL	*140*	*2,500*	*0.3*	0.95	U	0.71	U	0.78	U	1.4	U	0.72	U	0.72	U	0.72	U	0.72	U	0.74	U	0.88	U	1.6	U	0.87	U
2,4-DINITROTOLUENE	*0.9*	*8.4*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2,6-DINITROTOLUENE	*0.9*	*8.4*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
DI-N-OCTYLPHTHALATE	1,000	2,500	2	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	0.77	7.2	0.2	NT		0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
FLUORANTHENE	1,000	2,500	5.6	0.24	U	**38**		**0.67**		**7.7**		0.19	U	0.56	U	**0.85**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
FLUORENE	1,000	2,500	5.6	0.24	U	**4.1**		0.2	U	**0.69**		0.19	U	0.19	U	**0.2**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
HEXACHLOROBENZENE	1	3.6	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
HEXACHLOROBUTADIENE	*130*	*1,200*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
HEXACHLOROCYCLOPENTADIENE	*410*	*1,000*	*0.84*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
HEXACHLOROETHANE	44	410	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
INDENO(1,2,3-CD)PYRENE	*1*	*7.8*	*1*	0.24	U	**8.9**		0.2	U	**3.5**		0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
ISOPHORONE	*640*	*2,500*	*0.74*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2-METHYLNAPHTHALENE	*270*	*1,000*	*0.56*	0.24	U	**1.5**		0.2	U	0.37	U	0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
O-CRESOL	*1,000*	*2,500*	*2.8*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
M/P-CRESOL	*1,000*	*2,500*	*2.8*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
NAPHTHALENE	*1,000*	*2,500*	*5.6*	0.24	U	**2.2**		0.2	U	0.37	U	0.19	U	0.19	U	0.18	U	0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
2-NITROANILINE	*31*	*290*	*0.3*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
3-NITROANILINE	*31*	*290*	*0.3*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
4-NITROANILINE	*31*	*290*	*0.3*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
NITROBENZENE	*4*	*41*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2-NITROPHENOL	*540*	*2,500*	*1.1*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
4-NITROPHENOL	*~*	*~*	*~*	0.95	U	0.71	U	0.78	U	1.4	U	0.72	U	0.72	U	0.72	U	0.72	U	0.74	U	0.88	U	1.6	U	0.87	U
N-NITROSODIPHENYLAMINE	*130*	*1,200*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
N-NITROSO-DI-N-PROPYLAMINE	*0.20*	*0.82*	*0.2*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
PENTACHLORONITROBENZENE	*68*	*2,000*	*0.14*	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
PENTACHLOROPHENOL	5.1	48	1	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
PHENANTHRENE	*1,000*	*2,500*	*4*	0.24	U	**28**		**0.55**		**3.3**		0.19	U	**0.4**		**0.85**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
PHENOL	1,000	2,500	80	0.49	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
PYRENE	1,000	2,500	4	0.24	U	**30**		**0.72**		**14**		0.19	U	**0.61**		**0.85**		0.18	U	0.19	U	0.23	U	0.42	U	0.22	U
PYRIDINE	*20*	*610*	*0.2*	0.38	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,2,4,5-TETRACHLOROBENZENE	*20*	*610*	*0.1*	0.38	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
1,2,4-TRICHLOROBENZENE	*680*	*2,500*	*1.4*	0.38	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2,4,5-TRICHLOROPHENOL	*1,000*	*2,500*	*14*	0.38	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
2,4,6-TRICHLOROPHENOL	*56*	*520*	*0.2*	0.38	U	0.36	U	0.4	U	0.74	U	0.37	U	0.37	U	0.37	U	0.37	U	0.38	U	0.45	U	0.84	U	0.45	U
Total SVOCs (mg/kg)				0		**212**		3.11		**57.36**		0		**1.98**		**4.35**		0.0		0.0		0.0		0.0		0.0	

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			G-63				G-64								G-65				G-66			
	DEC		PMC																				
Field Sample ID	RES DEC	I/C DEC	GA PMC	G-63-S1 (1-5)		G-63-S2 (5-10)		G-64-S1 (1-5)		G-64-S2 (5-10)		G-64-S3 (10-15)		G-64-S4 (15-19)		G-65-S1 (1.5-5)		G-65-S2 (5-10)		G-66-S1 (0-5)		G-66-S2 (5-10)	
Sample Depth Interval (ft bgs)				1-5		5-10		1-5		5-10		10-15		15-19		1.5-5		5-10		0-5		5-10	
Lab Sample ID				24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007		24I2007	
Sampling Date				9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/12/2024		9/13/2024		9/13/2024	
Sample Location				Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.		Pocono Rd.	
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Percent Solids by SM 2540G (% Wt)																							
% Solids	~	~	~	**89.5**		**88.8**		**85.5**		**73.5**		**87.6**		**90.6**		**84.2**		**81**		**87.8**		**84.7**	
Extractable Total Petroleum Hydrocarbons (ETPH) by CT DEP ETPH Method (mg/Kg)																							
CTDEP ETPH	500	2,500	500	**690**		11	U	**720**		26	U	23	U	21	U	**250**		**32**		**64**		**150**	
Total Metals by EPA Method 6010D/7471B (mg/Kg)			(mg/L)[1]																				
Arsenic	10	10	0.05	3.6	U	3.7	U	**5.7**		**5.4**		3.7	U	3.5	U	3.9	U	3.9	U	**7**		**6.8**	
Barium	4,700	140,000	1	**60**		**30**		**110**		**120**		**53**		**22**		**32**		**61**		**50**		**21**	
Cadmium	34	1,000	0.01	0.36	U	0.37	U	0.39	U	0.43	U	0.37	U	0.35	U	0.39	U	0.39	U	0.37	U	0.37	U
Chromium	3,900	51,000	0.05	**13**		**5.6**		**22**		**23**		**12**		**5.8**		**10**		**12**		**16**		**17**	
Mercury	20	610	0.002	0.027	U	0.028	U	0.028	U	0.032	U	0.028	U	0.028	U	0.029	U	0.029	U	0.027	U	0.029	U
Lead	400	1,000	0.02	**5.3**		**3.1**		**5.6**		**6**		**3.3**		**2**		**5.1**		**4.7**		**8.8**		**3.3**	
Selenium	340	10,000	0.05	3.6	U	3.7	U	3.9	U	4.3	U	3.7	U	3.5	U	3.9	U	3.9	U	3.7	U	3.7	U
Silver	340	10,000	0.04	0.36	U	0.37	U	0.39	U	0.43	U	0.37	U	0.35	U	0.39	U	0.39	U	0.37	U	0.37	U
PCB Aroclors by Method 8082A (mg/kg)			(mg/L)[1]																				
PCB 1016	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1221	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1232	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1242	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1248	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1254	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1260	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1262	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
PCB 1268	1	10	0.0005	0.085	U	NT		0.088	U	NT		NT		NT		0.091	U	NT		0.088	U	NT	
VOCs by Method 8260D (mg/Kg)																							
		Discrete VOC Sample Interval (ft bgs)		2-3		7-9		1-3		8-10		10-12		15-17		1.5-3		6-8		NM		NM	
ACETONE	500	1,000	14	0.047	U	0.048	U	0.057	U	0.06	U	0.048	U	0.045	U	0.059	U	0.054	U	0.054	U	72	U
ACRYLONITRILE	1.1	11	0.01	0.0028	U	0.0029	U	0.0034	U	0.0036	U	0.0029	U	0.0027	U	0.0035	U	0.0033	U	0.0032	U	7.2	U
TERT-AMYLMETHYL ETHER	~	~	~	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
BENZENE	21	200	0.02	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
BROMOBENZENE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
BROMOCHLOROMETHANE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
BROMODICHLOROMETHANE	*18*	*170*	*0.02*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
BROMOFORM	78	720	0.08	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
BROMOMETHANE	*34*	*1,000*	*0.07*	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	2.9	U
2-BUTANONE (MEK)	500	1,000	8	0.019	U	0.019	U	0.023	U	0.024	U	0.019	U	0.018	U	0.024	U	0.022	U	0.022	U	29	U
N-BUTYLBENZENE	*500*	*1,000*	*7*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
SEC-BUTYLBENZENE	500	1,000	7	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TERT-BUTYLBENZENE	*500*	*1,000*	*7*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TERT-BUTYLETHYL ETHER	~	~	~	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
CARBON DISULFIDE	*500*	*1,000*	*0.08*	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	7.2	U
CARBON TETRACHLORIDE	4.7	44	0.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
CHLOROBENZENE	500	1,000	2	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
CHLORODIBROMOMETHANE	7.3	68	0.01	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
CHLOROETHANE	*130*	*1,000*	*0.15*	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	2.9	U
CHLOROFORM	100	940	0.12	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	0.0024	U	0.0022	U	0.0022	U	2.9	U
CHLOROMETHANE	*180*	*1,000*	*0.36*	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	2.9	U
2-CHLOROTOLUENE	*500*	*1,000*	*2.8*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
4-CHLOROTOLUENE	*500*	*1,000*	*2.8*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,2-DIBROMO-3-CHLOROPROPANE	0.09	0.82	0.005	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	7.2	U
1,2-DIBROMOETHANE (EDB)	0.007	0.067	0.01	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
DIBROMOMETHANE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,2-DICHLOROBENZENE	500	1,000	3.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,3-DICHLOROBENZENE	*500*	*1,000*	*12*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,4-DICHLOROBENZENE	*26*	*240*	*1.5*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TRANS-1,4-DICHLORO-2-BUTENE	~	~	~	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	0.0024	U	0.0022	U	0.0022	U	2.9	U
DICHLORODIFLUOROMETHANE	*500*	*1,000*	*7*	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	2.9	U
1,1-DICHLOROETHANE	500	1,000	1.4	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			G-63		G-64						G-65		G-66	
	DEC		PMC												
Field Sample ID	RES DEC	I/C DEC	GA PMC	G-63-S1 (1-5)	G-63-S2 (5-10)	G-64-S1 (1-5)	G-64-S2 (5-10)	G-64-S3 (10-15)	G-64-S4 (15-19)	G-65-S1 (1.5-5)	G-65-S2 (5-10)	G-66-S1 (0-5)	G-66-S2 (5-10)		
Sample Depth Interval (ft bgs)				1-5	5-10	1-5	5-10	10-15	15-19	1.5-5	5-10	0-5	5-10		
Lab Sample ID				24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007		
Sampling Date				9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/13/2024	9/13/2024		
Sample Location				Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.		
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
1,2-DICHLOROETHANE	6.7	63	0.02	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,1-DICHLOROETHYLENE	1	9.5	0.14	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	0.0024	U	0.0022	U	0.0022	U	1.4	U
CIS-1,2-DICHLOROETHYLENE	500	1,000	1.4	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TRANS-1,2-DICHLOROETHYLENE	500	1,000	2	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,2-DICHLOROPROPANE	9	84	0.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,3-DICHLOROPROPANE	~	~	~	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
2,2-DICHLOROPROPANE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,1-DICHLOROPROPENE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	2.9	U
CIS-1,3-DICHLOROPROPENE	3.4	32	0.01	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
TRANS-1,3-DICHLOROPROPENE	3.4	32	0.01	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
DIETHYL ETHER	~	~	~	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	2.9	U
1,4-DIOXANE	*6.1*	*57*	*0.1*	0.047	U	0.048	U	0.057	U	0.06	U	0.048	U	0.045	U	0.059	U	0.054	U	0.054	U	72	U
ETHYLBENZENE	500	1,000	10.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
HEXACHLOROBUTADIENE	*130*	*1,200*	*0.2*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
2-HEXANONE	*340*	*1,000*	*0.7*	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	14	U
ISOPROPYLBENZENE	*500*	*1,000*	*0.5*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
P-ISOPROPYLTOLUENE	*500*	*1,000*	*0.5*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
MTBE	500	1,000	2	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	0.0024	U	0.0022	U	0.0022	U	1.4	U
METHYLENE CHLORIDE	82	760	0.1	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	7.2	U
MIBK	500	1,000	7	0.0094	U	0.0096	U	0.011	U	0.012	U	0.0096	U	0.0089	U	0.012	U	0.011	U	0.011	U	14	U
NAPHTHALENE	*1,000*	*2,500*	*5.6*	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	**0.029**		0.0022	U	0.0022	U	**100**	
N-PROPYLBENZENE	*500*	*1,000*	*1*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
STYRENE	500	1,000	2	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	**1.4**	
1,1,1,2-TETRACHLOROETHANE	24	220	0.02	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,1,2,2-TETRACHLOROETHANE	3.1	29	0.01	0.00047	U	0.00048	U	0.00057	U	0.0006	U	0.00048	U	0.00045	U	0.00059	U	0.00054	U	0.00054	U	0.72	U
TETRACHLOROETHYLENE	12	110	0.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TETRAHYDROFURAN	*61*	*570*	*0.08*	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	14	U
TOLUENE	500	1,000	20	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	**1.6**	
1,2,3-TRICHLOROBENZENE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	7.2	U
1,2,4-TRICHLOROBENZENE	680	2,500	1.4	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,1,1-TRICHLOROETHANE	500	1,000	4	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
1,1,2-TRICHLOROETHANE	11	100	0.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TRICHLOROETHYLENE	56	520	0.1	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
TRICHLOROFLUOROMETHANE	*500*	*1,000*	*20*	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	2.9	U
1,2,3-TRICHLOROPROPANE	~	~	~	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	2.9	U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	*500*	*1,000*	*20*	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	1.4	U
1,2,4-TRIMETHYLBENZENE	500	1,000	2.8	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	**1.6**	
1,3,5-TRIMETHYLBENZENE	*500*	*1,000*	*2.8*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
VINYL CHLORIDE	0.32	3	0.04	0.0047	U	0.0048	U	0.0057	U	0.006	U	0.0048	U	0.0045	U	0.0059	U	0.0054	U	0.0054	U	2.9	U
M/P-XYLENE	*500*	*1,000*	*19.5*	0.0019	U	0.0019	U	0.0023	U	0.0024	U	0.0019	U	0.0018	U	0.0024	U	0.0022	U	0.0022	U	2.9	U
O-XYLENE	*500*	*1,000*	*19.5*	0.00094	U	0.00096	U	0.0011	U	0.0012	U	0.00096	U	0.00089	U	0.0012	U	0.0011	U	0.0011	U	1.4	U
Total VOCs mg/kg				0.0		0.0		0.0		0.0		0.0		0.0		**0.029**		0.0		0.0		**104.6**	
SVOCs by Method 8270E (mg/Kg)																							
ACENAPHTHENE	1,000	2,500	8.4	**1.1**		0.19	U	**0.86**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	**0.21**		**0.85**	
ACENAPHTHYLENE	*1,000*	*2,500*	*8.4*	**1.9**		0.19	U	**1.5**		0.22	U	0.19	U	0.18	U	**0.6**		0.21	U	**0.38**		**0.64**	
ACETOPHENONE	~	~	~	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U
ANILINE	*110*	*1,000*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U
ANTHRACENE	1,000	2,500	40	**2.7**		0.19	U	**2.3**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	**0.6**		**1.5**	
BENZO(A)ANTHRACENE	1	7.8	1	**9.9**		0.19	U	**6.1**		0.22	U	0.19	U	0.18	U	**2.3**		0.21	U	**2.5**		**2.1**	
BENZO(A)PYRENE	1	1	1	**11**		0.19	U	**6**		0.22	U	0.19	U	0.18	U	**2.7**		0.21	U	**2.4**		**1.8**	
BENZO(B)FLUORANTHENE	1	7.8	1	**13**		0.19	U	**6.5**		0.22	U	0.19	U	0.18	U	**3**		0.21	U	**2.8**		**2**	
BENZO(G,H,I)PERYLENE	*8.4*	*78*	*1*	**9.3**		0.19	U	**3.5**		0.22	U	0.19	U	0.18	U	**1.9**		0.21	U	**1.1**		**0.83**	
BENZO(K)FLUORANTHENE	8.4	78	1	**3.6**		0.19	U	**2.2**		0.22	U	0.19	U	0.18	U	**1.2**		0.21	U	**1.1**		**0.8**	
BIS(2-CHLOROETHOXY)METHANE	*200*	*2,500*	*0.42*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U
BIS(2-CHLOROETHYL)ETHER	1	5.2	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U
BIS(2-CHLOROISOPROPYL)ETHER	8.8	82	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U
BIS(2-ETHYLHEXYL)PHTHALATE	44	410	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Boring ID	CT DEEP RSR Criteria			G-63		G-64						G-65		G-66	
	DEC		PMC												
Field Sample ID	RES DEC	I/C DEC	GA PMC	G-63-S1 (1-5)	G-63-S2 (5-10)	G-64-S1 (1-5)	G-64-S2 (5-10)	G-64-S3 (10-15)	G-64-S4 (15-19)	G-65-S1 (1.5-5)	G-65-S2 (5-10)	G-66-S1 (0-5)	G-66-S2 (5-10)		
Sample Depth Interval (ft bgs)				1-5	5-10	1-5	5-10	10-15	15-19	1.5-5	5-10	0-5	5-10		
Lab Sample ID				24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007	24I2007		
Sampling Date				9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/12/2024	9/13/2024	9/13/2024		
Sample Location				Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.	Pocono Rd.		
Analyte				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
4-BROMOPHENYL PHENYL ETHER	*500*	*1,000*	*8.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
BUTYLBENZYLPHTHALATE	1,000	2,500	20	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
CARBAZOLE	*31*	*290*	*0.2*	**1.5**		0.19	U	**0.75**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	0.19	U	**0.65**					
4-CHLOROANILINE	*3.1*	*29*	*0.2*	0.74	U	0.74	U	0.77	U	0.87	U	0.73	U	0.71	U	1.6	U	0.81	U	0.73	U	0.77	U				
4-CHLORO-3-METHYLPHENOL	*1,000*	*2,500*	*14*	0.74	U	0.74	U	0.77	U	0.87	U	0.73	U	0.71	U	1.6	U	0.81	U	0.73	U	0.77	U				
2-CHLORONAPHTHALENE	*500*	*1,000*	*11*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2-CHLOROPHENOL	340	2,500	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
4-CHLOROPHENYLPHENYL ETHER	*500*	*1,000*	*8.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
CHRYSENE	*84*	*780*	*1*	**11**		0.19	U	**6.9**		0.22	U	0.19	U	0.18	U	**2.6**		0.21	U	**2.8**		**2**					
DIBENZ(A,H)ANTHRACENE	*1*	*1*	*1*	**1.8**		0.19	U	**0.89**		0.22	U	0.19	U	0.18	U	**0.46**		0.21	U	**0.36**		**0.22**					
DIBENZOFURAN	*68*	*1,000*	*0.2*	**0.89**		0.38	U	**0.9**		0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	**1**					
DI-N-BUTYLPHTHALATE	1,000	2,500	14	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,2-DICHLOROBENZENE	*500*	*1000*	*3.1*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,3-DICHLOROBENZENE	*500*	*1000*	*12*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,4-DICHLOROBENZENE	*26*	*240*	*1.5*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
3,3'-DICHLOROBENZIDINE	*1.4*	*13*	*0.2*	0.19	U	0.19	U	0.2	U	0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	0.19	U	0.2	U				
2,4-DICHLOROPHENOL	200	2,500	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
DIETHYLPHTHALATE	*1,000*	*2,500*	*20*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2,4-DIMETHYLPHENOL	*1,000*	*2,500*	*2.8*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
DIMETHYLPHTHALATE	*1,000*	*2,500*	*20*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
4,6-DINITRO-2-METHYLPHENOL	*20*	*610*	*0.3*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2,4-DINITROPHENOL	*140*	*2,500*	*0.3*	0.74	U	0.74	U	0.77	U	0.87	U	0.73	U	0.71	U	1.6	U	0.81	U	0.73	U	0.77	U				
2,4-DINITROTOLUENE	*0.9*	*8.4*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2,6-DINITROTOLUENE	*0.9*	*8.4*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
DI-N-OCTYLPHTHALATE	1,000	2,500	2	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	0.77	7.2	0.2	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
FLUORANTHENE	1,000	2,500	5.6	**20**		0.19	U	**12**		0.22	U	0.19	U	0.18	U	**4**		0.21	U	**5.1**		**5.4**					
FLUORENE	1,000	2,500	5.6	**2.2**		0.19	U	**2.7**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	**0.43**		**1.9**					
HEXACHLOROBENZENE	1	3.6	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
HEXACHLOROBUTADIENE	*130*	*1,200*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
HEXACHLOROCYCLOPENTADIENE	*410*	*1,000*	*0.84*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
HEXACHLOROETHANE	44	410	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
INDENO(1,2,3-CD)PYRENE	*1*	*7.8*	*1*	**7.6**		0.19	U	**3.5**		0.22	U	0.19	U	0.18	U	**1.8**		0.21	U	1.2	U	**0.9**					
ISOPHORONE	*640*	*2,500*	*0.74*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2-METHYLNAPHTHALENE	*270*	*1,000*	*0.56*	**0.44**		0.19	U	**1.4**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	**0.5**		**2.3**					
O-CRESOL	*1,000*	*2,500*	*2.8*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
M/P-CRESOL	*1,000*	*2,500*	*2.8*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
NAPHTHALENE	*1,000*	*2,500*	*5.6*	**0.25**		0.19	U	**0.71**		0.22	U	0.19	U	0.18	U	0.4	U	0.21	U	**0.85**		**3.8**					
2-NITROANILINE	*31*	*290*	*0.3*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
3-NITROANILINE	*31*	*290*	*0.3*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
4-NITROANILINE	*31*	*290*	*0.3*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
NITROBENZENE	*4*	*41*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2-NITROPHENOL	*540*	*2,500*	*1.1*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
4-NITROPHENOL	~	~	~	0.74	U	0.74	U	0.77	U	0.87	U	0.73	U	0.71	U	1.6	U	0.81	U	0.73	U	0.77	U				
N-NITROSODIPHENYLAMINE	*130*	*1,200*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
N-NITROSO-DI-N-PROPYLAMINE	*0.20*	*0.82*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
PENTACHLORONITROBENZENE	*68*	*2,000*	*0.14*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
PENTACHLOROPHENOL	5.1	48	1	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
PHENANTHRENE	*1,000*	*2,500*	*4*	**16**		0.19	U	**16**		0.22	U	0.19	U	0.18	U	**1.7**		0.21	U	**2.1**		**7**					
PHENOL	1,000	2,500	80	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
PYRENE	1,000	2,500	4	**24**		0.19	U	**16**		0.22	U	0.19	U	0.18	U	**5.2**		0.21	U	**4.8**		**4.5**					
PYRIDINE	*20*	*610*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,2,4,5-TETRACHLOROBENZENE	*20*	*610*	*0.1*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
1,2,4-TRICHLOROBENZENE	*680*	*2,500*	*1.4*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2,4,5-TRICHLOROPHENOL	*1,000*	*2,500*	*14*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
2,4,6-TRICHLOROPHENOL	*56*	*520*	*0.2*	0.38	U	0.38	U	0.39	U	0.45	U	0.38	U	0.36	U	0.8	U	0.42	U	0.38	U	0.39	U				
Total SVOCs (mg/kg)				**138.18**		0.0		90.71		0.0		0.0		0.0		**27.46**		0.0		**28.03**		**40.19**					

Appendix B - Table B-1
Dean and Pocono Roads Sanitary Sewer Extension
Brookfield, CT
Soil Sample Results - 2022 to 2024

Notes:
CT DEEP RSR = Connecticut DEEP Remediation Standard Regulations RSCA Section 22a-133k-1 to k-3
RES DEC = Residential Direct Exposure Criteria; I/C DEC = Industrial/Commercial Direct Exposure Criteria
GA PMC = GA Pollutant Mobility Criteria ([1]-PMC criteria for PCBs and Metals are based on TCLP/SPLP analysis)
Italicized Value - Indicates Additional Polluting Substance (APS)
Screening Criteria Exceedance Formatting:

Bold Text Only	= Analyte detection
Bold Text with Green Outline	= Exceeds RES DEC, I/C DEC, and/or GA PMC

Qualifiers:
U - The analyte was not detected at the reported detection limit.

Acronyms:
APS - Additional Polluting Substances
bgs - below ground surface
DEEP - Department of Energy and Environmental Protection
EPA - Environmental Protection Agency
mg/Kg - milligrams/kilogram
mg/L - milligrams/liter
~ - not applicable
NT - not tested
NM - not measured
% - percent
Quals - Qualifiers

APPENDIX C

CONNECTICUT NATURAL DIVERSITY DATABASE (NDDB) INFORMATION AND REQUIREMENTS

Connecticut Department of Energy & Environmental Protection

portal.ct.gov/DEEP

4/29/2026

Kristie Wagner
CDM SMITH INC.
101 E River Dr
East Hartford, CT 06108
wagnerkg@cdmsmith.com

Subject: Dean and Pocono Roads Area Sanitary Sewer Extension
Filing #: 134538
NDDB - New Determination Number: 202510063

Expiration Date: 4/29/2028

Location Description: Dean and Pocono Roads Area Sanitary Sewer Extension, Brookfield, Connecticut

I have reviewed the application and materials for the Dean and Pocono Roads Area Sanitary Sewer Extension project, Brookfield, Connecticut.

The following listed species are found within the vicinity of your project area:
Eastern box turtle (*Terrapene carolina carolina*) – State Special Concern
Wood turtle (*Glyptemys insculpta*) – State Special Concern

Below, I have provided protection measures which must be implemented to ensure no impacts to listed turtles.

Female turtles looking for nesting habitat are frequently killed by vehicles when crossing roads. These turtles of reproductive age are the most valuable individuals in the population to maintain population persistence. Highways with high traffic are impenetrable barriers that isolate populations

Low traffic road surfaces should use Cape Cod-style curbing or no curb alternatives to allow animals to cross road unimpeded

Do not use road surfaces and side slopes that will mimic sandy nesting areas for females.

Land disturbance activities need to consider local habitat features and apply fencing and/or time of year restrictions as appropriate. **We recommend you consult with a herpetologist familiar with preferred habitats to assist you with proper techniques to ensure the best protection strategies are employed for your site and the scope of your project.**

To prevent turtle access and entry into your work zone between April 1- November 1:

Exclusionary practices will be used to prevent any turtle access into disturbance areas. These measures will need to be installed at the limits of disturbance as shown on the plans, or

specifically designated by a herpetologist who can assess the conditions at your site.

Exclusionary fencing be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through.

All staging and storage areas, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.

All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species.

The Contractor must search the work area each morning prior to any work being done.

Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point. This animal is protected by law and should not be relocated off-site.

In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable and disturbance is finished to allow for reptile and amphibian passage to resume.

If land disturbance will occur in suitable eastern box turtle overwintering forested habitat you will need to take precautions to avoid mortality of hibernating adults. If practicable, small projects, under the supervision of a qualified herpetologist, may be able to utilize a combination of exclusionary fencing installed before October 15, combined with and surveys to ensure that no turtles are within the enclosed fencing. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained.

If land disturbance activity will include significant areas within and around rivers and streams, you will need to take precautions to avoid impacting hibernating wood turtle adults. Consult with a qualified herpetologist to assess your work impact zone for the potential to impact overwintering wood turtle.

Work with biologists to plan your development so that it minimizes the effect on these species. Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal pools.

Your submission information indicates that your project requires a state permit, license, registration, or authorization, or utilizes state funding or involves state agency action. This NDDB - New determination may be utilized to fulfill the Endangered and Threatened Species requirements for state-issued permit applications, licenses, registration submissions, and authorizations.

Please be aware of the following limitations and conditions:

Natural Diversity Database information includes all information regarding listed species available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, land owners, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as enhance existing data. Such new information is incorporated into the Database and accessed through the ezFile portal as it becomes available. New information may result in additional review, and new or modified restrictions or conditions may be necessary to remain in compliance with certain state permits.

- During your work listed species may be encountered on site. A report must be submitted by the observer to the Natural Diversity Database promptly and additional review and restrictions or conditions may be necessary to remain in compliance with certain state permits. Please fill out the appropriate survey form and follow the instructions for submittal.
- Your project involves the state permit application process or other state involvement, including state funding or state agency actions; please note that consultations with your permit analyst or the agency may result in additional requirements. In this situation, additional evaluation of the proposal by the DEEP Wildlife Division may be necessary and additional information, including but not limited to species-specific site surveys, may be required. Any additional review may result in specific restrictions or conditions relating to listed species that may be found at or in the vicinity of the site.
- If your project involves preparing an Environmental Impact Assessment, this NDDB consultation and determination should not be substituted for biological field surveys assessing on-site habitat and species presence.
- The NDDB - New determination for the Dean and Pocono Roads Area Sanitary Sewer Extension as described in the submitted information and summarized at the end of this document is valid until 4/29/2028. This determination applies only to the project as described in the submission and summarized at the end of this letter. Please re-submit an updated Request for Review if the project's scope of work and/or timeframe changes, including if work has not begun by 4/29/2028.

If you have further questions, please contact me at the following:

Dawn McKay
CT DEEP Bureau of Natural Resources
Wildlife Division
Natural Diversity Database
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3592
Dawn.McKay@ct.gov

Please reference the Determination Number 202510063 when you e-mail or write. Thank you for consulting the Natural Diversity Data Base.

Dawn McKay
Wildlife Division- Natural Diversity Data Base
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3592
Dawn.McKay@ct.gov

Application Details:

Project involves federal funds or federal permit:	Yes
Project involves state funds, state agency action, or relates to CEPA request:	Yes
Project requires state permit, license, registration, or authorization:	Yes
DEEP enforcement action related to project:	
Project Type:	Wastewater and other water Discharge
Project Sub-type:	Discharge to POTW (no construction)
Project Name:	Dean and Pocono Roads Area Sanitary Sewer Extension
Project Description:	Sanitary sewer construction will encompass portions of Dean Road, Pocono Road, and Silvermine Road


CDM
Smith
cdmsmith.com