

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

## **Aquila WWTP Improvements**

Aquila Village, Geauga County, Ohio  
Project P1802 (RE-BID)

Issued for Bid

February 2024

PREPARED BY:

Geauga County Department of Water Resources

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OPWC No. CG14Z/CG15Z

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## **INSTRUCTION TO BIDDERS**

### **§ 1.01: Bid Submission**

Sealed proposals for the work of this Contract will be received by the Board of County Commissioners at the Offices of the Geauga County Board of County Commissioners, 12611 Ravenwood Drive, Suite 350, Chardon, Ohio 44024, until 1:45 P.M. (local time) on the day set in the Legal Notice, the bids will be publicly opened and read.

The bidder is charged with full responsibility for delivery of its proposal. Should a bidder submit proposal by mail, it shall contain an inner sealed envelope endorsed only with the Title of the contract. Bids received after the time and date provided in the Legal Notice will not be accepted.

### **§ 1.02: Pre-Bid Meeting**

No pre-bid meeting will be held. Contractors interested in visiting the project site shall make arrangements by contacting Nick Gorris, PE at 440-279-1970.

### **§ 1.03: Location of Work**

The proposed project open to bid will be constructed and installed in Aquilla Village, Claridon Township, Ohio.

### **§ 1.04: Contract Examination**

The bidders' attention is directed to the necessity of examining the site of the proposed work. Submission of a proposal is an acknowledgment that the bidder has examined the job site, plans, and contract documents (as defined in Article 1, Section 1.1.1 of the General Conditions) and that the bidder fully and completely understands, and is aware of, the conditions and difficulties it may encounter.

### **§ 1.05: Soil Conditions**

- (a) The County does not guarantee, either expressly or impliedly, foundation conditions of soil materials at the job site. The Contractor assumes all risk as to the nature and behavior of all materials encountered in the project.
- (b) The County has included documentation of test bores. Said borings, test excavations, and other subsurface investigations, if any, are not warranted to show the actual subsurface conditions. The Contractor agrees that it will make no claim against the county, if, in carrying out the work, the Contractor finds that the actual subsurface conditions encountered do not conform to those indicated by said borings, test excavations, and other subsurface investigations.
- (c) Bidders are permitted to make borings or dig test pits at the job site subject to the convenience of the County Sanitary Engineer. Such work shall be done at the bidder's sole risk and expense, and shall not interfere in any way with site operations. The bidder shall restore the site to a safe condition and neat appearance after completion of its test pits and boring.

### **§ 1.06: Clarification and Explanation by County**

If any person contemplating submitting bids for the proposed Contracts is in doubt as to the true meaning of any part of the Drawings, Specifications, and other proposed Contract Documents he shall submit to the County Sanitary Engineer a written request for an interpretation. Any interpretation of the proposed documents will be made only by Addendum duly issued and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. The County will not be responsible for any other explanations or interpretations of the proposed documents.

## § 1.07: Bid Requirements

### (a) Form of Bid:

- (1) To become a registered bidder for or receive an approved project Bid Form and be added to the Plan Holder Listing for this project, prospective bidders shall complete and submit a bid form request available on the Department website [www.gcdwr.org](http://www.gcdwr.org). Upon receipt of a completed form a PDF of the Bid Form, blank, will be provided for use.
- (2) Bids shall be made upon the blank forms provided; shall give the price of each and every item of work bid, as provided on the form, in figures; and shall contain the full name of every person, firm or corporation interested in the bid, and the name and address of the person, firm, or the president and secretary of the corporation bidding. If the bid is by a corporation, it shall state the name of the state in which it is incorporated.
- (3) In order to be eligible to bid this project, prospective bidders shall be on the Official Plan Holders Listing.

### (b) Bid Guaranty:

- (1) Each proposal shall be accompanied by a bid guaranty consisting of a bid bond in the amount of 100% of the total amount bid; or a certified check, cashier's check, or a letter of credit in an amount not less than 10% of the total amount bid, as required by O.R.C. 153.54.
- (2) The certified check, cashier's check, letter of credit or bid bond shall be made payable to the Treasurer of Geauga County, Ohio and shall be issued by a financial institution licensed to conduct business in the State of Ohio.
- (3) Bid bond shall be issued by an approved surety company authorized to transact business in the State of Ohio and said company shall have local representation. Bond shall meet in full the satisfaction of the County Prosecutor.
- (4) The aforementioned certified check, cashier's check, letter of credit or bid bond shall be given as security that if the bid is accepted a contract will be entered into, and the performance of said contract will be properly secured.
- (5) The aforementioned financial instrument(s) shall be forfeited and surrendered to the County as the agreed amount of liquidated damages in case of failure to enter into a Contract.
- (6) If the County accepts the bidder's proposal it will return the cashier's check, certified check, letter of credit or bid bond after the Parties have signed the Contract and the bidder has furnished the required performance and maintenance bond (Sections 3.03 and 3.04) which the County Prosecutor has approved.
- (7) The County will retain the cashier's check, certified check, letter of credit or bid bond of the lowest and best bidder until that bidder has signed and secured the performance of its contract. If the lowest bidder fails to sign the contract, the County will retain said financial instrument until the second lowest and best bidder has signed and properly secured the Contract. If the lowest and best bidder fails to sign the contract and the County is unable to secure the next lowest and best bidder, the lowest and best bidder will be in default and said financial instrument will be forfeited to the County as liquidated damages.

(c) **Signature of Bidder:**

- (1) The bidder must sign the bid in the space(s) provided for signatures on the bid forms.
- (2) In the case of any corporation, each signing officer must clearly state his/her title. The corporation must submit with its proposal a resolution of the directors of the corporation, affixed with the corporate seal, authorizing the officer to submit the proposal and to execute the contract on behalf of the corporation. A copy of this resolution shall be attach to each copy of the Proposal and Contract.
- (3) In the case of any partnership, each signing partner must clearly state his/her title and must also submit the partnership agreement indicating that the partner(s) signing is/are authorized to bind the partnership to the Contract.
- (4) In the case of an individual, the term "doing business as \_\_\_\_\_" or "Sole Owner," shall be used.

(d) **Unit Prices Bid:** The bidder must submit prices for each item, in figures, in the spaces provided on the proposal form. Prices must be stated separately for each item on the sheet. For example, the bidder must provide separate prices for material, labor, for the sum of the material and labor, and for the total amount bid for each item.

- (1) The bid prices shall include the cost and expense of all contingent, accessory, and incidental work and all materials required to complete the performance of this Contract.
- (2) The bidder is advised that the County will look with disfavor upon a proposal in which the prices appear unbalance to the County. The County reserves the right to reject any bid which in its opinion appears unbalanced.

(e) **Ability of Bidder:** The bidder shall furnish Bidders Qualifications (p. B-9 top. B-13) with its proposal in order for the County to determine if the bidder has sufficient experience with work of the character specified in the Contract. The County requires the Bidder to: list three projects with their bid amount, location and project owner's name; evidence of the Bidder's financial ability to properly and successfully prosecute the work within the time period specified in the Contract; and the contractor shall also present satisfactory evidence that it can obtain the material, and owns the machinery and equipment necessary to conduct the work in a manner satisfactory to the County.

(f) **Bidder's Affidavits:**

- (1) Each bidder shall submit with its bid an affidavit stating that neither it nor its agents, nor any other party it has paid or agreed to pay, directly or indirectly, any person, firm, or corporation any money or valuable consideration for assistance in procuring or attempting to procure this Contract, and further swearing that no such money or valid consideration will be paid if the bidder wins the contract. This affidavit shall be on a form provided by the County which is attached hereto.
- (2) Each bidder which is a foreign corporation, licensed to conduct business in Ohio, is required to submit with its bid an affidavit duly executed by executive in charge of the corporation stating that said foreign corporation has obtained a certificate authorizing it to conduct business as provided in O.R.C. § 1703.03.

(g) **Withdrawal of Bids:** No bid will be allowed to be withdrawn after it has been deposited with Geauga County authorities except as provided in 3.01(a).

(h) **Unacceptable Bids:** The County will not accept any bid, nor award any contract to any person or entity that is in arrears or default on any obligation to the County, that is a defaulter or surety or

otherwise, or that has failed, in the County's opinion, to perform a previous contract with the County faithfully, dutifully and in good faith.

- (i) **Rejection or Acceptance of Bids:** The County reserves the right to accept or reject any and all bids, and any part or parts of any bid. In the awarding of a contract the County reserves the right to consider all elements determining the bidder's responsibility. Any bid which is incomplete, conditional, obscure, or which contains additions not called for, erasures, is not on forms herein included and bound, or contains irregularities of any kind, may be considered irregular and subject to rejection. In case of any discrepancy between the figures written in the column "Labor and Material," the separate figures listed in the columns "Labor" and "Material" will be considered as correct and used in the determination of the low bid. The figures listed in the column "Total Amount of Bid" will be considered an unofficial extension of quantities and prices.

## **§ SECTION A-2 BID COMPARISON**

### **§ 2.01: Criteria for Bid Comparison**

The County will compare proposals based on the estimated quantities of materials and work the bidder submits on its proposal forms. The parties understand that the bidder's estimates are prepared for the purpose of comparison of bids and that neither party guarantees the estimated quantities. The County reserves the right to increase, diminish, or omit any one or more items as may be deemed desirable. Any such departure from the stated quantities in the performance of the Contracts will not affect the contract prices and will not be valid grounds for any claim for damages or for loss of anticipated profits.

### **§ 2.02: Equipment Cost Comparison**

In comparing proposals for equipment, the County will give consideration not only to the cost of the equipment and appurtenances, but also to the cost of the Contract as a whole, together with the cost of operation made necessary for the installation of such equipment. The County reserves the right to select the type of equipment which in its opinion will result in the most economical and best installation and operation for the sewers as a whole.

## **§ SECTION A-3. CONTRACT AWARD AND REQUIREMENTS**

### **§ 3.01: Awarding of Contract**

- (a) The County will review proposals for the performance of the work covered in the Contract Documents, and will prepare and execute a contract between the parties. The contract award may be delayed by a duration of up to one hundred eighty (180) days from the bid opening. Work on this project will not be permitted before the official Notice of Award is issued by the County. By submitting a bid, the bidder agrees to hold bid prices for a minimum of 180 days. Bids may be withdrawn by the process provided in O.R.C. § 9.31.
- (b) The party or parties submitting a proposal will be expected to execute a written contract with approved sureties within ten (10) days from the date of service of notice to that effect.
- (c) Notice of the award of the contract to the successful responsible bidder, will be made in writing. Such notice will be forwarded to the Contractor at the address furnished in the proposal.



### **§ 3.02: Start Date**

The work contemplated in the Contract shall start on or before a date to be specified in a written "Notice to Proceed" from the County to the Contractor. The number of calendar days required for completion of the work of the Contract will start on the date specified in the "Notice to Proceed".

### **§ 3.03: Performance or Contract Bond**

- (a) The bidder to whom the Contract is awarded ("Contractor") will be required to furnish a bond in the amount equal to the total amount of its proposal in the form so marked and bound herein for Performance Bond.
- (b) The Performance Bond shall be executed by a surety, guaranty or trust company authorized to do business in the State of Ohio, with local representation, and the execution shall satisfy the County Prosecutor. In the event of failure of the surety, or if at any time such surety is declared unsatisfactory by the County, the Contractor shall immediately furnish a new bond as required herein.
- (c) Agents of bonding companies shall furnish power of attorney, bearing seal of the company and evidencing such agent's authority to execute the particular type of bond furnished. The Contractor shall attach a copy of this proof to each copy of the Contract.
- (d) The performance bond shall remain in force and effect until all provisions of the Contract have been fulfilled.

### **§ 3.04: Maintenance Bond**

- (a) Maintenance Bond: The Contractor will be required to furnish a bond in the amount equal to that herein shown for the Contract awarded and bond will be in the form so marked and bound herein for Maintenance Bond.
- (b) The Maintenance Bond shall be executed by a surety, guaranty or trust company authorized to do business in the State of Ohio, with local representation, and the execution shall satisfy the County Prosecutor.
- (c) Each maintenance bond shall guarantee that the workmanship and materials furnished under the Contract and used in the completion of the Contract are in all respects of the highest quality and of such construction that the improvement will remain in good condition for and during the entire period of maintenance and shall remain free from defects caused by inferior materials and poor workmanship.
- (d) Each maintenance bond shall remain in effect for a period of twelve (12) months after the County accepts the work performed under the Contract. The period of maintenance shall run from the date the County notifies the Contractor in writing that the County accepts the work performed under the contract.
- (e) If repairs are required at any time during the twelve (12) months after the County accepts the work because of defects in material, workmanship or for any other cause which the County determines may be attributed to the Contractor, the County will notify the Contractor in writing to perform the required repairs. If the Contractor does not commence the repair work within five (5) days of the notification date, if the County is not satisfied with the manner and quality of the repair work, or if in the County's opinion the aforementioned work requires immediate repairs that cannot await the Contractor notification process, the County shall have the right to: employ such other persons as the County may deem proper to make the repair(s), to apply the expense incurred from money due the Contractor, or which may thereafter become due to the Contractor or, out of the amount retained for that purpose by the County. If such monies are not sufficient to meet said expense, the Contractor shall furnish the additional monies; if the Contractor refuses or neglects to provide the necessary monies shall be provided by its sureties.

- (f) Maintenance Bonds shall be made out for the total amount of the bid with change orders as approved.

**§ 3.05: Public Liability, Property Damage and Automobile Insurance:**

- (a) The Contractor shall purchase and maintain throughout the life of this Contract such public liability and property damage insurance coverage that shall protect the Contractor, Geauga County, and all sub-contractors performing work provided in the Contract from claims for damages for personal injury, including accidental death. Such insurance shall also cover claims for property damages that may arise from work pursuant to the Contract, whether such work be conducted by the Contractor, sub-contractor, or by anyone directly or indirectly employed by either of them. The amount of such insurance shall be as follows:
  - (1) Contractor's Public Liability and Property Damage Insurance: The Contractor shall procure and shall maintain throughout the Contracted project Contractor's Public Liability Insurance, and Vehicle Liability Insurance in the amount of not less than \$1,000,000.00 for injuries, including accidental death, to any one person, and subject to the same limit for each person, and in an amount not less than \$1,000,000.00 on account of one accident and Contractor's Property Damage Insurance in an amount not less than \$2,000,000.00.
  - (2) Sub-Contractor's Public Liability and Property Insurance and Vehicle Liability Insurance: the Contractor shall either:
    - a) Require each of its sub-contractors to procure and to maintain during the life of its sub-contract, Sub-Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts as specified in the preceding paragraph (a), or
    - b) The Contractor shall insure the activities of its sub-contractors in its own policy as specified in the preceding paragraph (a).
- (b) The following additional special hazards shall be covered during the life of this Contract by rider or riders to the policy or policies above required or by separate preceding paragraphs:
  - (1) Blasting and explosion;
  - (2) Collapse of or structural injury to any building due to:
    - a) Excavation, tunneling, pile driving, break water, caisson or cofferdam work;
    - b) Moving, shoring, under piling, razing, or demolition of any building or structure, or the removal or rebuilding of any structural support thereof;
    - c) All cranes, equipment and floating plant;
    - d) The term "caused by accident" in the standard policy shall be broadened by the term "occurrence."
- (c) The policy or policies shall contain the following special provisions: "The Company agrees that thirty (30) days prior to cancellation or reduction of the insurance afforded by the Contract involved, written notice shall be mailed to the Office of the Geauga County Sanitary Engineer."
- (d) All such policies of insurance shall be in reliable and solvent insurance companies authorized to do business in the State of Ohio, are subject to approval by the Board of County Commissioners and shall designate Geauga County and Contractor as co-insured.
- (e) The Contractor shall bear any and all expenses incident to the furnishing of all insurance required of the Contractor, as well as the legally required Performance Bond, and shall be included in its unit or lump sum bid for the various items in the Contract.
- (f) The Contractor shall furnish the County with satisfactory proof of coverage of the insurance required, and neither it nor any sub-contractor shall commence work until it has submitted such proof that is approved by the County Prosecutor.

### **§ 3.06: Fire Insurance**

The Contractor shall insure for the life of the Contract against all loss or damage by fire at the site and against all loss or damage covered by the standard extended coverage insurance endorsement. The insurance policy shall be held jointly in the names of the Board of Commissioners and the Contractor. The amount of the policy may vary with the extent of the work completed, but shall at all times be at least equal to the amount paid on account of work and materials plus the value of work or materials furnished or delivered by the Contractor but not paid for by the County.

### **§ 3.07: Safety Procedures and Indemnification**

- (a) The Contractor shall at all times exercise reasonable precautions for the safety of the public and of employees on the work, and shall comply with all applicable provisions of Federal, State, Local and Municipal safety laws. All machinery and other physical hazards shall be guarded in accordance with safety codes approved by the American Standards Association, OSHA, Ohio Safety Regulations and Local and Municipal regulations as such are applicable.
- (b) If at any time, the Contractor fails to exercise proper safety precautions or measures, or is lax therein, or if its conduct of the work is in any way hazardous to life or property, the County may order the Contractor to institute adequate corrective measures, and the Contractor shall conform to such orders. But failure of the County to issue such orders shall not release the Contractor from his obligation to secure the safety of this work and operations.
- (c) The Contractor shall be held responsible for all accidents and shall indemnify and protect the County or its representatives from all suits, claims and actions brought against it, and all costs for liability to which the County may be put for any injury or alleged injury to the person or persons, or property of another resulting from negligence or carelessness in the performance of the work, or in caring for the same, or from any improper or inferior workmanship or inferior materials used.
- (d) The Contractor shall employ at all times as many watchmen or guards as are needed and, when necessary, shall erect and maintain on the work such strong and suitable barriers, and at night time such warning lights as will effectively prevent any accident to life, limb or property in consequence of said work, or property in consequence of said work, or in the use or occupancy or street, or highways or public or private grounds.

### **§ 3.08: Compliance with Social Security Act**

The Contractor shall be and remain an independent contractor with respect to all services performed hereunder and agrees to and does hereby accept full and exclusive liability for payment of any and all contribution or taxes for social security, unemployment insurance, or old age benefits, pensions, or annuities now or hereafter imposed under any Local, State or Federal Law which are measured by the wages, salaries, or other remuneration paid to persons employed by the Contractor for work performed under the terms of this Contract and further agrees to obey all lawful rules and regulations and to meet all lawful requirements which are not or hereafter may be issued or promulgated under said respective laws by any duly authorized State or Federal officials; and said Contractor also agrees to indemnify and save harmless Geauga County from any such contributions, taxes or liability.

### **§ 3.09: State Compensation and Insurance:**

- (a) The Contractor shall comply with the State Law known as the Workman's Compensation Act, and shall pay into the State Insurance Fund the necessary premiums required by the Act to cover all employees on this Contract and under the control of the Contractor, and shall relieve the County from any costs due to accidents or other liabilities mentioned in such Act. The Contractor shall furnish at the time of delivery of this Contract, and at such other times as may be requested, two **(2) copies of an official certificate or receipt showing payments referred to.**

- (b) The Contractor shall require similar coverage by sub-contractors for all their employees not covered by the Contractor himself. For any employees who cannot be protected under the State statute the Contractor shall provide equivalent and adequate insurance.

**§ 3.11: State Taxes**

Geauga County is exempt from all sales, excise and transportation taxes, except State of Ohio gasoline tax. The price or prices bid, whether a unit price or lump sum price, shall be exclusive of all such taxes and will be so construed.

**§ 3.12: Permits**

The Contractor shall take out at its own expense all permits and licenses required for the starting and prosecution of its work including licenses and permits required by the various municipal or other public bodies involved or have jurisdiction. The Contractor shall comply with all laws and ordinances of the County and no blasting shall be permitted without first obtaining the proper permits. The Contractor shall meet all provisions of the County and Ohio State Building Codes in the matter of construction and inspection as such are applicable to this Contract.

**§ 3.13: Utilities**

The Contractor shall obtain water as needed for its operation, and for drinking supply for its working force. The Contractor shall make its own arrangements for water at no cost to the County. Use of unpurified lake or stream water will not be permitted in the mixing of concrete or for drinking or for sanitary use or for the testing of any of the items or assemblies of equipment. The Contractor shall make its own arrangements for obtaining and for the use of electrical current and power and it shall provide temporary lights at his own expense for such periods and under requirements as may be necessary for the proper protection of the work.

**§ 3.14: Access to Work**

Contractors for work under proposal will be obligated to provide that the representatives of the County and Federal Water Pollution Control Administration and the State of Ohio will have access to the work wherever it is in preparation of progress and that proper facilities will be provided for such access and for inspection.

**§ 3.15: Non-Discrimination Practices**

Non-Discrimination Practices: The Contractor shall comply with the latest Ohio Revised Code, Title 41, Labor and Industry, Subsection 4112.02, dealing with non-discrimination practices in employment as to race, sex, color, religion, national origin or ancestry of any person.

**§ 3.16: Patents**

The Contractor shall pay all royalties and license fees and shall hold and save the County and its officers and employees harmless from liability of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article or appliance(s) manufactured or used in the performance of the Contract, including its use by Geauga County unless otherwise specifically stipulated in the contract documents. Contractor shall defend all suits or claims for any of the aforementioned uses.

**§ 3.17: Liquidated Damages**

The Contractor agrees that the County will be subject to additional costs in the form of expenses, inconveniences and other damages in the event that the contractor fails to perform the work herein specified within the time set forth. These damages will include, but are not limited to: inconvenience to the public; additional engineering expenses; interest charges; wages and salaries for clerks, inspectors and engineers; delay caused to other work by failure of performance of the Contract; and other elements some of which are indefinite and insusceptible of proof. The sum per day specified below for each day delay shall be considered as liquidated damages and not as penalty.

- (a) In the event the Contractor fails to complete the work within the time set forth in the proposal, the County shall deduct two hundred and fifty dollars (\$250.00) per day for each and every day

by which the time of completion of the work is delayed beyond the time stipulated in the proposal. No liquidated damages shall be exacted where such failure results from any of the causes stated below in the paragraphs entitled Time and Delay for Causes Beyond Control, for which additional time for completion has been allowed.

- (b) The time of completion of the work herein specified is defined to be when the bidder has completed all structures and appurtenances, such structures and appurtenances have been successfully tested, and the County Sanitary Engineer has indicated in writing that such structures and appurtenances are accepted by the County and are ready for continuous and permanent use and occupancy for the purpose intended and specified.
- (c) This remedy is in addition to any other remedy or damage the County may be entitled to under the Agreement

**§ 3.18: Small Businesses in Rural Areas (SBRA)**

This procurement is subject to the EPA policy of encouraging the participation of small businesses in rural areas. It is EPA policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practicable. The objective is to assure that such small business entities are afforded the maximum practicable opportunity to participate as subcontractors, suppliers and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

**§ 3.19: Continuous Treatment Provisions**

Federal regulations prohibit by-passing of any sewage during construction operations. The Contractor will be responsible for providing any required temporary pumping facilities piping, etc., necessary to complete the project without any plant by-passing and continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

**§ 3.20: Equal Employment Opportunity (EEO)**

The bidder's EEO certification form must be completed and submitted with their bid.

**§ 3.20: Debarment**

The bidder's Certification Regarding Debarment, Suspension, and Other Responsibility Matters must be completed and submitted with their bid.

**§ 3.20: Materials Testing**

1. Contractor shall appoint, employ, and pay for specified services of an independent firm to perform testing.
2. The independent firm will perform tests and other services specified in individual specification sections and as required by the Architect/Engineer.
3. Testing and source quality control may occur on or off the project site. Perform offsite testing as required by the Architect/Engineer or the Owner.

4. Reports will be submitted by the independent firm to the Architect/Engineer and Contractor, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
5. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - a. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.
  - b. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
6. Testing does not relieve Contractor to perform Work to contract requirements.
7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

### **§ 3.21: Wage Rates**

The following requirements are in compliance with Wage Rate requirements of a WPCLF funded project:

As used in these provisions “subrecipient” means the Geauga County Board of County Commissioners.

(a) The following applies 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 public building or public work, or building or work 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.

(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.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, [www.wdol.gov](http://www.wdol.gov).

(ii)(A) The subrecipient(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 EPA award official shall approve 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 subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the subrecipient(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. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action 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 and the subrecipient(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 questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt 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 subrecipient(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 subrecipient, that is, the entity that receives the subgrant 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 subrecipient 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/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 subrecipient(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 subrecipient(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 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)(1) through (10) and such other clauses as the EPA determines may be 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 subrecipient(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.

**Contract Provision For Contracts In Excess Of \$100,000 And Subject To The Overtime Provisions Of The Contract Work Hours And Safety Standards Act:**

(b) Contract Work Hours and Safety Standards Act. The following applies 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. As used in these paragraphs, 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 (a)(1) 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 (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, 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 (b)(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 (b)(1) through (4) of this section.

**Contract Provision For Contracts In Excess Of \$100,000 Subject ONLY To The Contract Work Hours And Safety Standards Act:**

(c) The following applies to 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 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.

The records shall be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Ohio EPA, EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

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**OPWC PROPOSAL NOTES – For insertion into Bid Documents (Rev 6/16)**

**1. STEEL PRODUCTS MADE IN THE UNITED STATES**

Domestic steel use requirements as specified in Ohio Revised Code §153.011 apply to this project. Copies of §153.011 can be obtained from any of the offices of the department of administrative services or through <http://codes.ohio.gov/orc/153.011>.

**2. PREVAILING WAGES ON STATE PROJECTS WITH NO FEDERAL-AID (Should this project contain Federal-aid funds then Federal Prevailing Wages must be paid. Contact the appropriate Federal funding agency for language.)**

This contract is subject to Ohio Prevailing Wage Laws, Chapter 4115 of the Ohio Revised Code and the Contractor and all subcontractors shall comply with all provisions contained therein or as otherwise provided by this note. The Contractor guarantees that the prevailing wage scale to be paid to all laborers and mechanics employed on this contract shall be in accordance with the schedule of the prevailing hourly wage and fringe benefits as determined by the Ohio Department of Commerce for the county in which the work is being performed. The failure to pay prevailing wages to all laborers and mechanics employed on this project shall be considered a breach of contract. Such a failure may result in the revocation of the contractor's and/or subcontractor's certificate of qualification and debarment. A schedule of the most current prevailing wage rates may be accessed by logging in/registering with the Ohio Department of Commerce, Labor and Worker Safety Division, Wage and Hour Bureau at the following web address:

<https://wagehour.com.ohio.gov/w3/webwh.nsf/wrlogin/?openform>

*The Contractor and all subcontractors shall compensate the employees on this contract at a pay rate not less than the hourly wage and fringe rate listed on the website noted above, for the applicable job classification or as may be modified by the Ohio Department of Commerce, Division of Labor and Worker Safety Wage and Hour Bureau, when new prevailing rates are established.*

Overtime shall be paid at one and one-half times the basic hourly rate for any hours worked beyond forty hours during a pay week. The Contractor and all subcontractors shall pay all compensation by company check to the worker and fringe benefit program.

The wage and fringe rates determined for this project or as may be later modified, shall be posted by the Contractor in a prominent and accessible place on the project, field office, or equipment yard where they can be easily read by the workers or otherwise made available to the workers. On the first pay date of contract work the Contractor and all subcontractors shall furnish each employee covered by prevailing wage a completed form (WHPW-1512) in accordance with section 4115.05 of the Ohio Revised Code, showing the classification, hourly pay rate, and fringes, and identifying the public authority's Prevailing Wage Coordinator, if such employees are not covered by a collective bargaining agreement or understanding between employers and bona fide organizations of labor. These forms shall be signed by the Contractor or subcontractor and the employee and kept in the Contractor's or subcontractor's payroll files.

The Contractor and all subcontractors shall submit to the Prevailing Wage Coordinator, certified payrolls on form WHPW-1512 or equivalent, in accordance with sections 4115.07 and 4115.071 (C) of the Ohio Revised Code, three weeks after the start of work and every subsequent week until the completion of the contract. Additionally, a copy of the "Apprentice Certification" obtained from the Ohio State Apprenticeship Council, must accompany all certified payrolls submitted, for all apprentices working on this project. Upon completion of the contract and before the final payment, the Contractor shall submit to the Prevailing Wage Coordinator a final wage affidavit in accordance with section 4115.07 of the Ohio Revised Code stating that wages have been paid in conformance with the minimum rates set forth in the contract. Please be aware that it is ultimately the responsibility of the Contractor to ensure that all laws relating to prevailing wages in Chapter 4115 of the Ohio Revised Code are strictly adhered to by all

subcontractors.

The Contractor and all subcontractors shall make all of its payroll records available for inspection, copying or transcription by any authorized representative of the contracting agency. Additionally, the Contractor and all subcontractors shall permit such representatives to interview any employees during working hours while the employee is on the job.

**3. UNRESOLVED FINDING FOR RECOVERY**

The Contractor affirmatively represents to the local contracting authority that it is not subject to a finding for recovery under Ohio Revised Code §9.24, or that it has taken the appropriate remedial steps required under §9.24 or otherwise qualifies under that section. The Contractor agrees that if this representation is deemed to be false, the contract shall be void ab initio as between the parties to this contract, and any funds paid by the state hereunder shall be immediately repaid to the local contracting authority, or an action for recovery may be immediately commenced by the local government and/or for recovery of said funds.

**4. OHIO WORKERS' COMPENSATION COVERAGE**

The Contractor must secure and maintain valid Ohio workers' compensation coverage until the project has been finally accepted by the local contracting authority. A certificate of coverage evidencing valid workers' compensation coverage must be submitted to the local contracting authority before the contract is executed.

The Contractor must immediately notify the local contracting authority, in writing, if it or any subcontractor fails or refuses to renew their workers' compensation coverage. Furthermore, the Contractor must notify the local contracting authority, in writing, if its or any of its subcontractor's workers' compensation policies are canceled, terminated or lapse.

The failure to maintain valid workers' compensation coverage shall be considered a breach of contract which may result in the Contractor or subcontractor being removed from the project, withholding of pay estimates and/or termination of the contract.

**5. DRUG-FREE WORKPLACE PROGRAM**

In accordance with Ohio Revised Code §153.03 and during the life of this project, the Contractor and all its Subcontractors that provide labor on the Project site must be enrolled in and remain in good standing in the Ohio Bureau of Worker's Compensation ("OBWC") Drug-Free Workplace Program ("DFWP") or a comparable program approved by the OBWC.

**6. OHIO PREFERENCE**

In accordance with Ohio Revised Code §164.05 (A)(6), to the extent practicable, the Contractor and subcontractor shall use Ohio products, materials, services and labor in connection with this project.

**7. BID GUARANTY**

In accordance with Ohio Revised Code §153.54, the contractor shall file with the bid a bid guaranty in the form of either: 1) a bond for the full amount of the bid, or 2) a certified check, cashier's check, or letter of credit equal to 10% of the bid.

**8. OHIO ETHICS LAW**

Contractor agrees that it is currently in compliance and will continue to adhere to the requirements of Ohio Ethics law as provided by Section 102.03 and 102.04 of the Ohio Revised Code.

**9. STATE OF OHIO EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS**

**NOTICE TO CONTRACTORS:**



The provisions of the Ohio Administrative Code (OAC) 123:2-3-02 through 124:2-9 regarding Equal Employment Opportunity on State Construction Contracts and State-assisted Construction Contracts, and OAC 123:2-3-02 through 123:2-9 regarding Equal Employment Opportunity and Female Utilization Goals are applicable to this project, and each contractor will be required to comply in all aspects of these provisions.

**CERTIFICATE OF COMPLIANCE FOR EEO PURPOSES:**

All prime contractors must secure a valid Certificate of Compliance from the Department of Administrative Services, Equal Opportunity Division, prior to execution of a construction contract.

See <http://www.das.ohio.gov/Divisions/EqualOpportunity/CertificateofCompliance/tabid/129/Default.aspx> for instructions for electronic filing.

>>> Does this bidder have a valid Certificate of Compliance? \_\_\_ Yes \_\_\_ No

>>> If "No" to the above, will this bidder be able to obtain a valid Certificate of Compliance prior to the execution of a contract? \_\_\_ Yes \_\_\_ No

**Bidder must provide a "Yes" answer to one or the other of the above questions.**

**BIDDER'S AFFIRMATIVE ACTION REQUIREMENTS:**

Each prime contract bidder must submit an affirmative action program regarding equal employment opportunity to and receive approval from the State Equal Employment Opportunity (EEO) Coordinator prior to the bid opening. **OR** the prime contract bidder must have evidence within its bid adoption of the minority and female utilization work hour utilization goals and the specific affirmative action steps set forth in 123:2-3 through 123:2-9 of the Ohio Administrative Code.

>>> Has the prime contract bidder prepared and submitted an Affirmative Action Program to the State Equal Employment Opportunity Coordinator and that program has been approved by the State Equal Employment Opportunity Coordinator prior to the bid opening ? \_\_\_ Yes \_\_\_ No

>>>If "no", with this bid response, the prime contract bidder hereby adopts the minority and female work hour utilization goals and the specific affirmative action steps set forth in 123:2-3 through 123:2-9 of the Ohio Administrative Code.

**BIDDER'S EEO COVENANTS:**

Throughout its performance of any contract awarded to it on this State-assisted project, the prime contract bidder agrees to the following covenants:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry or sex. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, national origin, ancestry or sex. Such action shall include, but is not limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will in all solicitations or advertisements for employees placed by or on behalf of the prime contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, ancestry or sex.

(3) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State

Administering Agency advising the said labor union or workers' representatives of the contractor's commitments under this covenant and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of the Ohio Department of Administrative Services, Equal Opportunity Division and with the implementing rules, regulations and applicable orders of the State Equal Employment Opportunity Coordinator.

(5) The contractor agrees to fully cooperate with the State Administering Agency, the State Equal Employment Opportunity Coordinator and with any other official or agency, or the State or Federal government which seeks to eliminate unlawful employment discrimination, and with all other State and Federal efforts to assure equal employment practices under its contract and the contractor shall comply promptly with all requests and directions from the State Administering Agency, the State Equal Employment Opportunity Coordinator and any of the State of Ohio officials and agencies in this regard, both before and during construction.

(6) Full cooperation as expressed in clause (5), above, shall include, but not be limited to, being a witness and permitting employees to be witnesses and complainants in any proceeding involving questions of unlawful employment practices, furnishing all information and monthly utilization work hour reports required by the OAC 123: 2-9-01 and by the rules, regulations and orders of the State Equal Employment Opportunity Coordinator pursuant thereto, and permitting access to its books, records, and accounts by the State Administering Agency and the State Equal Employment Opportunity Coordinator for purposes of investigation to ascertain compliance with such rules, regulations and orders. Specifically, contractors will submit workforce utilization reports to the State Equal Opportunity Coordinator by the 10th of each month. The monthly reports must be electronically submitted through the following website: <http://das.ohio.gov/EOD/CCInputForm29.htm>

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of its contract or with any of the said rules, regulations, or orders, its contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further State Contracts or State-assisted Construction Contracts in accordance with procedures authorized in OAC 123:2-3 through 2-9 and such other sanctions may be instituted and remedies invoked, as provided in OAC 123:2-3 through 2-9 or by regulation, or order of the State Equal Employment Opportunity Coordinator, or as otherwise provided by law.

In the event that its contract is terminated for a material breach of OAC 123:2-3 through 2-9 the contractor shall become liable for any and all damages which shall accrue to the State Administering Agency and Applicant and the State of Ohio as a result of said breach.

(8) The contractor will require the inclusion of language reflecting these same eight covenants within every subcontract or purchase order it executes in the performance of its contract unless exempted by rules, regulations or orders of the State Equal Employment Opportunity Coordinator issued pursuant to O.A.C. 123:2-3-02 so that these provisions will be binding upon each subcontractor or vendor. The contractor will take such actions as the Administering Agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in any litigation with a subcontractor, vendor or other party as a result of such direction by the State Administering Agency, the contractor may be requested to protect the interests of the State.

>>>The prime contract bidder hereby adopts the foregoing covenants ? \_\_\_ Yes \_\_\_ No

**BIDDER'S CERTIFICATION:**

The undersigned, being a duly authorized officer of the prime contract bidder, does hereby certify to and agree with the foregoing statements and covenants regarding its subscription to the State's Equal Employment Opportunity Requirements for State-assisted Construction Contracts.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
Signature of Authorized Officer      Date

\_\_\_\_\_  
Title

**>>> PLEASE NOTE: Only a bidder possessing a valid certificate will be awarded a contract pursuant to Chapter 153 of the Revised Code by an owner referred to in section 153.01 of the Revised Code. Application shall be made at least ten working days prior to the date that the bidder expects to receive the certificate. The bidder's failure to elect one of the two Bidder's Affirmative Action Requirements, adopt the Bidder's EEO Covenants, and complete the foregoing certification may cause the bidder's proposal to be rejected as being non-responsive to the State's Equal Employment Opportunity Requirements and in non-compliance with the State Equal Employment Opportunity Bid Conditions. In addition, the bidder must, prior to the execution of a contract, submit to the local subdivision a valid Certificate of Compliance for Equal Employment Opportunity purposes.**

**"APPENDIX A" OF THE STATE EEO BID CONDITIONS**

**MINORITY MANPOWER UTILIZATION GOALS AND TIMETABLES**

The following minority goals listed are expressed in terms of percentages of work hours for each trade to be used by the contractor in a designated area. Designated areas are defined as Ohio's Standard Metropolitan Statistical Areas (SMSA). They are: Akron, Cincinnati, Cleveland, Columbus, Dayton, Toledo and Youngstown-Warren. In cases where the project is not located in a designated area, the contractor may adopt minority utilization goals of the near/nearest designated area.

	<b>AKRON</b>		<b>CINCINNATI</b>		<b>CLEVELAND</b>	
All Trades		10%	<u>Trade</u>		<u>Trade</u>	
			Asbestos Workers	9%	Asbestos Workers	17%
			Boilermakers	9 %	Boilermakers	10%
	<b>COLUMBUS</b>		Carpenters	10%	Carpenters	16%
All Trades		10%	Elevator Constructors	11%	Electricians	20%
			Floor Layers	10%	Elevator Constructors	20%
			Glaziers	10%	Floor Layers	11%
	<b>DAYTON</b>		Lathers	10%	Glaziers	17%
All Trades		11%	Marble, Tile, Terrazzo	8%	Ironworkers	13%
			Millwright	10%	Operating Engineers	17%
			Operating Engineers	11%	Painters	17%
	<b>TOLEDO</b>		Painters	11%	Pipefitters	17%
All Trades		9%	Pipefitters	11%	Plasterers	20%
			Plasterers	10%	Plumbers	17%
			Plumbers	11%	Roofers	17%
	<b>YOUNGSTOWN</b>		Sheet Metal Workers	11%	Other Trades	17%
All Trades		9%	Other Trades	11%		

## **"APPENDIX B" OF THE STATE EEO BID CONDITIONS**

### **SPECIFIC AFFIRMATIVE ACTION STEPS**

The following Affirmative Action steps are directed at increasing minority utilization:

(1) The contractor should maintain a file of the names and addresses of each minority and female referred to it by any individual or organization and what action was taken with respect to each such referred individual, and if the individual was not employed by the contractor, and the reasons therefore. If such individual was sent to the union hiring hall for referral and not referred back by the union or if referred back by the union or if referred, not employed by the contractor, the file should document this and the reason therefore.

To Demonstrate Compliance: Maintain a file of the names, addresses, telephone numbers, and craft of each minority and female applicant showing (a) the date of contact and whether the person was hired; if not, the reason, (b) if the person was sent to a union for referral, and the results (c) follow-up contacts when the contractor was hiring.

(2) The contractor should promptly notify the State Contracting Agency when the Union or Unions with which the contractor has collective bargaining agreements does not refer to the contractor a minority or female worker referred (to the union) by the contractor, or when the contractor has information that the union referral process has impeded efforts to meet its goals.

To Demonstrate Compliance: Have a copy of letters sent, or do not claim the union is impeding the contractors' efforts to comply.

(3) The contractor should disseminate its Equal Employment Opportunity policy within its organization by including it in any company newsletters and annual reports; by advertising at reasonable intervals in union publications; by posting of the policy; by specific review of the policy with minority and female employees; and by conducting staff meetings to explain and discuss the policy.

To Demonstrate Compliance: Have a written EEO policy which includes the name and how to contact the contractor's EEO Officer and (a) include the policy in any company policy manuals, (b) post a copy of the Policy on all company bulletin boards (in the office and on all job sites), (c) records, such as reports or diaries, etc., that each minority and female employee is aware of the Policy and that it has been discussed with them, (d) that the policy has been discussed regularly at staff meetings and (3) copies of newsletters and annual reports which include the Policy.

(4) The contractor should continually monitor all personnel activities to ensure that its EEO policy is being carried out, including the evaluation of minority and female employees for promotional opportunities on a quarterly basis and the encouragement of such employees to seek those opportunities.

To Demonstrate Compliance: Have records that the company EEO Officer reviews all: (a) monthly workforce reports, (b) hiring and terminations, (c) training provided on-the-job, (d) minority and female employees quarterly for promotion and encourages them to prepare for and seek promotion. The records should be the EEO Officer's job description, reports, memos, personnel files, etc., documenting the activities for possible discriminatory patterns.

(5) The contractor should disseminate its EEO policy externally by informing and discussing it with all recruiting sources; by advertising it in news media, specifically including minority and female news media; and by notifying and discussing it with all subcontractors.

To Demonstrate Compliance: Have copies of (a) letters sent, at least six months or at the start of each new major contract, to all recruiting sources (including labor unions) requiring compliance with the

Policy, (b) advertising, which has the EEO "tagline" on the bottom, and (c) purchase order and subcontract agreement forms will include or make reference to the State EEO Covenant, Appendix A or B of the Ohio Administrative Code 123:2-3-02.

(6) The contractor should make specific and reasonably recurrent oral and written recruitment efforts directed at minority and women's organizations, and training organizations with the contractor's recruitment area.

To Demonstrate Compliance: Have a record either in a follow-up file for each organization or on the reverse of the notification letter sent under Item 1, above, of the dates, individuals contacted and the results of the contract from telephone calls or personal meetings with the individuals or groups notified under Item 1.

(7) The contractor, where reasonable, should develop on-the-job training opportunities and participate and assist in all Department of Labor funded and/or approved training programs (including Apprenticeship) Programs relevant to the contractor's employee needs consistent with its obligations in the Bid Conditions.

To Demonstrate Compliance: Have records of contributions in cash, equipment supplied and/or contractor personnel provided as instructors for Bureau of Apprenticeship and Training approved or Department of Labor funded training programs and records of the hiring and training of minorities and females referred to Company by such programs.

(8) The contractor should solicit bids for subcontracts (and joint ventures) from available minority and female subcontractors engaged in the trades covered by the Bid Conditions, including circulation of minority and female contractors associations.

To Demonstrate Compliance: Have copies of letters or other direct solicitation of bids for subcontracts/joint ventures from minority/female contractors with a record of the specific response and any follow-up the contractor has done to obtain a price quotation or to assist a minority/female contractor in preparing or reducing a price quotation; have a list of all minority/female subcontracts awarded or joint ventures participated in with dollar amounts, etc.

#### **EXPLANATION OF AN ACCEPTABLE AFFIRMATIVE ACTION PROGRAM:**

An Affirmative Action Program is a set of specific and result-oriented procedures to which a Contractor shall apply every good faith effort. The objective of those procedures and efforts is to assure equal employment opportunity. An acceptable Affirmative Action Program will include an analysis of all trades employed by the Contractor within the last year with an explanation of whether Minorities are currently being under-utilized in any one or more trades. A necessary prerequisite to the development of a satisfactory Affirmative Action Program is the identification and analysis of problem areas inherent in Minority employment and an evaluation of opportunities for utilization of Minority group personnel.

#### Part I - Basic Contents of an Affirmative Action Program:

1. Development or reaffirmation of the contractor's EEO policy in all personnel actions.
2. Formal internal and external dissemination of contractor's EEO policy.
3. Establishment of responsibilities for implementation of the contractor's affirmative action program.
4. Identification of problem areas (deficiencies) by organizational units and job classification.

5. Establishment of goals and objectives by organizational units and job classification, including timetables for completion.
6. Development and execution of action oriented programs designed to eliminate problems and further designed to attain established goals and objectives.
7. Design and implementation of internal audit and reporting systems to measure effectiveness of the total programs.
8. Compliance of personnel policies and practices with Federal sex discrimination guidelines (41 CFR Part 60-20).
9. Active support of local and national community action programs and community service programs, designed to improve the employment opportunities of minorities.
10. Consideration of ethnic minorities and women not currently in the work force having requisite skills who can be recruited through affirmative action measures.
11. Summary data on applicant flow, hires, terminations and promotions, and training for the last twelve months or the last one hundred applicants, hires, etc., whichever is less.

#### Part II - Analysis of Individual Trades

1. The minority population of the labor area surrounding (contractor's) projects.
2. The size of the minority unemployment force in the labor area surrounding (the contractor's) projects.
3. The percentage of minority work force as compared with the total work force in the immediate labor area.
4. The general availability of minorities having requisite skills in the immediate labor area.
5. The availability of minorities having requisite skills in the area in which the contractor can reasonably recruit.
6. The availability of promotable minority employees within the contractor's organization.
7. The anticipated expansion, contraction, and turnover of an in the work force.
8. The existence of training institutions capable of training minorities in the requisite skills.
9. The degree of training which the contractor is reasonably able to undertake as a means of making all job classes available to minorities.

Goals, timetables and affirmative action commitments must be designed to correct any identifiable deficiencies. Where deficiencies exist and where numbers or percentages are relevant in developing corrective action, the contractor shall establish and set forth specific goals and timetables. Such goals and timetables, with supporting data and the analysis thereof shall be a part of the contractor's written affirmative action program. Where the contractor has not established a goal, its written affirmative action program must specifically analyze each of the factors listed above, and must detail its reason for a lack of a goal. The goals and timetables should be attainable in terms of the contractor's analysis of its deficiencies and its entire action. Thus, in establishing its goals and timetables, the contractor should consider the results which could be reasonably expected from its good faith efforts to make its overall affirmative action program work. If the contractor does not meet its goals and timetables, the



contractor's good faith efforts shall be judged as to whether the contractor is following its program and attempting to make the program work toward the attainment of its goals.

Support data for the above analysis and program shall be compiled and maintained as part of the contractor's affirmative action program. This data should include applicant flow data and applicant rejection ratios indicating minority status.

Compliance Status: No State Contractor's compliance status shall be judged alone by whether or not he reaches his goals and meets his timetables. Rather each Contractor's compliance posture shall be reviewed and determined by reviewing the contents of his program, the extent of his adherence to his program and his good faith efforts to make his program work toward the realization of the program's goals within the timetables set for completion.

### **“APPENDIX C” OF THE STATE EEO BID CONDITIONS**

#### **FEMALE UTILIZATION GOALS**

OAC 123:2-3-05 Required utilization analysis and goals

(A) Each state-involved contractor shall include in his/her affirmative action program the information and analysis required pursuant to part IV 401-C of appendix A of rule 123:2-1-01 of the Administrative Code, in addition to female utilization requirements pursuant to the governor's "Executive Order 84-9" and this rule.

(B) As required by the governor's "Executive Order 84-9", the utilization of women shall be, at a minimum, that currently in use by the federal government as of February 15, 1984. This requirement stated at C.F.R. part 60-4 is 6.9 percent utilization of women. This requirement shall remain at 6.9 percent unless further amended by the governor in a subsequent order. This requirement shall be met by a determination of work hours utilized in the same manner as minority utilization hours are calculated.

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**BID FORM (RE-BID)**  
FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

**ARTICLE 1—OWNER AND BIDDER**

- 1.01 This Bid is submitted to: Board of County Commissioners, 12611 Ravenwood Drive, Suite 350, Chardon, Ohio 44024
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2—ATTACHMENTS TO THIS BID**

- 2.01 The following documents are submitted with and made a condition of this Bid:
  - A. Required Bid security;
  - B. List of Proposed Subcontractors;
  - C. List of Proposed Suppliers;
  - D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
  - E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;
  - F. Required Bidder Qualification Statement with supporting data; and

**ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES**

3.01 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	Chlorination/Dechlorination Feeders, Vaults & Accessories	LS	1		\$
2	Mag Meter in Utility Vault	EA	2		\$
3	Lagoon Liner & Accessories, installed cost	LS	1		\$
4	Gate Valve: 3-inch on overland flow piping	EA	4		\$
5	Gate Valve: 4-inch in yard	EA	1		\$

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
6	Gate Valve: 6-inch in driveway	EA	1		
7	Gate Valve: 6-inch in existing chamber(s)	EA	4		
8	Plug Valve: 8-inch 3-way, 2-port 180* in ex. chamber	EA	1		
9	6" Perforated PVC Piping for overland flow, with supports	LF	1,000		
10A	Dewatering & Hauling of Sludge, Incl. any Permitting Lagoon A	Gallons	320,000		
10B	Dewatering & Hauling of Sludge, Incl. any Permitting Lagoon B	Gallons	580,000		
11	Gravel for temporary drive and work area	CY	18.5		
12	Electrical Work				
13	Temporary Fence	LF	175		
14	Erosion Control	LS	1		
15	Grading & Seeding	CS	1		
16	ALLOWANCE: Structural Repairs to Vaults, As Directed by Owner				\$7,500.00
17A	ALLOWANCE: Lime Stabilization of Sludge, including time required for testing and stabilization - Lagoon A				\$5,000.00
17B	ALLOWANCE: Lime Stabilization of Sludge, including time required for testing and stabilization - Lagoon B				\$5,000.00
Total of All Unit Price Bid Items					\$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's Mobilization and Demobilization for each separately identified item, and

3. the estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

**ARTICLE 4—TIME OF COMPLETION**

4.01 Bidder agrees that the Work will be substantially complete within 210 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 250 calendar days after the date when the Contract Times commence to run.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA**

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

**ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS**

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
  1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
  2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
  4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing

surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of the Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### 6.02 Bidder's Certifications

##### A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

- a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
- b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
- c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
- d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

**SAMPLE**

BIDDER hereby submits this Bid as set forth above:

Bidder:

\_\_\_\_\_  
*(typed or printed name of organization)*

By: \_\_\_\_\_  
*(individual's signature)*

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Date: \_\_\_\_\_  
*(typed or printed)*

*If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.*

Attest: \_\_\_\_\_  
*(individual's signature)*

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Date: \_\_\_\_\_  
*(typed or printed)*

Bidder's Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_

Bidder's Contact Person:

Name: \_\_\_\_\_  
*(typed or printed)*

Title: \_\_\_\_\_  
*(typed or printed)*

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Address:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Bidder's Contractor License No.: (if applicable) \_\_\_\_\_

**SAMPLE**



## BID GUARANTY BOND

Ohio Revised Code §153.571

**KNOW ALL MEN BY THESE PRESENTS**, that we, the undersigned  
\_\_\_\_\_ as principal and  
\_\_\_\_\_ as sureties, are  
hereby held and firmly bound unto \_\_\_\_\_  
\_\_\_\_\_ as obligee in the penal sum of the dollar amount of  
the bid submitted by the principal to the obligee on \_\_\_\_\_ to  
undertake the project known as \_\_\_\_\_

\_\_\_\_\_

The penal sum referred to herein shall be the dollar amount of the principal's bid to the obligee, incorporating any additive or deductive alternate proposals made by the principal on the date referred to above to the obligee, which are accepted by the obligee. In no case shall the penal sum exceed the amount of \_\_\_\_\_ dollars. (If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid, including alternates. Alternately, if the blank is filled in, the amount stated must not be less than the full amount of the bid including alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ **THE**  
**CONDITION OF THE ABOVE OBLIGATION IS SUCH**, that whereas the above named  
principal has submitted a bid for \_\_\_\_\_  
\_\_\_\_\_.

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the principal pays to the obligee the difference not to exceed ten per cent of the penalty hereof between the amount specified in the bid and such larger amount for which the obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the principal pays to the obligee the difference not to exceed ten per cent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the obligee accepts the bid of the principal and the principal within ten days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein;

Now also, if the said \_\_\_\_\_  
shall well and faithfully do and perform the things agreed by \_\_\_\_\_  
\_\_\_\_\_ to be done  
and performed according to the terms of said contract; and shall pay all lawful claims of  
subcontractors, material suppliers, and laborers, for labor performed and materials furnished in  
the carrying forward, performing, or completing of said contract; we agreeing and assenting that  
this undertaking shall be for the benefit of any material suppliers or laborer having a just claim,  
as well as for the obligee herein; then this obligation shall be void; otherwise the same shall  
remain in full 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 said surety hereby stipulates and agrees that no modifications, omissions, or  
additions, in or to the terms of the said contract or in or to the plans or specifications therefor  
shall in any wise affect the obligations of said surety on its bond.

WITNESS our hands this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Witnesses:

\_\_\_\_\_  
\_\_\_\_\_

Contractor:

\_\_\_\_\_  
\_\_\_\_\_

Surety:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CONTRACT AGREEMENT**

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ by and between the County of Geauga, Ohio through its Board of Commissioners, herein called the "County", and \_\_\_\_\_, hereinafter called the "Contractor".

THIS AGREEMENT shall not become a contract binding upon the parties concerned until the parties have properly signed this Agreement. In consideration of the mutual covenants herein contained, the parties agree as follows:

WITNESSETH:

The Contractor agrees to construct the **Aquila WWTP Improvements - P1802 (RE-BID)** hereafter called the "Project", so described in the bid specification package, including the Instructions to Bidders, Contract Conditions, Equal Opportunity Requirements, Labor Standards, and the Contractor's bid, incorporated herein by reference, for the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_). The Contractor, at its own proper cost and expense shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said Project in accordance with the conditions stated in the bid specification all of which are made a part hereof and collectively evidence and constitute the contract.

WITNESSETH:

The Contractor hereby agrees to commence work under this contract within ten (10) days upon receipt of a written "Notice to Proceed" from the County. At that time, the Contractor should have made efforts to secure any and all necessary permits and licenses to carry on such work at a rate which shall secure its final completion no later than the completion date stated in the "Notice to Proceed". Contractor shall pay for all necessary permits and licenses.

In the case of non-compliance with the time allocation or non-compliance with another substantial term of the Agreement, the County has the option of issuing a temporary stop work order, or notice of cancellation of the Agreement, either of which would be sent to the Contractor by certified mail, return receipt requested, or posted at the work site.

The Contractor shall not request extra payment for any reason other than for a change in scope of work as requested and authorized by the County.

The Contract amount in the sum of, not to exceed \$ \_\_\_\_\_

The Contractor covenants and agrees that this Contract shall consist of this document together with the following additional documents incorporated herein by reference as if fully rewritten and to which the Contractor will fully comply:

- a. Legal Notice, Advertisement and Motion letter from the Board of Commissioners
- b. Instructions to Bidders
- c. Contractor's Bid and all documents, memoranda and other materials attached thereto or a part thereof and subsequent amendments or additions.
- d. Information Showing Qualifications of the Bidder
- e. Consent of Surety
- f. Affidavits (as to authority of the Bidder)
- g. Recommendation to award bid
- h. Motion letter from Board to award bid

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- i. Performance Bond
- j. Wage Schedules
- k. General Conditions
- l. Work Specifications
- m. Other information required for the proper execution of this Agreement
- n. Certificate of Insurance listing Geauga County Board of Commissioners as Additional Insured with 30 day notice of cancellation, \$1mm minimum
- o. Proof of Workers Compensation Insurance

I. LIABILITY AND PUBLIC LIABILITY INSURANCE

- A. The Contractor shall defend, indemnify, and save harmless the County and its officers and agents from all claims, demands, payments, suits, actions, recoveries, and judgements of every description, whether or not founded in law, brought or recovered against it, to include reimbursement of any fees or cost incurred by the County and in the defense of any claims against the County arising from the conduct of the Contractor or terms of this contract, by reason of any act or omission of said Contractor, his agents or employees, in the execution of this Contract or in consequence of insufficient protection, or for the use of any patented invention by said Contractor.
  
- B. The Contractor shall, at his own expense, at all times during the performance hereunder, maintain comprehensive general liability insurance insuring the County against the indemnification obligations undertaken in paragraph A of Section I. The comprehensive general liability insurance policy shall name Geauga County as additional insured, shall in addition to the above protect the County from claims which may arise out of or result from the Contractor's operations under the contract, whether such operation be by himself or by any subcontractor, agent or employee, shall have a thirty (30) day notice of cancellation clause, and shall have limits of not less than one million dollars (\$1,000,000.00) for any one incident involving one or more persons, including property insurance in an amount not less than two million dollars (\$2,000,000.00) and shall be primary with respect to the Contractor's general liability, notwithstanding any other insurance covering the County. Said insurance shall be written by an insurance company licensed to carry on business and write policies of casualty insurance in the State of Ohio. The Contractor shall submit proof of the required insurance with the County as a condition precedent to beginning work, pursuant to the contract. This contract also includes the insurance requirements as listed in the Instructions to Bidders.

II. WORKER'S COMPENSATION

- A. The Contractor shall at all times during the life of the Contract, subscribe to and comply with the Worker's Compensation laws of the State of Ohio and pay such premiums as may be required thereunder and to save the Board harmless from any and all liability arising from, out of, or under said act. He shall also furnish at the time of delivery of this Contract and at such times as may be requested, a copy of the official certificate or receipt showing the payment hereinbefore referred to.

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III. COMPLIANCE WITH LOCAL LAW

- A. The Contractor shall perform all work in conformance with the applicable state law, local codes and requirements.

IV. PROTECTION OF PROPERTY

- A. Safety Precautions and Programs: The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions in connection with this project.
- B. Safety of Persons and Property: The Contractor shall take all reasonable precautions for protection and prevention of damage, injury or loss to:
  - 1. All employees on the work site and all other persons who may be affected thereby;
  - 2. All the work and materials and equipment to be incorporated therein, whether in storage on or off site, under the care, custody or control of the Contractor or subcontractors;
  - 3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavement, roadways, and structures, and utilities to be designated for; and
  - 4. The Contractor will maintain all continuous and contiguous walkways and roadways free of debris or any condition which may be considered unsafe or inconvenient as a result of the work on the subject property by the Contractor.
- C. The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority having jurisdiction for the safety of persons or property to protect them from damage, injury or loss; he shall erect and maintain as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.
- D. When the use or storage of hazardous materials or equipment is necessary Contractor shall use the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- E. Contractor shall be liable for all damage or loss to any property referred to in Section IV caused in whole or in part by the Contractor, except damage or loss attributable to misinformation that was supplied to the Contractor.
- F. The Contractor shall not load or permit any part of the work to be loaded so as to endanger its safety.

V. INSPECTION OF WORK

- A. The County shall be authorized to inspect at reasonable times, all work and materials furnished, or at such other times as may be necessary in an emergency. The Contractor shall promptly secure all necessary inspections and approval required thereby and permits reasonable inspection of all work by authorized inspectors. The County shall also make an inspection of the area, upon completion, prior to release of payment.

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VI. PAYMENT

- A. The Contractor will be paid, as the work has been satisfactorily completed, in accordance with the following schedule:
  - a. The Contractor's application for payment shall include;
  - b. The Invoice,
  - c. Inspection report and approval of payment by County, waiver of lien,
  - d. Contractor's Affidavit of Payment,
  - e. U.S. Department of Labor Payroll Reporting Forms,
  - f. Contractor's Certification Concerning Labor Standards and Prevailing Wage Requirements
  - g. Partial payment to the contractor for work performed under the lump sum price shall be based on a schedule prepared by the contractor and approved by the architect or engineer who shall apportion the lump sum price to the major components entering into or forming a part of the work under the lump sum price.
  - h. Partial payments to the contractor for labor performed under either a unit or lump sum price contract shall be made at the rate of ninety-two per cent of the estimates prepared by the contractor and approved by the architect or engineer. All labor performed after the job is fifty per cent completed shall be paid for at the rate of one hundred per cent of the estimates submitted by the contractor and approved by the architect or engineer
- B. The County shall authorize payment when all conditions in this Section have been met. The Contractor shall submit said documents and application for payment and invoices to the Department of Water Resources. The County will release the final payment upon receipt of a Maintenance Bond in favor of the County for 100% of the value of the Contract, and upon approval by Geauga County Department of Water Resources.

The invoice amounts shall reflect the total Contract price, not to exceed \$ \_\_\_\_\_ unless a change in "Scope of Work" resulting from a hidden factor, has been properly requested and approved by all parties. Said change in "Scope of Work" shall constitute an amendment to this Agreement.

VII. LIQUIDATED DAMAGES

- A. Should Contractor fail to complete the Project by the date stipulated in the "Notice to Proceed", the County shall have the right to deduct two hundred and fifty dollars (\$250.00) per day until the Project is completed. This amount is not intended to be a penalty and adequately represents the County's damage caused by the Contractor's delay. This remedy is in addition to any other remedy or damage the County may be entitled to under the Agreement.

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## VIII. DISPUTES

- A. The parties agree that the law of the State of Ohio shall control with regard to any and all contractual disputes that may arise and that any and all litigation undertaken or arising under this Agreement shall be presented in a Court of Competent Jurisdiction of Geauga County, Ohio.
- B. The parties agree that this and the documents referred to herein are the sole and exclusive agreements of the parties and that any necessary modification be reduced in writing and executed in a like manner.
- C. If any covenant or provision of this Agreement, the application thereof to any person, firm or corporation or to any circumstance, shall to any extent be held invalid or unenforceable, the remainder of this Agreement, or application of such covenant or provision to persons, firms or corporations or to circumstances other than those to which it is invalid or unenforceable, shall not be affected thereby.

## IX. ASSIGNMENT OF CONTRACT

The Contractor shall not assign this Contract without the written consent of the County.

## X. TERMINATION

- A. This Agreement may be terminated by the County, at its option, upon any substantial noncompliance with the provisions of this Agreement by the Contractor, any unjustifiable work stoppage by the Contractor, acts by the Contractor or others indicating the insolvency of the Contractor including but not limited to proceedings pursuant to the Federal Bankruptcy Statutes. Termination shall include, but not be limited to, a temporary work stoppage order issued by the County in the event any of the foregoing circumstances or any other reason becomes known to the County, which work stoppage may be imposed as a means to resolve the cause without termination according to this Section.

## XI. INTEREST OF MEMBERS, OFFICERS, EMPLOYEES

- A. No member of Congress, no officer or employee of the State of Ohio, County of Geauga, Ohio shall directly or indirectly receive any benefit or profit from or on account of this Agreement.
- B. No member, officer, or employee of the County or its designees or agents, or member of the governing body of the locality in which the project is situated, or any other public officials of such locality or localities who exercise any functions or responsibilities with respect to the project during his/her tenure, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for which work to be performed in connection with the project assisted under the Agreement.

## XII. AFFIRMATIVE ACTION - NONDISCRIMINATION

The Contractor agrees to the following:

- (1) In hiring employees for the performance of work under this contract or any subcontract, no contractor or subcontractor shall, by reason of race, color, religion, gender, age, handicap, national origin, or ancestry, discriminate against any citizen of this state in the employment of a person qualified and available to perform the work to which this contract relates.
- (2) No contractor, subcontractor, or any person acting on behalf of any contractor or subcontractor shall, in any manner, discriminate against, intimidate, or retaliate against any employee hired for the performance of work under this contract on account of race, color, religion, gender, age, handicap, national origin, or ancestry.

IN WITNESS WHEREOF, we have entered into this Agreement as of the date first above-written in Chardon, Ohio.

ATTEST:

GEAUGA COUNTY, BOARD  
OF COMMISSIONERS

\_\_\_\_\_  
Clerk, Board of County  
Commissioner

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Nicholas J. Gorris, PE  
Sanitary Engineer / Director  
Department of Water Resources

WITNESS:

CONTRACTOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Company  
\_\_\_\_\_  
Name  
\_\_\_\_\_  
Contractor's Federal Tax ID Number

APPROVED AS TO FORM:

**Auditor's Certification of Funds  
O.R.C. 5705.41D**

\_\_\_\_\_  
Geauga County Assistant Prosecutor

Geauga County, Chardon, Ohio at \_\_\_\_\_ am/pm on this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_. I HEREBY  
CERTIFY that the money required to meet the foregoing  
contract, agreement, or obligation in the sum of  
\$ \_\_\_\_\_ has been lawfully appropriated,  
authorized or directed for such purpose in that the amount of  
\$ \_\_\_\_\_ is at this time unencumbered  
in the account

GCDWR Financial Department

Amt: \_\_\_\_\_  
Acct.: \_\_\_\_\_  
PO#: \_\_\_\_\_  
Date Approved: \_\_\_\_\_  
Approved By: \_\_\_\_\_

\_\_\_\_\_  
This money is in the Treasury or in the process of collection  
to the credit of this fund and free from any previous  
encumbrances.

CHARLES E. WALDER, GEAUGA COUNTY AUDITOR  
By \_\_\_\_\_, Deputy Auditor

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If an individual doing business under firm name, so state, giving both names. If a Partnership, so state, giving names and Post Office address of all partners under their signatures above. If a Corporation, give full corporation name and the State under which it is incorporated; corporate titles should be indicated under signatures. Certificate of power to sign on behalf of the corporation must be attached.

**Waiver of Mechanic's Lien**

WHEREAS, the undersigned CONTRACTOR \_\_\_\_\_ may enter into a contract with the OWNER, Geauga County Board of Commissioners, to provide materials and perform labor necessary for the construction of the **Aquilla WWTP Improvements, Project P1802**, upon grounds located in Aquilla Village, Geauga County, Ohio.

NOW THEREFORE, it is hereby stipulated and agreed by and between the said parties as part of said contract and for the consideration therein set forth, that neither the undersigned contractor, any subcontractor, or material man, not any other persons furnishing labor or materials to said contractor under this contract shall file a lien in the State of Ohio in such case provided.

IN WITNESS WHEREOF, said parties hereunto set their hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Signed, Sealed and Delivered in the Presence of

\_\_\_\_\_ (seal)  
(Owner's Representative)

\_\_\_\_\_  
(Contractors Representative)

\_\_\_\_\_  
(Printed Name of Representative)

State of Ohio:  
:SS.  
County of Geauga

On this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, before me \_\_\_\_\_ the undersigned officer, personally appeared \_\_\_\_\_, who acknowledge himself to be the \_\_\_\_\_ of \_\_\_\_\_, the Contractor, and that he as such being authorized to do so, execute the foregoing instrument for the purpose therein contained by signing the name of the Contractor by himself.

In witness whereof, I hereunto set my hand and official seal.

\_\_\_\_\_  
Notary Public

DRAFT

**MAINTENANCE BOND**

KNOWN ALL MEN BY THESE PRESENTS, THAT WE \_\_\_\_\_,  
as Contractor, and \_\_\_\_\_, and Surety, are held and firmly bound unto  
the County of Geauga, Ohio as Obligee in the penal sum of  
\_\_\_\_\_ dollars  
(\$ \_\_\_\_\_) for the payment of which well and truly to be made, we  
hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

WHEREAS, the Contractor entered into a Contract dated \_\_\_\_\_ with  
Obligee for the construction of the **Aquila WWTP Improvements** in accordance with the Contract  
Drawings, Plans, and Specifications, of the Obligee.

WHEREAS, the Specifications pertaining to said work require that the same shall be free from all defects  
caused by inferior materials or the result of poor workmanship for the period of one (1) year from the date  
of acceptance or the work of this Contract.

NOW, THEREFORE, if the said Principal shall in all things observe the guarantee described in the  
foregoing paragraph, and shall protect and indemnify said Obligee from and against any and all loss,  
costs, attorney's fees, and expenses of whatever kind and character which said Obligee shall sustain by  
reason of the failure of said Principal to faithfully observe the guarantee hereinbefore described then this  
obligation shall be void; otherwise the same shall be and remain in full force and effect.

Signed, Sealed and Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Name of Surety

\_\_\_\_\_  
Address

By: \_\_\_\_\_

\_\_\_\_\_  
Officer of Surety

Witness: \_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_  
Address

Attest: \_\_\_\_\_  
Officer of Surety

APPROVED AS TO FORM:

\_\_\_\_\_  
Gauga County Prosecutor

NOTE: ATTACH POWER OF ATTORNEY OF SURETY AGENT CERTIFIED BY SURETY  
COMPANY

**DRAFT**

**PERFORMANCE OR CONTRACT BOND**

KNOW ALL MEN BY THESE PRESENTS:

THAT WE (1) \_\_\_\_\_ as Principal and (2) \_\_\_\_\_ as sureties, are held and firmly bound unto the Board of Commissioners of Geauga County, Ohio, in the penal sum of

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named principal did on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, enter into a contract with the Geauga County Board of Commissioners which said contract is made a part of this bond the same as though set forth herein;

NOW, if the said \_\_\_\_\_ shall well and faithfully do and perform the things agreed by \_\_\_\_\_ to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full 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 said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefor shall in any wise effect the obligations of said surety on its bond.

SIGNED AND SEALED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20 \_\_\_\_\_.

PRINCIPAL:

\_\_\_\_\_

BY \_\_\_\_\_

TITLE: \_\_\_\_\_

SURETY:

SURETY COMPANY ADDRESS

\_\_\_\_\_

\_\_\_\_\_

BY: \_\_\_\_\_

\_\_\_\_\_

(1) If a corporation, insert "A corporation organized under the laws of the State of \_\_\_\_\_ with its principal place of business at \_\_\_\_\_, Ohio."

**DRAFT**

(2) If a surety company, insert "A corporation organized under the laws of the State of \_\_\_\_\_ and duly authorized to transact business within the State of Ohio".

If the above bond is executed by private individuals as sureties, the affidavits in justification of the County Auditor of the County in which said sureties, or one of them reside, or have property, may be furnished to the effect that in his judgement such sureties possess the qualifications required by R.C. 9.311.

**DRAFT**

**AGREEMENT RELATIVE TO SEPARATE CONSIDERATION FOR INCORPORATION OF TANGIBLE PERSONAL PROPERTY**

The undersigned, a bidder on the above described project, hereby agrees that the Contract which he is to enter into in the event his bid is accepted for the above described project, is a "construction contract pursuant to which his tangible personal property is or is to be incorporated into a structure or improvement on and becoming a part of real property" and he further agrees that "the consideration for such incorporation" is agreed upon "separately from the consideration for the performance of the other obligations of such construction contract," and that such "incorporation" shall constitute a sale of such tangible personal property to the County of Geauga as provided in Section 5739.01 et. seq. of the Revised Code of Ohio.

It is further agreed and understood that this agreement shall, for the purpose of said Sections 5739.01 et. seq., be considered as a part of the bid or offer of the bid and/or contract of the undersigned for the purpose of Sections 5739.01 et. seq.

The purpose of the said Sections 5739.01 et. seq., the consideration to be paid for the performance of the Contract of the above described project is divided as follows:

- 1. **Consideration for materials** (Materials incorporated into a structure or improvement and on becoming a part of real property)

\$ \_\_\_\_\_

- 2. **Consideration for Other Obligations** (For other obligations of such construction contract)

\$ \_\_\_\_\_

\$ \_\_\_\_\_

**TOTAL** \$ \_\_\_\_\_

The figure set down as the total amount must correspond with the total set down in the bid which accompanies this supplemental agreement, and the bidder in submitting this figure shall be subject to the same rules and regulations with respect to mistakes in extensions and additions as are provided in the case of totals set forth by the bidder in his bid, namely, that mistakes in addition or extensions will be corrected and the totals corrected accordingly, but the same proportion will be maintained in the division above set forth between the Consideration for Materials and Consideration for Other Obligations.

**Violating Facilities**

The CONTRACTOR agrees to comply with all applicable standards, orders, or requirements under Section 306 of the Clean Air Act, 42 USC 1857(h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 15, which prohibit the use under nonexempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

**DRAFT**

**NOTICE TO PROCEED**

To: \_\_\_\_\_  
Name

Date: \_\_\_\_\_

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip Code

Project:

**Aquilla WWTP Improvements**

Project Number: P1802 (RE-BID)

You are hereby notified to commence work in accordance with the agreement dated \_\_\_\_\_ on or before \_\_\_\_\_, and you are to complete the work within \_\_\_\_\_ consecutive calendar days thereafter. The date of completion is therefore \_\_\_\_\_.

GEAUGA COUNTY DEPARTMENT OF WATER RESOURCES

BY: \_\_\_\_\_  
Nicholas J. Gorris, PE  
Sanitary Engineer / Director

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by:

\_\_\_\_\_

This is \_\_\_\_\_, 20\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Federal Tax Identification Number:  
\_\_\_\_\_

**DRAFT**

THE CONTRACTOR SHALL FURNISH THE FOLLOWING  
DOCUMENTS WITHIN 10 DAYS OF NOTIFICATION OF AWARD:

- A. CERTIFICATE OF INSURANCE FOR CONTRACTOR'S GENERAL LIABILITY  
INSURANCE POLICY AND AUTOMOTIVE INSURANCE POLICY
- B. CERTIFICATE OF INSURANCE FOR OWNER'S AND CONTRACTOR'S  
PROTECTIVE POLICY
- C. CERTIFICATE OF WORKER'S COMPENSATION
- D. CONTRACT BOND OR PERFORMANCE BOND

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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 and the controlling Laws and Regulations.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly by

**ACEC**

AMERICAN COUNCIL OF ENGINEERING COMPANIES



**ASCE** American Society  
of Civil Engineers

**P/E** National Society of  
Professional Engineers  
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

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*A Practice Division of the*  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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**STANDARD GENERAL CONDITIONS OF THE  
CONSTRUCTION CONTRACT**

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
  7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
  9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
  10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
  11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.



27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *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 at the Site.
44. *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 thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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 Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

### B. *Intent of Certain Terms or Adjectives:*

1. 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 Paragraph 9.09 or any other provision of the Contract Documents.

### C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

### D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents; or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - c. 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 14.04 or 14.05).

### E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. 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 Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

### *2.02 Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

### *2.03 Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement 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 Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

## 2.04 *Starting the Work*

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

## 2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
  - 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 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.

## 2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

## 2.07 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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 component parts of the Work.

### **ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

#### **3.01 *Intent***

- A. The Contract Documents are complementary; what is required by one 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

#### **3.02 *Reference Standards***

- A. Standards, Specifications, Codes, Laws, and Regulations
  1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

#### **3.03 *Reporting and Resolving Discrepancies***

- A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
  - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  1. A Field Order;
  2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

### 3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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 editions; or
  2. 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.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

### 3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

## **ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

### 4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor 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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the



Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

#### 4.02 *Subsurface and Physical Conditions*

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

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
- 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.

#### 4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or
- 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
  - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
  - 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 Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
  - a. reviewing and checking all such information and data;
  - b. locating all Underground Facilities shown or indicated in the Contract Documents;
  - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
  - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 4.05 *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 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.

#### 4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
  - 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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 – BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

### 5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

#### 5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. by any other person for any other reason;
  - 5. 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; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
  - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners,

employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
  - a. Such insurance shall remain in effect for two years after final payment.
  - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

#### 5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of



them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
  3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. allow for partial utilization of the Work by Owner;
  6. include testing and startup; and
  7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. 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:
1. loss 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 perils whether or not insured by Owner; and
  2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

## ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

### 6.01 *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### 6.02 *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 at all times maintain good discipline and order at the Site.
- B. 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 shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

### 6.03 *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.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall 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 shall 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.

#### 6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

#### 6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it 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; and
      - 3) it has a proven record of performance and availability of responsive service.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

## 2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
  - 1) shall certify that the proposed substitute item will:
    - a) perform adequately the functions and achieve the results called for by the general design,
    - b) be similar in substance to that specified, and
    - c) be suited to the same use as that specified;
  - 2) will state:
    - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
    - b) 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
    - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
  - 3) will identify:
    - a) all variations of the proposed substitute item from that specified, and
    - b) available engineering, sales, maintenance, repair, and replacement services; and
  - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

#### 6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or

entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
  2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *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 a particular 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 shall be disclosed by Owner 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.

#### 6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

#### 6.09 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

#### 6.10 *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.

#### 6.11 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. 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 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 by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall 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 all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading 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 property to stresses or pressures that will endanger it.

## 6.12 *Record Documents*

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

## 6.13 *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. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. 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. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. 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.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.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 (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).

- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

#### 6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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.

#### 6.16 *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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will 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 6.17.D.

##### 2. *Samples:*

- a. Submit number of Samples specified in the Specifications.

- b. 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 6.17.D.
- B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the information given in 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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the

Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

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.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper 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.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  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 or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

#### 6.20 *Indemnification*

- A. 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 performance of the Work, provided that any such claim, cost, loss, or damage 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 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 6.20.A shall 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.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
  1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

## 6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## **ARTICLE 7 – OTHER WORK AT THE SITE**

### 7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
  - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe



access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

#### 7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
  - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

## ARTICLE 8 – OWNER’S RESPONSIBILITIES

### 8.01 *Communications to Contractor*

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

### 8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.03 *Furnish Data*

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

### 8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

### 8.05 *Lands and Easements; Reports and Tests*

- A. Owner’s duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

### 8.06 *Insurance*

- A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

### 8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

### 8.08 *Inspections, Tests, and Approvals*

- A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

### 8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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 Documents.

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

**ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION**

9.01 *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 Documents.

9.02 *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 9.09. 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.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. 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 thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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 shall 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 Paragraph 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

#### 9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

### **ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

#### 10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

#### 10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

#### 10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
  - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
  - 2. changes in the 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; and
  - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of

executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

#### 10.04 *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.

#### 10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
  - 1. deny the Claim in whole or in part;
  - 2. approve the Claim; or
  - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

## **ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **11.01 *Cost of the Work***

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall 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, who 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 shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.



4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, which are 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.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the 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 property insurance established in accordance with Paragraph 5.06.D), 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
  - g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
  2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  4. 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.
  5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.02 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:*
1. Contractor agrees that:
    - a. 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
    - b. 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 on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

**ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five 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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
    - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

## 12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

## 12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### *13.01 Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### *13.02 Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will 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 therewith as applicable.

### *13.03 Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
  - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
  - 3. as otherwise specifically provided in the Contract Documents.
- 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.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, or both, 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *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, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall 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.

#### 13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay 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 correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

### 13.07 *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 terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
1. repair such defective land or areas; or
  2. correct such defective Work; or
  3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If 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. 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. 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.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, 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.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.



### 13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

### 13.09 *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 rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

## **ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION**

### 14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

### 14.02 *Progress Payments*

#### A. *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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

#### B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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.
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, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. 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;
  - c. there are other items entitling Owner to a set-off against the amount recommended; or
  - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

#### 14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. 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 tentative list.

#### 14.05 *Partial Utilization*

- 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 significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

#### 14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and

- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

*B. Engineer's Review of Application and Acceptance:*

1. 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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

*14.08 Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

#### 14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

### **ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION**

#### 15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

#### 15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's repeated disregard of the authority of Engineer; or
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);



2. 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
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

### 15.03 *Owner May Terminate For Convenience*

- A. Upon seven 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;
  3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven 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 15.03.

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, seven 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 provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION**

#### 16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or
3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

## **ARTICLE 17 – MISCELLANEOUS**

### *17.01 Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
  1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
  2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### *17.02 Computation of Times*

- A. When any period of time is referred to in the Contract Documents 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.

### *17.03 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 Documents. 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.

### *17.04 Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

### *17.05 Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

### *17.06 Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.



**SUPPLEMENTAL CONDITIONS FOR CONSTRUCTION OF:**

**AQUILLA VILLAGE – AQUILLA WWTP IMPROVEMENTS**

**1. Location and Scope of Work:** The work for this Contract will be performed in Aquilla Village, Ohio. The Aquilla WWTP is located at 202 Cornelia Drive, Aquilla Village, Ohio, Geauga County.

The Contract relates to improvement to the existing Aquilla Village WWTP.

**2. Dimensions and Elevations:** Figured dimensions on the Contract Drawings shall take precedence over measurements by scale and details shop drawings shall take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work.

Whenever figures are given on the Contract Drawings after the word "Elevation", or an abbreviation of it, or in a manner which indicates clearly that they are elevations, they shall mean the vertical distance above the datum plane of the United States Geodetic Survey (U.S.G.S.).

**3. Lines and Grades:** All control base line stakes and control bench marks for grades and construction staking will be established by the County but the Contractor shall provide such materials as templates, stakes, ranges, and spikes. All marks given shall be carefully preserved and the Contractor shall keep the County informed, a reasonable length of time in advance, of his work in order that control lines and grades may be established and measurements be made with minimum delay for record and payment.

The Contractor shall provide a field force which shall include a Registered Engineer or Surveyor who shall be responsible for the setting of all additional staking that may be required for the proper construction of structures, sewers, utilities, roadways and drains, fences, culverts, or other structures, supplementary bench marks as required, and any other horizontal or vertical controls necessary to secure a correct layout. Stakes for lines and grades for pavements, storm drains, sewers, etc., shall be set at twenty-five (25) feet maximum intervals. Base lines, control lines, and right-of-way lines shall be staked in such a manner as to clearly define them.

The Contractor is responsible for having the finished work conform to the lines, grades, elevations and dimensions as shown on the Contract and Shop Drawings.

All work shall be subject to checking and inspection of the County but any checking or inspection of the Contractor's work by the County and the acceptance of any part of all of this work shall not relieve the Contractor of his responsibility to secure and obtain the proper dimensions, grades, elevations and locations of the several parts of the work. The Contractor shall exercise care in the preservation of the stakes, monuments and bench marks and shall have them reset at his own expense when they are lost, displaced, damaged or removed. No special compensation will be paid to the Contractor for the cost of any work or delay occasioned by his obtaining lines and grades, or making other necessary measurements or by inspection, but such costs shall be considered as having been included in the prices stipulated for the various items of work to be done under this Contract.

The Contractor shall be responsible to contact property owners adjacent to the work, prior to commencement of construction, to determine the location of existing property corner monuments, such as iron pins, iron pipes, etc. Those monuments noted by property owners or shown on the plans shall be clearly marked in the field and protected during the course of construction. Should

the Contractor be unable to protect the existing property corner monuments, he shall be responsible to have a registered surveyor reference the location of each monument and replace each monument after construction and final grading has been completed.

The Contractor shall provide the Engineer with a copy of an affidavit, signed by each property owner adjacent to the work, stating that they do/do not have existing property corner monuments and have shown the Contractor their location(s). If an affidavit for a particular property owner is not provided to the Engineer and the Owner files a claim that his property corner monuments have been lost or disturbed due to the Contractor's work, the Contractor shall provide for a property survey, at the Contractor's expense, by a registered surveyor to replace said disturbed monuments prior to final payment being made by the County.

**4. Contract and Shop Drawings:** Prior to the order, manufacture, fabrication, delivery or erection of any equipment or materials and as part of the performance of this Contract, the Contractor shall submit to the Engineer for approval one (1) reproducible copy of each shop drawing and six (6) copies of all catalog data. Drawings and catalog data as required shall be submitted with regard to the sequence in which the information shall be required for construction. The Contractor shall furnish in six (6) copies related operation, maintenance and spare parts manuals for the various items.

Drawings shall relate to actual field conditions and it shall be the Contractor's responsibility to check, make such field measurements as are required or necessary, and to base his drawings insofar as practical on actual field conditions, to assure proper connections, fit and performance of the work of this Contract.

Drawings, Specifications and/or catalog data shall be clear and complete enough to enable the Engineer to determine that proposed materials conform in full to the Specifications and their requirements, and that materials delivered to the site are identical to those approved by the County. Copies of the Contract Drawings will not be sufficient for submission as Contractor's shop drawings. Various catalog numbers for materials or equipment shall not suffice, and catalog data showing details and full descriptions shall be required. The Contractor's shop drawings shall include sufficient details with dimensions to establish conformance of the submitted materials with these Specifications and that finish, space requirements, anchoring, connecting-in with piping and other equipment required meets in full the intent of these Specifications.

The Contractor shall be required to submit to a scale of not less than one quarter (1/4) inch to the foot, complete reinforcing steel bending and placing diagrams, structural steel shop drawing, and detailed piping drawings and layout with valves, expansion joints, anchors, hangers, supports and other related appurtenances.

It shall be the responsibility of the Contractor to provide these drawings finished, completely detailed and dimensioned shop drawings, drawn to scale and based on actual field conditions or measurements, and detailing in full the proposed methods in installing and locating the exact materials and equipment he proposes to furnish.

All shop drawing and catalog data shall be submitted, for approval, in proper sequence and timing with due regard for the time required for checking and transmittal of the drawings and their distribution. Attention is called to the imperative need of the Contractor submitting and receiving approval of shop drawings and materials covering concrete inserts, sleeves, piping, conduit, anchor

bolts, etc., which are to be concealed in or pass through concrete, sufficiently far in advance of the time of pouring of any concrete.

All drawings shall be clear and legible and shall show as required, working dimensions, arrangement, materials, finish and pertinent erection data together with like information which is needed to define materials furnished and to establish whether or not such materials are in accord with these Specifications and will meet all limitations of space, and will meet connection requirements with existing facilities or material furnished by others. Specifications of these drawings, where required, shall particularize materials and established any characteristics of performance as such are pertinent. Suitable catalog data sheets in certain instances may be sufficient to define the equipment or materials the Contractor proposes to furnish.

**SAMPLES:** The Contractor shall be required to furnish samples of such items as concrete aggregates, waterproofing paints, grating and other materials when such are called for by the Item Specifications. Samples, unless otherwise required or ordered by Item Specifications, shall be submitted to the Engineer, in duplicate, and each sample shall be properly labeled and identified, giving the date, item number, supplier, and trade name.

If required by the County, one (1) complete line of unmounted hardware samples shall be submitted for written approval. This hardware will remain on file where directed and will be used as standards for comparison with hardware furnished. Samples will be used later to complete the hardware requirements.

Contractor's submissions, as herein required for approval shall be made to the Engineer by the Contractor only. Any data prepared by sub-contractors, suppliers, etc., must be submitted through the Contractor. If after checking, Shop Drawings are found to conform in full to the Contract Requirements they will be stamped "Approved for General Conformance but Subject to Detailed Requirements of Specifications." Shop Drawings and data so approved will be distributed by the County so that three (3) copies will go to the County, and one (1) to the Resident Engineer's office, and the reproducible copy to the Contractor.

These Shop Drawings having only minor correction such as dimensions, or notes will have these revisions made by the Engineer and will be stamped "Approved as Corrected". Distribution will be as listed above. Drawings marked "Approved as Corrected" need not to be resubmitted.

Those Shop Drawings and catalog data which are incomplete, inadequate, or not in compliance with the Specifications will be so marked to indicate their incompleteness or non-compliance and on (1) copy will be returned to the Contractor stamped "Not Approved". The Contractor shall, without undue delay, furnish additional information or revised Shop Drawings and resubmit same until Shop Drawings and data are satisfactory and so approved.

The Engineer's approval of the Contractor's submitted data is for General Conformance to the Contract Drawings but subject to the detailed requirements of the Drawings and Specifications. Even though these drawings may be checked together with related data in more or less detail, such checking by the Engineer is only an effort to discover any errors or omissions in the Contractor's Shop Drawing and to assist the Contractor in coordinating and expediting his work. This checking shall in no way relieve the Contractor of his obligations and responsibilities to co-ordinate the work and to engineer the details in such a manner that the intent of the Contract shall be achieved. The more or less detailed checking by the Engineer shall not be construed as placing on him or the

County any responsibility for the accuracy, proper fit, functioning, or performance of any phase of the work included under this Contract.

**5. Tests, Inspection and Reports:** The County, without cost to the Contractor will make all shop tests, inspection and reports of material as such are required. Inspection and tests of various items of equipment will be made as desired by the County at no expense to the Contractor. The County reserved the right to select the laboratory or laboratories to make these tests.

**6. Mill and Shop Test:** Whenever the Item Specifications call for mill or shop tests, the Contractor shall furnish duplicate copies of attested manufacturer's certificates showing details of quality or performance sufficient to demonstrate full conformity with the requirements of these Specifications. Mill shop, or witnessed tests may be subject to view by the Engineer or his representative, but County representation shall not relieve the Contractor from the necessity of furnishing specified certification.

**7. Supervision:** The Contractor shall have at the site at all times during the construction of the project, a complete engineering and construction supervision group. Supervision shall be under a Superintendent that shall be satisfactory to the Engineer with respect to his ability to adequately handle and prosecute the work in an efficient manner. The Superintendent shall be authorized to represent the Contractor in his absence, and all written and verbal directions given to him shall be binding as if given to the Contractor. Verbal instruction shall be confirmed in writing. It is understood that the Superintendent shall be changed on order of the Engineer if found unsatisfactory or does not prosecute the job in a manner satisfactory to the County.

**8. Aid to the Injured:** The Contractor shall keep in his field office, ready for immediate use, all supplies necessary for "First Aid to the Injured". He shall also make complete arrangements, prior to commencing work, for the emergency removal and hospital treatment of any employee who may be injured or hurt on the job site. Phone numbers for emergency use shall be posted in a conspicuous well marked spot.

**9. Sanitary Measures:** The Contractor shall furnish complete sanitary conveniences for the use of all persons employed on the job site, and he shall maintain same in a satisfactory condition at no expense to the County. Sanitary conveniences shall be located where directed by the County, and shall meet requirements in full of all regulation of the Ohio State Department of Health and local ordinances. All persons connected with the work shall be obligated to use these conveniences and any employee found violating these provisions shall be discharged immediately. The Contractor shall at all times comply in full with all orders and regulations in regard to these matters.

**10. Intoxicating Liquors:** The Contractor shall neither permit nor suffer the introduction or use of intoxicating liquor upon or about the work specified in this Contract or upon any of the grounds occupied by him or his employees.

**11. Use of Roads:** During the progress of the work, the Contractor shall make ample provisions for safe movement and use of machinery and equipment, responsible handling of material and for minimizing unnecessary noise, dirt and dust.

Roadway shall be maintained by the Contractor in such a manner as to eliminate dust and nuisance. Temporary roadways shall be wetted down to prevent dust.



**12. Space for Working Facilities:** The County has easements to the property at the site of the work and has also obtained rights to lands owned by others. The Contractor will be allowed the use of portions of this land within the limits shown on the Contract Drawings. The use of indicated lands as designated will be for storage of materials, plant and equipment.

All other additional areas which may be needed by the Contractor for working facilities shall be provided by the Contractor at no expense to the County. These additional areas shall include facilities for warehousing equipment to protect it from the weather, adequate storage area, etc.

**13. Delivery, Handling and Storage of Materials:** The Contractor shall make his own arrangements for delivery and handling of materials at the job site. Storage where necessary, shall be as the aforementioned, and shall afford full protection against contamination, deterioration, and damage. Care shall be taken to safeguard equipment from corrosion even to the extent of providing special housings or resistant surface finishes. Whenever the interest of the County so requires, the Engineer may order and the Contractor shall provide better storage facilities and methods.

**14. Measurements:** Weights and measures of quantity for payment will be the actual measure, and no special, trade, or so-termed customary allowances shall be made. It is understood and agreed that a "ton" will mean the short ton of two thousand (2,000) pounds.

For estimating quantities in which computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adopted to the measurement of such areas.

Payments will be made upon the work done within the lines and to the limits prescribed in these Specifications and shown on the Contract Drawings and in accordance with the various unit or Lump Sum prices for the items under which the work is done.

The measurements of the County as to the amount of work done shall be final and conclusive.

**15. Work in Inclement Weather:** The Contractor shall be presumed to have taken into account in the preparation of his bid all difficulties that may arise due to unfavorable weather conditions. The Contractor shall take all precautions to protect all work from unfavorable weather and extremes in temperature, either hot or freezing. The Contractor shall provide approved facilities for protecting finished work or work in progress against unfavorable weather. These protection methods and devices shall meet in full the requirements of the Engineer.

**16. Protection of Existing Structures:** The Contractor shall, at his own expense, shore up and protect all building and structures which may be encountered or endangered in the prosecution of the work, and he shall repair and make good any damages caused to any such property by reason of his operations. No extra payment will be made for said work or materials.

The Contractor shall, at his own expense, carry out all necessary supporting and bracing required for the adequate protection of all existing structures and sewers, all pipes of whatever service and kind encountered, electric light and power cables, poles or conduits, telephone poles or cables, and other fixtures laid across or along the site of his work.

Should it become necessary to change the position, or temporarily remove any electric conduits, water or gas pipes, sewers, etc., because of interference or to permit the use of a particular type or

method of construction, the Contractor shall notify the County of the location and circumstances and shall cease work, if necessary, until satisfactory arrangements have been made. No claims for damages will be allowed on account of any delay occasioned thereby. The cost of any changes or temporary removal and replacement of lines shall be paid by the Contractor.

**17. Provisions for Protecting Materials and Work:** Required materials and equipment, whether stored at the site or elsewhere, shall be protected at all times from physical injury, weather, dirt, and water. Suitable housings, platforms, or racks shall be provided by the Contractor for this purpose. No payment will be allowed in the monthly estimates for materials improperly stored or inadequately protected. All equipment, fixtures and structures in the process of construction shall be properly protected during painting and concrete finishing to prevent damage.

The Contractor shall furnish all the necessary equipment and accessories, and shall take all necessary precautions and shall assume the entire cost of the complete handling of any sewage, seepage or storm and surface flood flow which may be encountered at any time during construction of the work. The manner of providing for these occurrences shall meet with the full approval of the County and the cost thereof shall be included in the various prices stipulated for the work to be done under this Contract.

During and after installation of the work, prior to final payment, the Contractor shall furnish and maintain satisfactory protection to all completed work against injury by weather, flooding, freezing, or by direct or incidental damage from his own operations, leaving all work in a perfect condition at the completion of the Contract when the work is ready for final acceptance and payment.

No extra payments will be made for this work but the entire cost of same shall be included in the various prices stipulated for the work to be done under this Contract.

All sewers, drains, and other piping or conduits shall be properly protected to prevent silting or clogging until put into intended service after final acceptance has been given.

Equipment located in damp areas shall have suitable waterproof coverings to protect it from deterioration or shall have suitable grease coating to prevent rusting. The removal of these waterproof coverings or grease coatings for final acceptance will be at the option of the Engineer.

**18. Watertight Structures and Lines:** It is the intent of the Specifications and Contract Drawings to obtain and maintain liquid-containing structures which will be watertight in service. All pipe lines, cast iron, galvanized wrought iron, steel, etc., shall be leak-proof under design test and operating conditions and with normal overloads of volume and pressures.

The Contractor shall provide all labor, materials and equipment as may be required or specified to demonstrate the tightness of the various structures and pipe lines and he shall uncover work and repair same as may be necessary in the judgement of the County to ascertain and remedy any leakage. Repeated repairs and tests may be required before leaks are eliminated.

After testing and inspection, all structures, conduits and pipes shall be drained unless otherwise directed. The cost and expense of proving tightness of structures, conduits, and pipes and of remedying defects shall be included in the prices stipulated for the various items of work of this Contract.

**19. Connecting to Existing Work:** The Contractor shall remove existing structures and piping where shown on the Contract Drawings and as required and shall make connections between existing and new work in a manner satisfactory to the Engineer. Payment for this work shall be as stipulated under the applicable item of the Contract.

**20. Monuments and Landmarks:** Monuments and landmarks shall not be molested or removed by the Contractor or his employees without the written consent of the Engineer. Any monument or landmark so removed shall be replaced by the Contractor as directed by the County at the expense of the Contractor.

**21. Erection and Testing of Equipment:** All equipment under this Contract shall be installed in strict accordance with the approved equipment drawings, and, if necessary, to assure proper installation and performance, shall be installed under the supervision of a skilled representative of the manufacturer, at the expense of the Contractor. After installation and before acceptance, the equipment shall be tested to demonstrate its fitness and performance to the satisfaction of the Engineer.

**22. Painting:** All metal surfaces, except those encased in concrete, galvanized, electroplated, brass, stainless steel, aluminum, or bronze, shall be satisfactorily protected by durable coats of paint or approved materials as herein specified. All surfaces requiring paint shall be well painted at completion of this Contract and shall meet in full the detailed requirements as herein set for the various items of these Specifications. Prior to final payment, marred surfaces shall be touched up or repainted as required by the Engineer. This provision for repainting refers to the work of the Contract and also to any surface or surfaces which may have been damaged by the Contractor or his employees.

**23. Cleaning Up:** The Contractor shall, as the work progresses or as directed by the Engineer, remove from the site and dispose of at his own expense all debris and waste materials resulting from the construction. Particular attention shall be directed to minimizing fire hazards and the promoting of safety.

All buildings and structures, including tanks, basins, conduits, pipe lines, sewers and drains, etc., shall be kept clean and free of all debris and waste material at all times during the progress of this work. Prior to completion and acceptance of the work, the Contractor shall thoroughly clean all structures, tanks, basins, pits, vaults, conduits, pipe lines, sewers and drains, etc., and same shall be inspected by the County for compliance with the Specifications.

Prior to final payment the Contractor shall remove, tear down and dispose of at his own expense all temporary structures and buildings built by him in the prosecution of this work. The Contractor shall repair and replace all parts of existing roadways, banks, fences or structures injured by his operations.

Grounds shall be thoroughly cleaned and cleared of all rubbish and placed in a neat condition, satisfactory to the Engineer. All buildings, tunnels and rooms shall be thoroughly cleaned and shall be ready for occupancy. All floors shall be washed and swept clean and shall be free from spots and stains. Windows shall be washed. Dirt and debris shall be removed from all covers, tarpaulins, wrappings or other devices left to protect equipment until it can be put into service as specified. The Contractor's attention is called to the fact that interiors of all tanks, sumps and the like shall be carefully cleaned, all wooden blocks and debris disposed of, and all materials that could plug lines or injure pumps shall be removed from pipe lines.

**24. Procedure for Construction:** All excavation, removing of existing structures and construction work included under this Contract shall be carried out as efficiently and as rapidly as possible, with full cooperation among Contractor's on the related Contract and the Engineer.

Construction shall proceed in accordance with a construction schedule to be prepared by the Contractor and submitted to the Engineer for his approval. Work shall be started only after approval has been given by the Engineer.

**25. Guarantees of Equipment:** A written guarantee by the manufacturer for all equipment under this Contract shall be delivered with the equipment drawings, guaranteeing the successful operation of his equipment and the replacement of any parts showing defective materials or workmanship within one (1) year from the date of completion of the Contract.

**26. Sign:** A sign shall be constructed from a 4' x 4' x 5/8" exterior graded plywood. Pressure treated 4" x 4" x 8' posts shall be used to support the sign. The posts must be placed a minimum of three (3) feet into the ground. Lateral support shall be provided for the sign by using 2" x 4" construction graded lumber. The sign shall be attached to the support post with 3/8" x 6" carriage bolts. The Contractor shall take all necessary precautions to secure the sign to the posts and to keep the sign erect.

The background for the sign shall be painted with a white enamel exterior paint. A blue enamel exterior paint shall be used for the letters. The lettering for the sign shall have a minimum height of two (2) inches and shall read as follows:

GEAUGA COUNTY, OHIO  
AQUILLA WWTP IMPROVEMENTS  
PROJECT NO: P1802

CONTRACTOR:

---

COUNTY COMMISSIONERS:  
James W. Dvorak  
Timothy C. Lennon  
Ralph Spidalieri

DEPARTMENT OF WATER RESOURCES:  
Nicholas J. Gorris, PE – Sanitary Engineer  
  
HDR Engineering, Inc.

**Property Corner Monuments Affidavit**

I, \_\_\_\_\_, Owner of the property located at \_\_\_\_\_, have been notified by the Contractor for the Geauga County Department of Water Resources that construction is ready to begin and that the work may disturb existing property corner monuments. In the interest of preserving these existing property corner monuments, the Contractor has requested my assistance in locating existing monuments located at my property corners.

As such, I have (check one of the following):

\_\_\_\_\_ Shown the Contractor where my existing property corner monuments are located so that he can properly reference those monuments and replace same, if disturbed, after construction is complete.

**or**

\_\_\_\_\_ Advised the Contractor that monuments do not exist at my property corners adjacent to the work.

\_\_\_\_\_  
Witness Signature

\_\_\_\_\_  
Property Owner's Signature

Date \_\_\_\_\_

Date \_\_\_\_\_

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**SECTION 01 11 00**  
**SUMMARY OF WORK**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Location and description of Work and prior uses of the Site.
  - 2. Construction Contracts for this Project.
  - 3. Others retained by Owner for the Project.
  - 4. Work by others under Owner's control on other projects.
  - 5. Work by others not under Owner's control.
  - 6. Work by Owner.
  - 7. Sequence and progress of Work.
  - 8. Contractor's use of the Site.
  - 9. Easements and rights-of-way.
  - 10. Partial utilization by Owner.
  - 11. Utility owners.
  - 12. Tree trimming, clearing, and tree removal.
- B. Related Requirements:
  - 1. Include, but are not limited to, the following:
    - a. Section 01 14 19 - Use of Site
    - b. Section 01 71 33 - Protection of the Work and Property.

**1.2 LOCATION AND DESCRIPTION OF WORK**

- A. The Work is located at the Aquilla Village Wastewater Treatment Plant, 202 Cornelia Drive, Aquilla Village, Ohio 44024 .
- B. The Project includes constructing the Work broadly described below, in accordance with the Contract Documents, with all related appurtenances. Work shown on the Drawings, or indicated in the Specifications, or indicated elsewhere in the Contract Documents is part of the Work, regardless of whether indicated below. The Work includes, but is not limited to, the following:
  - 1. Replacement of Valves, As Per Plan
  - 2. Replacement of Lagoon Liners
  - 3. Removal, Dewatering and Disposal of Sludge
  - 4. Replacement of Effluent Disinfection
  - 5. Effluent Flow Meter.
  - 6. Replacement of Overland Flow Above-Grade Piping and Valves
  - 7. Associated Electrical Work
- C. Contracting Method: The Project will be constructed under a single prime construction Contract.

**1.3 CONSTRUCTION CONTRACTS FOR THIS PROJECT**

- A. Single Prime Construction Contract: The Contract requires all the Work for the Project not expressly allocated to Owner or others in the Contract Documents.

**1.4 OTHERS RETAINED BY OWNER FOR THE PROJECT**

- A. Engineer:
  - 1. Engineer is identified in the Agreement.
  - 2. Engineer's responsibilities for the Project, relative to Contractor, are indicated throughout the Contract Documents.

3. Whether the Engineer will furnish the services of a Resident Project Representative (RPR) for the Project is indicated in the Supplementary Conditions.

## **1.5 WORK BY OWNER**

- A. Owner will perform the following in connection with the Work:
  1. Operate all existing valves, flow-control gates, pumps, equipment, and appurtenances that will affect Owner's operations or facility processes, unless otherwise specified or indicated.

## **1.6 SEQUENCE AND PROGRESS OF WORK**

- A. Sequencing:
  1. Incorporate sequencing of the Work into the Progress Schedule.
  2. Sequencing Requirements:
    - a. The flow of wastewater to the plant for treatment and the ability to treat wastewater flows must be maintained through the construction of the improvements.
    - b. Owner will review, comment and approve the proposed sequence of construction prior to Contractor commencing construction if it is deemed satisfactory to the Owner. If proposed sequence is not acceptable to the Owner, alternatives will be suggested.

## **1.7 CONTRACTOR'S USE OF SITE**

- A. Use of Site - General:
  1. Limits on Contractor's use of the Site are indicated in Section 01 14 19 - Use of Site, and as may be shown on the Drawings.
  2. Relocate stored materials and equipment that interfere with operations of Owner, other contractors, and others performing work for Owner.
  3. Comply with restrictions set forth in Section 01 14 19 - Use of Site.

## **1.8 EASEMENTS AND RIGHTS-OF-WAY**

- A. Easements and Rights-of-Way - General:
  1. Easements and rights-of-way required for the permanent improvements included in the Work will be provided by Owner in accordance with the General Conditions and Supplementary Conditions.
  2. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and limits shown, and property for which Contractor has made arrangements directly with property owner(s).
  3. Use care in placing construction tools, machinery and equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
  4. Do not enter private property outside the construction limits without permission from the owner of the property.

## **1.9 UTILITY OWNERS**

- A. Utilities known to Engineer and that may have Underground Facilities or other facilities in the vicinity of the Work are:
  1. All on-site utilities are owned by Geauga County and are noted on the plans from available records. Underground electrical conduit is located on the site and Contractor shall use care when excavating in areas where electrical conduits are located.
- B. Utilities and their owners indicated in the Contract Documents are for Contractor's convenience. Neither Owner nor Engineer will be liable to Contractor or any utility owner for failure to indicate utility, its owner, or complete and correct contact information in the Contract Documents where Contractor's reasonable and ordinarily-exercised diligence would reveal the presence of the utility and its owner. Nothing in the Contract mitigates Contractor's responsibilities under the General Conditions, Section 01 71 33 - Protection of the Work and Property, and Laws and Regulations, including "call before you dig" regulations.



**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 11 20**  
**JOB CONDITIONS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Job conditions.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

**1.2 PROJECT CONDITIONS**

- A. Prior to installation of material, equipment and other work, verify with subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials attach is acceptable for installation of those materials or equipment. (Substrate is defined as building surfaces to which materials or equipment is attached to i.e., floors, walls, ceilings, etc.).
- B. Correct unacceptable substrate until acceptable for installation of equipment or materials.
- C. Maintaining Facility Operations:
  - 1. Facility is currently operating.
  - 2. Ensure construction activities do not interfere with Owner's operation of facility.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 14 19**  
**USE OF SITE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

1. Section Includes: Restrictions on Contractor's use of the Site and premises.
  2. Restrictions on use of existing buildings and structures, including:
    - a. Permanent utilities and sanitary facilities.
    - b. Existing elevators.
    - c. Existing hoisting equipment.
- B. Scope:
1. Contractor shall provide all labor, materials, equipment, tools, and incidentals shown, specified, and required to comply with restrictions on Contractor's use of the Site and other areas.
  2. Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions, regarding the Contractor's use of the Site and other areas.

**1.2 SUBMITTALS**

- A. Action Submittals: Submit the following:
1. Shop Drawings:
    - a. Site plan showing proposed location of field offices, storage trailers, staging and laydown areas, temporary sanitary facilities, fuel and oil storage, fueling location, bottle gas storage facilities, and other areas Contractor proposes to occupy.
- B. Informational Submittals: Submit the following:
1. Notices of Condition:
    - a. Notice of condition of Owner's existing hoisting equipment that Contractor proposes to use, together with written evaluation of condition of equipment including condition of equipment's safety devices. If corrective work is necessary or advisable, transmit concurrently with the Submittal Contractor's Change Proposal for remedial work, in accordance with Section 01 26 00 - Contract Modification Procedures.
  2. Hoist Manufacturer's Reports: Submit written report of results of each visit to Site by equipment manufacturer's service technician, including purpose and time of visit, tasks performed, and results obtained.
  3. Qualifications Statements:
    - a. Identification by name, and qualifications and experience of, person Contractor proposes as Contractor's operator of Owner's hoisting equipment.

**1.3 USE OF PREMISES**

- A. Limit use of premises at the Site to work areas shown or indicated on the Drawings and as specified in this Section. Do not disturb portions of the Site beyond areas of the Work.
1. Limits:
    - a. Confine construction operations to the following areas:
      - 1) Within the limits of the GCDWR property as noted on the Plans.
    - b. Confine storage of materials and equipment, and locations of temporary facilities to the following areas:
      - 1) Area designated for dewatering activities.
      - 2) Contractor's gang boxes and storage containers for tools in active use in the Work may be kept in reasonable quantity in the work areas as long as such items do not obstruct access to the facilities by Owner or occupants.
    - c. Do not enter the following areas:

- 1) Areas outside of the work areas indicated in Paragraph A.1.a of the “Use of Premises” Article in this Specifications section, and outside of work areas indicated on the Drawings.
2. Prohibitions:
  - a. Do not use the Site for the following:
    - 1) Conducting Contractor’s business not related to the Project or other work for Owner.
    - 2) Overnight lodging or other, non-work use of the Site by workers or others for whom Contractor is responsible, whether housed in recreational vehicles, other vehicles, tents, quarters in field offices or Contractor-furnished temporary structures, or in work areas, is unacceptable.
    - 3) Areas shown on the plans as within the 100-year Flood Elevation shall not be used to store materials that may run off into the stream. Work within this area shall be limited to that shown on the plans.
  3. Access to Site, Access Roads, Parking Areas, and Haul Routes:
    - a. Access to site shall be via the existing access driveway.
- B. Promptly repair damage to premises, including existing structures, finishes, equipment, and other features, caused by construction operations. Upon completion of the Work, restore premises to specified condition; if condition is not specified, restore to pre-construction condition.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

## **SECTION 01 21 00 ALLOWANCES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Administrative and procedural requirements for:
    - a. Contingency allowances.
- B. Related Requirements:
  - 1. Include but are not necessarily limited to the following:
    - a. Section 01 26 00 - Contract Modification Procedures.
    - b. Section 01 32 16 - Construction Progress Schedule.

#### **1.2 REFERENCES**

- A. Terminology:
  - 1. Terminology indicated below are not defined terms and are not indicated with initial capital letters, but when used in this section have the following meanings:
    - a. “Allowance authorization” or “authorization”, whether singular or plural, are Owner’s written and signed approval for using a specific allowance item, in a specific authorized amount, for a specific construction task or activity. Allowance authorizations include all associated attachments at the time of Owner’s signature and as delivered to Contractor.
    - b. “Contingency allowance” is a stipulated amount included in the Contract Price, controlled by Owner, for Owner’s sole use to cover unanticipated costs and costs for Work authorized by Owner that is not part of any other bid/pay item in the Contract.

#### **1.3 ALLOWANCES – GENERAL**

- A. This Article applies to all allowance types and all authorized allowance Work performed in accordance with the Contract Documents.
- B. All allowances in the Contract are Owner-controlled and for Owner’s sole use. Contractor has no right or entitlement to any allowance or part thereof without express, written authorization from Owner.
- C. Authorization of Allowances:
  - 1. Only Owner can authorize use of an allowance. No other entity, including Engineer, Resident Project Representative (RPR, if any), Owner’s Site Representative (OSR, if any), or others may authorize use of allowances in place of Owner.
  - 2. Owner’s personnel empowered to authorize use of allowances are:
    - a. Names will be provided to the Contractor at the pre-construction meeting.
  - 3. Allowance Authorization Mechanism:
    - a. To be binding and enforceable, allowance authorizations must be in writing, signed by one of the Owner’s employees indicated immediately above.
    - b. Allowance authorization form is attached to this Section.
    - c. Allowance authorizations issued in accordance with the procedures set forth in this Section, are binding and enforceable under the Contract, unless promptly contested in writing by Contractor in accordance with this Section.
    - d. Oral authorizations, authorizations without an appropriate signature, and authorizations not on the proper form, will not be binding or enforceable.
  - 4. Allowance authorizations duly signed by Owner’s authorized person may be delivered to Contractor by Engineer, RPR, OSR, or other Owner-authorized representative, and shall be binding and enforceable when so delivered (unless properly contested).

5. Do not perform Work presumed for compensation under an allowance without first obtaining Owner's allowance authorization.
  6. Work presumed by Contractor to be under an allowance and performed without: (a) written authorization duly signed by Owner, or (b) Change Order, or (c) Work Change Directive, is not eligible for payment.
- D. Contract Times:
1. Allowance authorizations do not have any effect on, and do not change, the Contract Times. The Contract Times can be changed only via a duly authorized Change Order.
  2. Should the Work included in an allowance authorization adversely affect Contractor's ability to comply with the Contract Times, promptly submit Change Proposal (including appropriate supporting documentation), in accordance with the Contract Documents, indicating the associated, specific, proposed effect on each of the Contract Times.
- E. Payment for Work Under an Allowance Authorization:
1. Work duly authorized by Owner under an allowance is eligible for payment upon performance of the associated Work, in accordance with the Contract Documents and the associated allowance authorization.
  2. When applying for payment for Work under an allowance authorization, the Application for Payment shall include a copy of the associated allowance authorization(s) signed by Owner.
  3. When requested by Owner or Engineer, amend the Schedule of Values to indicate Work authorized under contingency allowances or cash allowances.
- F. Compensation for Bonds and Insurance:
1. Contractor is not eligible for compensation under an allowance, or for an increase in the Contract Price, for costs associated with insurance, performance bond, payment bond, or warranty bond (when such bond is required by the Contract). Compensation for such costs is included elsewhere in the Contract Price, under other (non-allowance) bid/pay items.
- G. Change Orders:
1. A Change Order is not required for authorization of an allowance that is already included in the Contract.
  2. Prior to final payment, all allowances with funds remaining (not yet authorized) shall be reduced to the total amount authorized by Owner for that allowance item, via a Change Order.

#### **1.4 CONTINGENCY ALLOWANCES**

- A. Provisions on contingency allowance(s) are set forth in the General Conditions, as may be modified by the Supplementary Conditions, and in this Section.
- B. Owner may authorize use of all or part of a contingency allowance included in the Contract for Work not otherwise covered under one or more other bid/pay items already in the Contract.
- C. Procedure for Using Contingency Allowances:
1. Prior to Work being authorized under a contingency allowance, Contractor shall submit complete Change Proposal for the associated Work, in accordance with the Contract Documents.
  2. Compensation proposed via the Change Proposal for the contemplated allowance Work shall be complete and sufficient for the entire scope of the contemplated allowance Work, unless expressly indicated otherwise in the Change Proposal or an associated, Owner- or Engineer-issued Proposal Request.
  3. Compensation eligible under a contingency allowance includes:
    - a. Materials and equipment furnished to Owner or incorporated into the Work; labor; construction equipment and machinery; services, incidentals, and related costs, in accordance with the Contract Documents' provisions for Contract modifications.
    - b. Overhead and profit for the associated Work, for Contractor and Subcontractors.
    - c. Other costs and expense mutually agreeable to Owner and Contractor.



4. Excluded are costs not mutually agreeable to the parties and costs excluded in accordance with Article 1.3 of this Section.
5. Should Change Proposal indicate, and Owner accept that, change in the Contract Times is necessary, Owner (or Engineer, on Owner's behalf) will issue an appropriate Change Order for signature by the parties, upon mutual agreement to the changed Contract Times.
6. Upon receipt of contingency allowance authorization, when Contractor does not reject or disagree with the authorization, Contractor shall sign allowance authorization form indicating acceptance and return signed form to Owner and Engineer within two days of receipt.
7. Commence performing the allowance Work promptly upon receipt of allowance authorization.
8. Application for Payment for the associated Work may be made in accordance with Article 1.3 of this Section and the Contract's provisions governing progress payments.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 ATTACHMENTS**

- A. The following, bound after this Specifications Section's "End of Section" designation, are part of this Specifications Section:
  1. Forms:
    - a. Allowance Authorization Form, (one page).

**END OF SECTION**

**ALLOWANCE AUTHORIZATION**

Project: \_\_\_\_\_ Authorization Number: \_\_\_\_\_  
 \_\_\_\_\_ From: \_\_\_\_\_  
 To: \_\_\_\_\_ Date: \_\_\_\_\_  
 \_\_\_\_\_ Engineer Project No.: \_\_\_\_\_  
 Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Contractor is authorized to perform the following item(s) of Work and to be eligible to apply for payment under the designated Contract allowance(s) indicated below for the amount indicated below for each item:

1. Allowance Title / Title of Change:

This instrument is not a Change Order and does not modify the Contract Price, nor does it modify the Contract Times.

Original Allowance .....	\$ _____
Allowance Expenditures prior to this Authorization .....	\$ _____
Allowance Balance prior to this Authorization .....	\$ _____
Allowance will be decreased by this Authorization .....	\$ _____
New Allowance Balance .....	\$ _____

**RECOMMENDED BY**

**OWNER APPROVAL**

HDR  
 \_\_\_\_\_  
 Engineer

\_\_\_\_\_  
 Owner

By \_\_\_\_\_ Date \_\_\_\_\_

By \_\_\_\_\_ Date \_\_\_\_\_

**CONTRACTOR ACCEPTANCE**

\_\_\_\_\_  
 Contractor

By \_\_\_\_\_ Date \_\_\_\_\_

Attachments

Copies:     Owner     Contractor     Consultants     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_     File

**SECTION 01 22 00**  
**MEASUREMENT AND PAYMENT**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. General requirements applicable to all bid/pay items.
  - 2. General provisions on unit prices and quantities.
  - 3. General provisions on lump sums.
  - 4. Listing of the various bid/pay items in the Project, together with criteria for measuring Unit Price Work for payment.
- B. Related Requirements:
  - 1. Include but are not necessarily limited to:
    - a. Section 01 26 00 - Contract Modification Procedures.

**1.2 REQUIREMENTS APPLICABLE TO ALL BID/PAY ITEMS**

- A. In this Section and elsewhere in the Contract Documents, the terms “bid item”, “pay item”, “bid/pay item”, “Item” followed by a number designation, “this item”, and the like all have the same meaning, and refer to one or more specific elements of the Contract, established for pricing and payment, as indicated in the Bid Form and in the Agreement (or exhibit to the Agreement) at the time the Contract was signed by the parties.
- B. This Article applies to all bid/pay items in the Contract.
- C. Prices – General:
  - 1. The bid/pay items listed refer to and are the same bid items listed in the Bid Form and included in the Contract, and constitute all bid/pay items for the Work at the time the Contract was signed by the parties.
  - 2. No direct or separate payment will be made, outside of the bid/pay items in the Contract, for the following: providing miscellaneous temporary or accessory materials or equipment, temporary works, temporary construction facilities, Contractor’s project management, superintendence, and similar costs for Subcontractors or Suppliers; bonds and insurance; schedules and schedule updates; coordination (with: operations (including, but not limited to, lockout/tag-out procedures), other contractors, utility owners, owners of transportation facilities, adjacent property owners and occupants, authorities having jurisdiction, Subcontractors and Suppliers, and others with whom Contractor is to coordinate the Work); information technology systems required by the Contract Documents; Submittals; photographic documentation; Project meetings; Contractor’s hazard communication program; Contractor’s compliance with environmental procedures for Constituents of Concern (including spill control and countermeasures plans and implementation); professional services (required for Contractor’s means and methods of construction, and for delegated designs required by the Contract Documents); obtaining and complying with permits and licenses; temporary utilities (including electric power, water supply and disposal, fuel, and communications); temporary lighting; temporary fire protection; temporary enclosures and HVAC; temporary sanitary facilities; temporary first-aid facilities and services; ; Contractor’s field offices and sheds, Engineer’s field offices (when required elsewhere in the Contract Documents); temporary vehicular access and parking (including access to the Site, temporary access roads and parking, onsite traffic controls for construction traffic, and offsite haul routes); traffic control of non-construction vehicular and pedestrian traffic; temporary controls (including temporary erosion and sediment controls, noise control, control of storm water, surface water, and groundwater, pollution controls (including solid waste control, water pollution control, and control of atmospheric

pollution), dust control, pest and rodent controls, odor controls, and other temporary controls required by the Contract Documents); temporary security for the Work; temporary barriers; Project signage (when required elsewhere in the Contract Documents); delivering, handling, and storing materials and equipment to be incorporated into the Work; layouts and surveys for the Work; construction equipment, machinery, tools, and vehicles; safety and protection; Site maintenance during construction; cleaning and removal and disposal of waste and debris; checkout and startup; testing and other quality control activities required by the Contract Documents; record documents, operation and maintenance data; warranties; spare parts and extra materials required by the Contract Documents; instruction of facility personnel as required by the Contract Documents; commissioning (when required elsewhere in the Contract Documents); Contractor's correction period, Contractor's general warranty and guarantee; Contractor's indemnification obligations; other labor, cost, or effort required by the General Conditions and Supplementary Conditions, Division 01 Specifications, and other requirements of the Contract Documents.

3. Price Escalation:
    - a. Unless expressly indicated otherwise in the Contract Documents, Owner is not obligated to change the stipulated prices (including lump sums, unit prices, and allowances) that are all or part of the Contract Price because of escalation of costs when there is no corresponding change in the Contract Times.
    - b. Changes in the Contract Times do not necessarily entitle Contractor to a change in Contract Price due to escalation.
    - c. Should Contractor claim a change in Contract Price for one or more stipulated price pay items without a corresponding change in scope, extent, or quality in the associated Work, prior to receiving any such change in Contract Price, Contractor shall submit with Contractor's associated Change Proposal, documentation satisfactory to Engineer supporting and documenting that Contractor's costs have increased because of delays beyond Contractor's control within the associated change in Contract Times included in such Change Proposal.
  4. Compensation for all services, labor, materials, and equipment shall be included in prices stipulated for the lump sum and unit price bid/pay items in the Contract.
  5. Each lump sum and unit price in the Contract shall include an amount considered by Contractor as sufficient for all overhead and profit for each separately identified bid/pay item.
- D. Contract Price, Payment Procedures, and Related Matters:
1. Contract Price: The Contract Price, as apportioned among bid/pay items in the Contract, is indicated in the Agreement and may be modified by Change Order.
  2. Payments to Contractor: Refer to the General Conditions (as may be modified by the Supplementary Conditions), the Agreement (including provisions on retainage, if any), and Section 01 29 76 - Progress Payment Procedures, among other applicable Contract Documents.
  3. Schedule of Values: Refer to the General Conditions (as may be modified by the Supplementary Conditions).
  4. Procedures for Changes in Contract Price: Refer to the General Conditions (as may be modified by the Supplementary Conditions) and Section 01 26 00 - Contract Modification Procedures.
  5. Defective Work is not eligible for payment.

### **1.3 GENERAL PROVISIONS ON UNIT PRICES AND QUANTITIES**

- A. Quantities:
1. Quantities of Unit Price Work indicated in the Bid Form and in the Contract (at the time the Agreement was signed by the parties) are estimates for purposes of pricing and comparison of Bids.
  2. Owner does not represent, either expressly or by implication, or agree that the nature of materials encountered below ground surface or in concealed areas, or actual quantities of

Unit Price Work required, will correspond with the quantities in the Contract at the time the Agreement was signed by the parties. Owner reserves the right to increase or decrease quantities, and to eliminate quantities, as Owner may deem necessary or as may be necessary due to Site conditions encountered.

3. Adjustment of Unit Prices Due to Variation in Quantities:
    - a. Provisions, if any, regarding adjustment of unit prices due to variations in actual quantities (eligible for payment) from the estimated quantities in the Contract (including quantities at the time the Agreement was signed by the parties and as subsequently modified by Change Order) are in the General Conditions, as may be modified by the Supplementary Conditions.
      - 1) Engineer's review for possible unit price adjustment, when provision for such adjustment is expressly indicated in the Contract, will be at a time Engineer deems reasonable and proper.
      - 2) When the Supplementary Conditions establish that, to be eligible for an adjustment in the unit price, a pay item of Unit Price Work must have a total computed, extended price (at the time the Agreement was signed by the parties) equal to or greater than a specified percentage (stipulated in the Supplementary Conditions) of the total Contract Price (at the time the Agreement was signed by the parties), and the total extended price of such pay item does not exceed the stipulated percentage of the Contract Price, then the associated pay item will be paid at the unit price in the Contract without adjustment for variations in actual quantity.
  4. Quantities eligible for payment will be actual quantities furnished and installed (as applicable) in accordance with the Contract Documents, within the pay limits shown or indicated, as measured by Engineer (or other entity so empowered in the Contract Documents), and recommended for payment by Engineer.
  5. At Contractor's expense, Contractor may independently verify quantities measured by Engineer for payment. Should Contractor disagree with quantities measured and recommended for payment by Engineer, submit appropriate Change Proposal (appealing Engineer's measurements) indicating the specific reasons for Contractor's appeal, with detailed reasons therefor and associated calculations and estimates, in accordance with the Contract Documents.
  6. Quantity Overruns:
    - a. When the quantity of a pay item of Unit Price Work eligible for payment exceeds the pay item's quantity included in the Contract, Owner will pay for quantities that exceed those in the Contract only while the estimated total payments to Contractor under the Contract will not exceed the Contract Price. Otherwise, a Change Order is required to modify the associated quantity in the Contract, thus changing the Contract Price.
  7. Except as may be established elsewhere in the Contract Documents, make no claim for anticipated profit, loss of profit, damages, or additional compensation arising from difference between quantities of Unit Price Work eligible for payment and the estimated quantities in the Contract.
- B. Measuring for Payment:
1. At Engineer's option, Engineer may delegate to Resident Project Representative (RPR) (if any), some or all of Engineer's responsibilities for measuring Unit Price Work eligible for payment.
  2. Unless expressly indicated otherwise in the Contract Documents, measurements will be in United States standard measurements.
  3. Unless indicated otherwise elsewhere in the Contract Documents, quantities of Unit Price Work eligible for payment will be rounded to the nearest whole number.
  4. In the event of conflict between this Section and the measurement criteria in the Specifications of Divisions 02-49, the measurement criteria in this Section will govern. Typical intent when measurement criteria are in both this Section and the associated Division 02-49 Specifications section, is for the criteria to be interpreted together.
  5. Assistance with Measurements:

- a. Assist Engineer and Resident Project Representative (RPR) (if any), by providing measuring equipment, labor, and survey personnel necessary to measure quantities eligible for payment.
- 6. Quantities eligible for payment can be adjusted by Engineer to correct quantities included in Contractor's prior payment requests, and for incomplete or defective Unit Price Work. Such corrections are at Engineer's sole discretion.

**1.4 GENERAL PROVISIONS ON LUMP SUM ITEMS**

- A. Progress payments for Work paid on a lump sum basis will be based on Engineer's estimate of the Work (in accordance with the Contract Documents) performed through the end of the associated pay period, based on the Schedule of Values accepted by Engineer in accordance with the Contract Documents.
- B. At its sole discretion, Engineer may correct amounts of lump sum Work included in prior payment requests based on improved data or information available to Engineer, or Engineer's knowledge or reasonable belief that Work is incomplete or defective.

**1.5 BID/PAY ITEMS – GENERAL CONTRACT**

- A. Item 1 – Chlorination/Dechlorination Unit, As Per Plan:
  - 1. Measurement: The chlorination/dechlorination unit will be measured and paid for as a Lump Sum.
  - 2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing and installing utility vault of the size and type indicated with chlorination and dechlorination tablet feeders installed within.
    - b. Relocation of existing manhole and appurtenances, as per plan.
    - c. Piping necessary to make connections between new and old units, as per plan
    - d. Jointing, including gaskets, and fastening hardware for mechanical joints and restrained joints.
    - e. Excavating and backfilling.
    - f. Other work, services or materials required for complete installation of valves not expressly included in this bid item.
  - 3. Not included in this item are:
    - a. Electrical work associated with the relocation of the effluent manhole.
  - 4. Payment: Unit price per valve under this item will be full compensation for providing the chlorination/dechlorination unit as indicated, of the size and joint type shown or as directed by Engineer, complete, and not included under other bid/pay items or other contracts.
- B. Item 2 – Magnetic Flow Meter in Utility Vault, As Per Plan:
  - 1. Measurement: Flow Meters of the size and type indicated will be measured and paid per each unit provided and installed at the locations shown on the plans.
  - 2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing meters of the size and type indicated.
    - b. Providing a meter vault for each meter provided.
    - c. Jointing, including gaskets, and fastening hardware for mechanical joints and restrained joints.
    - d. Excavating and backfilling.
    - e. Other work, services or materials required for complete installation of valves not expressly included in this bid item.
  - 3. Not included in this item are:
    - a. Pipe material other than fittings.
    - b. Electrical work associated with the installation of the meter.
  - 4. Payment: Unit price per valve under this item will be full compensation for providing all meters indicated, of the size and joint type shown or as directed by Engineer, complete, and not included under other bid/pay items or other contracts.
- C. Item 3 Lagoon Liner Replacement, Complete:

1. Measurement and Payment: Lagoon liner replacement will be measured and paid as a Lump Sum.
  2. Item Includes (all in accordance with the contract documents):
    - a. Removal and replacement of the wastewater lagoon liners, complete, as shown on the plans and described in the contract documents.
    - b. Other work, services or materials required for lagoon liner replacement not expressly included in this bid item.
  3. Not included in this item are:
    - a. Sludge Dewatering
- D. Items 4-8 - Valves, As Per Plan:
1. Measurement: Valves of the size and type indicated will be measured and paid per each unit provided and installed at the locations shown on the plans.
  2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing valves of the size and type indicated.
    - b. Jointing, including gaskets, and fastening hardware for mechanical joints and restrained joints.
    - c. Excavating and backfilling.
    - d. Other work, services or materials required for complete installation of valves not expressly included in this bid item.
  3. Not included in this item are:
    - a. Pipe material other than fittings.
  4. Payment: Unit price per valve under this item will be full compensation for providing all valves indicated, of the size and joint type shown or as directed by Engineer, complete, and not included under other bid/pay items or other contracts.
- E. Item 9 - Perforated PVC Pipe, 6 IN Diameter, As Per Plan for Overland Flow Area:
1. Measurement will be per linear foot of pipe provided, measured along centerline of pipe, including fittings and pipe supports.
  2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing pipe of the size, material, wall thickness or class, and joint type indicated; necessary and required fittings; gaskets; jointing; connections to existing piping and facilities shown; and specified source quality control. Install piping as shown on the Drawings.
    - b. Performing specified field quality control. When not expressly indicated otherwise in the Contract Documents, at minimum, required field quality control shall include successfully completing the following:
      - 1) Verifying alignment and elevation.
    - c. Other Work necessary, shown, and indicated for providing the required sewer in place, and complete, not included under other bid/pay items.
  3. Not included in this bid/pay item:
    - a. Work expressly included under other bid/pay items.
  4. Payment: Unit price per linear foot for this item will be full compensation for all pipe of the indicated size, material, wall thickness or class, lining, and joint type, with all related Work performed under this item, complete in accordance with the Contract Documents, and not specifically included under other bid/pay items or contracts.
- F. Items 10A and 10B Sludge Dewatering, Hauling and Disposal, Complete:
1. Measurement and Payment: Sludge dewatering, hauling and disposal will be measured and paid as a Lump Sum.
  2. Item Includes (all in accordance with the contract documents):
    - a. Pumping of sludge from the wastewater lagoons to the dewatering equipment, including all interconnections between the pumps and dewatering equipment, provision of electrical power and water necessary for the process.
    - b. Dewatering sludge on site including providing means to direct the liquid for the process back to the wastewater lagoon that is still in service.

- c. Supplying water for the sludge dewatering. (Bulk Water may be purchased from the County at their facility on Ravenwood for \$10.96/1,000G)
    - d. Hauling the sludge offsite for ultimate disposal.
    - e. Disposal of sludge in a permitted location.
    - f. Acquisition of any necessary permits for disposal.
    - g. Any required sludge testing related to permitting and disposal.
    - h. Other work, services or materials required for sludge dewatering, hauling and disposal not expressly included in this bid item.
  - 3. Not included in this item are:
    - a. Dewatering the wastewater lagoons above the sludge layer
    - b. Gravel for temporary work area
- G. Item 11 – Gravel for Temporary Dewatering Area, As Per Plan:
- 1. Measurement:
    - a. Gravel for temporary dewatering area will be measured for payment by the cubic yard of required approved gravel material provided within the limits shown or indicated in the Contract Documents.
  - 2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing gravel as indicated within the pay limits shown or indicated, including installing for proper storm water drainage, without ponding on the finished pavement surface.
  - 3. Payment: Unit price per cubic yard of specified gravel material paid under this item will be full compensation for all gravel, with all related Work performed under this item, complete in accordance with the Contract Documents, and not specifically included under other bid/pay items or contracts.
- H. Item 12 – Electrical:
- 1. Measurement: Electrical work will be measured and paid for as a Lump Sum.
  - 2. Item Includes (all in accordance with the Contract Documents):
    - a. Providing electrical work associated with installation of the two (2) magnetic meters and associated panels
    - b. Providing electrical work associated with relocation of the effluent manhole/pump.
    - c. Running conduit to the meter on the lagoon effluent line, as directed.
- I. Item 13 – Temporary Fence
- 1. Measurement will be per linear foot of temporary fence provided.
  - 2. Item Includes:
    - a. Removal and Replacement of existing permanent fencing
    - b. Installation of and removal of temporary fencing at the project site
    - c. Gates, as needed, for access to the site by Contractor and Owner’s personnel
    - d. Providing locks and keys to Owner for access to the site during construction.
    - e. Other Work necessary, shown, and indicated for providing the required temporary fencing, complete, not included under other bid/pay items.
  - 3. Not included in this bid/pay item:
    - a. Work expressly included under other bid/pay items.
- J. Item 14 – Erosion Control:
- 1. Measurement: Provision of erosion control will be measured and paid for as a Lump Sum.
  - 2. Item Includes (all in accordance with the Contract Documents):
    - a. Submittal of a SWPPP plan for approval by Geauga County, including all associated costs
    - b. Provision of all site erosion control measures to comply with the SWPPP plan.
- K. Item 15 – Grading and Seeding:
- 1. Measurement for grading and seeding shall be a Lump Sum. for the seeding and grading of excavated and disturbed areas.
  - 2. Item Includes (all in accordance with the Contract Documents):



- a. Rough grading, providing appropriate topsoil (whether originally removed and stockpiled by contractor or from offsite sources), and final grading (appropriately transitioning to proposed grades at completion of Work), without ponding of water.
  - b. Hydroseeding or other seeding method indicated in the Contract Documents.
  - c. Protecting, watering, and maintaining new growth.
  - d. Landscaping restoration for areas (unpaved and not subject to vehicular traffic) disturbed by Contractor outside of the pay limits shown or indicated.
  - e. Other Work required and necessary for landscaping restoration not expressly included in other bid/pay items.
- L. Item 16 – ALLOWANCE – Structural Repairs to Vaults, As Directed By Owner
- 1. An allowance item in the amount of \$7,500 is included and may be used for work directed by the OWNER related to structural repairs to existing concrete vaults at the site. This work does not serve as payment for any Work already outlined in the Contract Documents.
  - 2. The CONTRACTOR shall be responsible for its own errors of workmanship, improper work scheduling and delay, etc. and this allowance shall not be used to compensate for that responsibility.
  - 3. The CONTRACTOR will be compensated for work performed under this item in accordance with the procedures set forth in Article 12 of the General Conditions. All remaining funds at the end of the Contract will be deleted by a deduct order.
- M. Items 17A and 17B – ALLOWANCE - Lime Stabilization of Sludge
- 1. Allowance items in the amount of \$5,000 each, are included and may be used for work directed by the OWNER related to lime stabilization of sludge, including time required for testing and stabilization of, the sludge in Lagoon A and Lagoon B. This work does not serve as payment for any Work already outlined in the Contract Documents.
  - 2. The CONTRACTOR will be compensated for work performed under this item in accordance with the procedures set forth in Article 12 of the General Conditions. All remaining funds at the end of the Contract will be deleted by a deduct order.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 25 13**  
**PRODUCT SUBSTITUTIONS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. The procedure for requesting the approval of substitution of a product that is not equivalent to a product which is specified by descriptive or performance criteria or defined by reference to one or more of the following:
    - a. Name of manufacturer.
    - b. Name of vendor.
    - c. Trade name.
    - d. Catalog number.
  - 2. Substitutions are not "or-equals."
  - 3. This Specification Section does not address substitutions for major equipment.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.
- C. Request for Substitution - General:
  - 1. Base all bids on materials, equipment, and procedures specified.
  - 2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers.
    - a. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are "or-equals," as determined by Engineer.
  - 3. Other types of equipment and kinds of material may be acceptable substitutions under the following conditions:
    - a. Or-equals are unavailable due to strike, discontinued production of products meeting specified requirements, or other factors beyond control of Contractor; or,
    - b. Contractor proposes a cost and/or time reduction incentive to the Owner.

**1.2 QUALITY ASSURANCE**

- A. In making request for substitution or in using an approved product, Contractor represents they:
  - 1. Have investigated proposed product, and have determined that it is adequate or superior in all respects to that specified, and that it will perform function for which it is intended.
  - 2. Will provide same guarantee for substitute item as for product specified.
  - 3. Will coordinate installation of accepted substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete in all respects.
  - 4. Waives all claims for additional costs related to substitution which subsequently arise.

**1.3 DEFINITIONS**

- A. Product: Manufactured material or equipment.

**1.4 PROCEDURE FOR REQUESTING SUBSTITUTION DURING BIDDING PERIOD**

- A. See Instructions to Bidders.

**1.5 PROCEDURE FOR REQUESTING SUBSTITUTION AFTER AWARD OF CONTRACT**

- A. Substitution will only be considered under the conditions stated herein.
- B. Written request through Contractor only.

- C. Transmittal Mechanics:
  - 1. Follow the transmittal mechanics prescribed for Shop Drawings in Specification Section 01 33 00.
    - a. Product substitution will be treated in a manner similar to "deviations," as described in Specification Section 01 33 00.
    - b. List the letter describing the deviation and justifications on the transmittal form in the space provided under the column with the heading DESCRIPTION.
      - 1) Include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in Paragraph D below.
- D. Transmittal Contents:
  - 1. Product identification:
    - a. Manufacturer's name.
    - b. Telephone number and representative contact name.
    - c. Specification Section or Drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
  - 2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
  - 3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
    - a. Size.
    - b. Composition or materials of construction.
    - c. Weight.
    - d. Electrical or mechanical requirements.
  - 4. Product experience:
    - a. Location of past projects utilizing product.
    - b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
    - c. Available field data and reports associated with proposed product.
  - 5. Data relating to changes in construction schedule.
  - 6. Data relating to changes in cost.
  - 7. Samples:
    - a. At request of Engineer.
    - b. Full size if requested by Engineer.
    - c. Held until substantial completion.
    - d. Engineer not responsible for loss or damage to samples.

## **1.6 APPROVAL OR REJECTION**

- A. Written approval or rejection of substitution given by the Engineer.
- B. Engineer reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.
- C. In the event the substitution is approved, the resulting cost and/or time reduction will be documented by Change Order in accordance with the General Conditions.
- D. Substitution will be rejected if:
  - 1. Submittal is not through the Contractor with his stamp of approval.
  - 2. Request is not made in accordance with this Specification Section.
  - 3. In the Engineer's opinion, acceptance will require substantial revision of the original design.
  - 4. In the Engineer's opinion, substitution will not perform adequately the function consistent with the design intent.
- E. Reimburse Owner for the cost of Engineer's evaluation whether or not substitution is approved.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**



**SECTION 01 26 00**  
**CONTRACT MODIFICATION PROCEDURES**

**1.1 SUMMARY**

A. Section Includes:

1. This Specifications section expands upon provisions of the General Conditions, as may be modified by the Supplementary Conditions, and includes:
  - a. Requests for interpretation.
  - b. Written clarifications.
  - c. Minor changes in the Work and Field Orders.
  - d. Work Change Directives.
  - e. Proposal Requests.
  - f. Change Proposals.
  - g. Change Orders.

**1.2 GENERAL – APPLICABLE TO ALL PROVISIONS OF THIS SECTION**

- A. Submit Contract modification documents to Engineer, addressed to the contact person and contact information indicated in Section 01 33 00 - Submittal Procedures, and in accordance with Section 01 31 26 - Electronic Communication Protocols.
- B. Retain at Contractor's office and at the Site complete copy of each Contract modification document, all interpretations and clarifications, related documents, and Engineer's response.

**1.3 REQUESTS FOR INTERPRETATION**

A. General.

1. Transmit written requests for interpretation to Engineer. Contractor and Owner may prepare and transmit requests for interpretation.
2. Prepare and transmit request for interpretation to obtain clarifications or interpretations of the Contract Documents. Report conflicts, errors, ambiguities, and discrepancies in the Contract Documents by requesting an interpretation.
3. Do not transmit request for interpretation when other form of communication is appropriate, such as Submittals, requests for approvals of substitutes, notices, ordinary correspondence, or other form of communication. Improperly prepared or inappropriate requests for interpretation will be returned without response or action by Engineer.
4. Do not submit request for interpretation or clarification when:
  - a. answer may be obtained by observations at the Site; or
  - b. required information is clearly indicated in the Contract Documents; or
  - c. required information is included in industry standards referenced in the Contract Documents or Supplier's instructions that are consistent with the Contract Documents; or
  - d. are reasonably inferable from any of foregoing.
5. Engineer will return requests for interpretation without response for any of the following reasons:
  - a. Request is regarding one of the items addressed in Paragraphs 1.3.A.3 and 4 of this Specifications section.
  - b. Request is unclear or incomplete.
  - c. Request was answered in Engineer's response to a prior request for interpretation.
  - d. Request is related to construction means, methods, techniques, procedures, or sequences of construction that are not required by the Contract Documents.
  - e. Request is related to safety and protection matters that are solely Contractor's responsibility.
  - f. Request resulted in whole or in part to lack of adequate coordination by Contractor, including coordination of Subcontractors and Suppliers.
  - g. Requests that are otherwise frivolous or unnecessary.

6. Should requests be categorized by Engineer as within the limits of Paragraphs 1.3.A.3, 4, or 5 of this Specifications Section, Engineer may recommend and Owner may withhold from payments due Contractor under the Contract set-off(s) sufficient to cover Owner's costs of Contractor's submittal of invalid, frivolous, unnecessary, or inappropriate requests for interpretation or clarification.
  7. Contractor shall have sole financial responsibility for Contractor's costs for requests for interpretation or clarification that are submitted late, out of sequence, or that are unnecessary.
- B. Procedure.
1. Transmit requests for interpretation in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Include with each request for interpretation a separate letter of transmittal.
  2. If Engineer requests additional information to make an interpretation, entity requesting the interpretation shall transmit the information requested within 10 days, unless Engineer allows additional time, via correspondence referring to request for interpretation number.
  3. Engineer will review and respond to requests for interpretation with reasonable promptness. Allow sufficient time for review and response.
  4. Engineer will maintain log of requests for interpretation. Upon request, copy of log will be transmitted to requestor.
  5. Engineer's response to requests for interpretation will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each response to a request for interpretation will include a separate letter of transmittal.
  6. Engineer's response to each request for interpretation will be distributed to:
    - a. Contractor.
    - b. Owner.
    - c. Resident Project Representative (RPR).
    - d. Engineer.
  7. If Contractor desires to appeal Engineer's interpretation or clarification, comply with the appeals procedure set forth in the General Conditions, as may be modified by the Supplementary Conditions.
  8. Interpretations that One or Both Parties Believes Entails a Change to the Contract:
    - a. If Contractor or Owner believes that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of Engineer's interpretation, so advise Engineer in writing before proceeding with the Work associated with the request for interpretation.
    - b. If, after this initial communication, either Owner or Contractor believes that change in Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.
- C. Preparation of Requests for Interpretation:
1. Prepare each request for interpretation on the "Request for Interpretation" form included with this Specifications section, or other form acceptable to Engineer.
  2. Number each request for interpretation as follows: Numbering system shall be the Contract number and designation followed by a hyphen and three-digit sequential number. Example: First request for interpretation on the general contract for project titled, "Contract WWTP09" would be, "RFI No. WWTP09-GC-001".
  3. In space provided on form, describe the interpretation requested. Provide additional sheets as necessary. Include text and sketches as required in sufficient detail to describe the need for interpretation.
  4. When applicable, request for interpretation shall include Contractor's recommended resolution.

## 1.4 WRITTEN CLARIFICATIONS

### A. General:



1. Written clarifications, when required, will be initiated and issued by Engineer.
  2. Written clarifications do not change the Contract Price or Contract Times, and do not alter the Contract Documents.
  3. Written clarifications will be issued as correspondence or using clarification notice form acceptable to Engineer, with additional information as required.
- B. Procedure.
1. Engineer's written clarifications will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section.
  2. Each written clarification will be distributed to:
    - a. Contractor.
    - b. Owner.
    - c. Resident Project Representative (RPR).
    - d. Engineer.
  3. If Contractor desires to appeal Engineer's interpretation or clarification, comply with the appeals procedure set forth in the General Conditions, as may be modified by the Supplementary Conditions.
  4. Written Clarifications that One or Both Parties Believes Entails a Change to the Contract:
    - a. If Contractor or Owner believe that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of Engineer's written clarification, so advise Engineer in writing before proceeding with the Work associated with the written clarification.
    - b. If, after this initial communication, either Owner or Contractor believes that change in the Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.
  5. If Engineer's written clarification is unclear, prepare and transmit a request for interpretation in accordance with the Contract Documents.

## **1.5 MINOR CHANGES IN THE WORK AND FIELD ORDERS**

- A. General:
1. Field Orders, when required, will be initiated and issued by Engineer.
  2. Field Orders authorize minor changes in the Work but do not change the Contract Price or Contract Times.
  3. Field Orders will be in the form of Engineers Joint Contract Documents Committee document EJCDC C-942, "Field Order".
  4. Engineer will maintain a log of Field Orders issued. Copy of Engineer's log of Field Orders will be transmitted to Contractor or Owner upon request.
- B. Procedure:
1. Field Orders will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Field Order will include a separate letter of transmittal.
  2. Each Field Order will be distributed to the following:
    - a. Contractor.
    - b. Owner.
    - c. Resident Project Representative (RPR).
    - d. Engineer.
  3. Field Orders that One or Both Parties Believes Entails a Change to the Contract Price or Contract Times:
    - a. If Contractor or Owner believes that a change in the Contract Price or Contract Times or other change to the Contract is required as a result of a Field Order, so advise Engineer in writing before proceeding with the Work associated with the Field Order.
    - b. If, after this initial communication, Contractor believes that change in Contract Price, Contract Times, both, or other relief with respect to the terms of the Contract is necessary, recourse shall be in accordance with the Contract Documents.
  4. If the Field Order is unclear, submit request for interpretation.

5. If Owner disagrees with the Field Order, Engineer may issue a revised or amended Field Order, or a Change Order or Work Change Directive may be issued.

## 1.6 WORK CHANGE DIRECTIVES

### A. General:

1. Work Change Directives, when issued, order additions, deletions, or revisions to the Work. When issued, Contractor shall promptly implement the changes ordered in the associated work Change Directive.
2. Work Change Directives do not change the Contract Price or Contract Times but are evidence that the parties to the Contract expect that the change ordered or documented by the Work Change Directive will be incorporated in subsequently issued Change Order following agreement by the parties as to the Work Change Directive's effect, if any, on the Contract Price, Contract Times, or both.
3. Work Change Directives will be in the form of EJCDC C-940, "Work Change Directive".

### B. Procedure.

1. Work Change Directives signed by Owner and Engineer will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Work Change Directive will include a separate letter of transmittal. Signed Work Change Directives will be transmitted to:
  - a. Contractor.
  - b. Owner.
  - c. Engineer.
  - d. Resident Project Representative.
  - e. Contractor: One original.
  - f. Owner: One original.
  - g. Engineer: One original.
  - h. Resident Project Representative (RPR): One copy.
2. Documentation of Costs:
  - a. Promptly following receipt of the Work Change Directive:
    - 1) Advise Engineer and Owner in writing of the anticipated quantity and types of construction equipment and machinery required or anticipated for the associated Work.
    - 2) Advise Engineer and Owner in writing of which construction equipment and machinery is owned by the Contractor or Subcontractor and which is, or will be, rented from an equipment rental firm.
    - 3) When construction equipment and machinery is rented from a rental firm, transmit to Engineer and Owner copy of the associated rental agreements(s) pertinent to the Work ordered by the Work Change Directive.
    - 4) For all construction equipment and machinery, indicate to Engineer and Owner whether each item is required only for the Work ordered by the Work Change Directive and whether each item is being, or will be, used for other Work on the Project or other projects for Owner.
    - 5) Advise Engineer and Owner in writing of information on anticipated temporary materials (including items such as temporary support of excavations, scaffolding, temporary barriers, temporary plates covering excavations, and other temporary materials) to the same extent as that required for construction equipment and machinery.
  - b. When basis of payment for Work ordered under a Work Change Directive will be paid as Cost of the Work plus a fee, or when otherwise required by Engineer, document for the Work performed under each separate Work Change Directive, for each day, the following:
    - 1) Number and labor classifications of workers employed and hours worked each day on the Work ordered via the Work Change Directive.

- 2) Construction equipment used, including manufacturer, model, and year of manufacture, and number of hours such equipment was onsite and used each day for the Work under the Work Change Directive. Indicate where the equipment was used for other Work under the Contract and idle time.
  - 3) Temporary materials; furnish the same information as required for construction equipment and machinery. Where rental costs of such items approaches the purchase cost of such item, or when otherwise requested by Engineer, furnish evidence, satisfactory to Engineer, of the purchase price of such temporary materials.
  - 4) Consumables and similar materials used.
  - 5) Suppliers' receipts, bills, or invoices for and descriptions of materials and equipment incorporated into the Work.
  - 6) Invoices and labor and equipment breakdowns for Subcontractors.
  - 7) Other information required by Owner or Engineer.
  - 8) Transmit such documentation as a Change Proposal promptly after such documentation is available to Contractor. Actively pursue Subcontractors and Suppliers for required documentation to promptly furnish required documentation to Engineer.
- c. Separately track and document Work performed in accordance with each Work Change Directive and Work performed under stipulated price methods of compensation (including lump sums and Unit Price Work).
  - d. Submit such information in a format acceptable to Engineer.
3. Documentation of Time:
    - a. General:
      - 1) Contractor will be entitled to change of Contract Times Work ordered by a Work Change Directive in accordance with the requirements of the General Conditions, as may be modified by the Supplementary Conditions.
      - 2) Contractor will be entitled to a change in Contract Times only when the Work ordered by the Work Change Directive is implemented promptly and affects the Contractor's ability to comply with the Contract Times.
    - b. Requirement Documentation: Submit the following as part of the Change Proposal documenting price-related impact of the Work ordered by the Work Change Directive:
      - 1) Statement on whether the subject Work affected Contractor's ability to comply with the Contract Times.
      - 2) If Contractor's ability to comply with the Contract Times was so affected, indicate the effect on each of the relevant Contract Times.
      - 3) Document that Contractor acted promptly and properly upon receipt of the Work Change Directive to promptly implement the Work ordered thereby.
      - 4) Time impact analysis for the affected Work, in accordance with Section 01 32 16 - Construction Progress Schedule.
      - 5) Other time-related documentation required by Engineer.

## 1.7 PROPOSAL REQUESTS

### A. General:

1. Proposal Requests may be initiated by Engineer or Owner.
2. Proposal Requests are for requesting the effect on the Contract Price and the Contract Times and other information relative to contemplated changes in the Work. Proposal Requests do not authorize changes or variations in the Work, and do not change the Contract Price or Contract Times or terms of the Contract.
3. Proposal Requests will be furnished using the "Proposal Request" form included with this Specifications section.

### B. Procedure:

1. Proposal Requests will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Section. Each Proposal Requests will include a separate letter of transmittal.
2. Each signed Proposal Request will be transmitted to the following:
  - a. Contractor.
  - b. Owner.
  - c. Resident Project Representative (RPR).
  - d. Engineer.
3. Transmit request for interpretation to obtain clarification of conflicts, errors, ambiguities, and discrepancies in Proposal Request.
4. Upon receipt of Proposal Request, Contractor shall prepare and transmit to Engineer a Change Proposal, in accordance with the Contract Documents, for the proposed Work described in the Proposal Request.

## **1.8 CHANGE PROPOSALS**

### **A. General:**

1. Prepare and transmit written Change Proposal to Engineer in response to each Proposal Request; or when Contractor believes a change in the Contract Price, Contract Times, both, or other change to the terms of the Contract is required; or to appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract.

### **B. Procedure:**

1. Prepare and transmit Change Proposals within time limits indicated in the General Conditions, as may be modified by the Supplementary Conditions.
2. Submit only one Change Proposal for each change issue, unless Engineer requires additional information or clarification. Do not submit repeated Change Proposals for the same change issue. Rather, when Contractor is dissatisfied with Engineer's decision on a Change Proposal, recourse is set forth in the General Conditions, as may be modified by the Supplementary Conditions, and elsewhere in this Article.
3. Transmit Change Proposals in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Include with each Change Proposal all required supporting documentation and a separate letter of transmittal.
4. Engineer's Review and Requests for Additional Information:
  - a. Engineer will review and act on each Change Proposal in accordance with, and within the time limits indicated in, the General Conditions, as may be modified by the Supplementary Conditions.
  - b. When, Engineer requests additional information to render a decision, submit required information within five days of receipt of Engineer's request, unless Engineer allows more time. Submit the required information via correspondence that refers to the specific Change Proposal number.
  - c. Owner shall transmit to Engineer such comments, if any, that Owner has on the Change Proposal, within 10 days of Owner's receipt of the Change Proposal.
  - d. Engineer will render a written decision on the Change Proposal or take other action in accordance with the General Conditions, as may be modified by the Supplementary Conditions.
  - e. Engineer's response to Change Proposals will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section, the General Conditions, and the Supplementary Conditions.
5. Engineer's response to each Change Proposal will be distributed to:
  - a. Contractor.
  - b. Owner.
  - c. Resident Project Representative (RPR).

- d. Engineer.
  - 6. If Change Proposal is recommended for approval by Engineer and is approved by Owner, a Change Order will be issued or, when applicable, an appropriate use of an allowance (already included in the Contract Price) will be authorized by Owner.
  - 7. If parties do not agree on terms for the change, Owner or Contractor may file a Claim against the other, in accordance with the General Conditions, as may be modified by the Supplementary Conditions.
- C. Preparation of Change Proposals:
- 1. Each Change Proposal shall be submitted on the “Change Proposal” form included with this Specifications section, or other form acceptable to Engineer.
  - 2. Number each Change Proposal as follows: Numbering system shall be the Contract number and designation followed by a hyphen and three-digit sequential number. Example: First Change Proposal for the general contract for project named “Contract No. 8” would be, “Change Proposal No. 8-GC-001”.
  - 3. In space provided on Change Proposal form:
    - a. Describe scope of each proposed change. Include text and sketches on additional sheets as required to provide detail sufficient for Engineer’s review and response. If a change item is submitted in response to Proposal Request, write in as scope, “In accordance with Proposal Request No.” followed by the Proposal Request number. Submit written clarifications, if any, to scope of change.
    - b. Submit justification for each proposed change. If change is in response to proposal request, write in as justification, “In accordance with Proposal Request No.” followed by the Proposal Request number.
    - c. Indicate the total change in the Contract Price and Contract Times for each separate change item included in the Change Proposal.
  - 4. Proposed Effect on Contract Price: Unless otherwise directed by Engineer, attach to the Change Proposal detailed breakdowns of pricing (Contractor’s cost and Contractor’s fee) including:
    - a. List of Work tasks to accomplish the change.
    - b. For each task, labor cost breakdown including labor classification, total hours per labor classification, and hourly cost rate for each labor classification. Where overtime is included, indicate the overtime hours, labor classifications, and associated overhead rates.
    - c. Construction equipment and machinery to be used, including manufacturer, model, and year of manufacture, and number of hours for each. Indicate whether the construction equipment or machinery is owned by Contractor, Subcontractor, or leased from a rental firm; if leased, include with the Change Proposal a copy of the rental agreement. Indicate whether the construction equipment and machinery is already onsite and used for other activities, or whether it is required solely for the Work in the contemplated change. Indicate overtime hours budgeted, if any, and the associated cost rate for overtime compared with the straight-time rate.
    - d. Indicate temporary materials required, including description of extent, scope, and quality, and associated cost. Temporary materials include items such as temporary sheeting for support of excavations, scaffolding, temporary plates to cover open excavations, temporary barriers, and other temporary items. Indicate ownership or source of such items. Include copy of rental agreement if rented from a third-party rental firm in which neither Contractor nor any Subcontractor has a financial interest. Indicate intended duration of use for such items and purchase cost of such items.
    - e. Detailed breakdown of cost of materials and equipment to be incorporated into the Work, including quantities, unit costs, and total cost, with Supplier’s written quotations. When requested by Engineer, submit quotes by multiple prospective Suppliers.
    - f. Breakdowns of each Subcontractors’ pricing, including labor, construction equipment and machinery, temporary materials, and materials and equipment incorporated into the

- Work, other costs, and Subcontractor fees (e.g., overhead and profit). Breakdown of Subcontractors' pricing shall be the same level of detail as that for Contractor.
  - g. Breakdown of other costs eligible, in accordance with the General Conditions and the Supplementary Conditions under "Cost of the Work" provisions.
  - h. Other information required by Engineer.
  - i. Contractor's fees (overhead and profit) applied to eligible Contractor costs and eligible Subcontractor costs.
5. Proposed Effect on Contract Times: Unless otherwise directed by Engineer, attach to the Change Proposal detailed information substantiating the proposed change in Contract Times, including:
    - a. Time impact analysis required by Section 01 32 16 - Construction Progress Schedule.
    - b. Indication of whether the Work associated with the contemplated change will affect Contractor's ability to comply with the Contract Times.
    - c. Other time-related information requested by Engineer.

## **1.9 CHANGE ORDERS**

### **A. General:**

1. Change Orders will be recommended by Engineer (when required by the General Conditions) and will be signed by Owner and Contractor (subject to the General Conditions related to a party withholding its signature from a contractually-required Change Order), to authorize additions, deletions, or revisions to the Work, changes to the Contract Price, changes in the or Contract Times, changes to the terms of the Contract, or a combination thereof.
2. Change Orders will be in the form of EJCDC C-941, "Change Order".

### **B. Procedure.**

1. Change Orders for signature by Contractor will be transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols, and requirements of this Specifications section. Each Change Order will include a separate letter of transmittal. Contractor shall print three originals of Change Order for Contractor's signature.
2. Contractor shall promptly sign each original Change Order and, within five days of receipt, deliver all originals to Engineer.
3. Engineer will sign each original Change Order and forward them to Owner.
4. After approval and signature by Owner, original Change Orders will be distributed as indicated below.
5. Original, signed Change Orders will be distributed as follows:
  - a. Contractor: One original.
  - b. Owner: One original.
  - c. Engineer: One original.
  - d. Resident Project Representative (RPR): One copy.
6. Upon Contractor's receipt of the fully-signed Change Order, promptly perform the Work ordered thereby in accordance with the Contract Documents and the Progress Schedule accepted by Engineer.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 ATTACHMENTS**

- A. The forms listed below and bound following this Specifications section's "End of Section" designation, are part of this Specifications section:
  1. Request for Interpretation form (one page).
  2. Proposal Request form (one page).
  3. Change Proposal form (one page).



**REQUEST FOR INTERPRETATION**

Owner: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contractor: \_\_\_\_\_ RFI No. \_\_\_\_\_

Date Transmitted: \_\_\_\_\_ Date Received: \_\_\_\_\_

Date Response Requested: \_\_\_\_\_ Date Response Transmitted: \_\_\_\_\_

Subject: \_\_\_\_\_

Specification Section and Paragraph: \_\_\_\_\_

Drawing References: \_\_\_\_\_

---

**INTERPRETATION REQUESTED:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

**ENGINEER'S RESPONSE:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## PROPOSAL REQUEST

Owner: \_\_\_\_\_

Project Name: \_\_\_\_\_

Proposal Request No.: \_\_\_\_\_ Date: \_\_\_\_\_

Contract Name and No.: \_\_\_\_\_

Contractor: \_\_\_\_\_

Other Contracts Involved in Proposed Change: \_\_\_\_\_

**TO CONTRACTOR:** Please submit a complete Change Proposal for the proposed modifications described below. If the associated Change Proposal is approved, a Change Order or allowance authorization will be issued to authorize adjustment so the Contract. This Proposal Request is not a Change Order, Work Change Directive, Field Order, or an authorization to proceed with the proposed Work described below.

### SCOPE OF PROPOSED CHANGE(S) IN THE WORK:

1. [Title 1]:
2. [Title 2]:
3. [Title 3]:

Attachments to this Proposal Request:

1. [None].

Proposal requested by: \_\_\_\_\_  
HDR (Engineer)

Signature of Requestor: \_\_\_\_\_

## CHANGE PROPOSAL

Owner: \_\_\_\_\_

Project Name: \_\_\_\_\_

Change Proposal No.: \_\_\_\_\_ Date: \_\_\_\_\_

Submitted in Response to Proposal No.: \_\_\_\_\_

Contractor Name and No.: \_\_\_\_\_

Contractor: \_\_\_\_\_

Subject: \_\_\_\_\_

The following changes to the Contract are proposed:

**SCOPE OF PROPOSED CHANGE TO CONTRACT:** *(attach supporting information as required)*

1. [Title 1]:
2. [Title 2]:

**JUSTIFICATION:**

1. [Title 1]:
2. [Title 2]:

**PROPOSED CHANGES IN CONTRACT PRICE AND CONTRACT TIMES:**

We propose that the Contract Price and Contract Times be changed as follows:

*For Contract Price, attach detailed cost breakdowns for Contractor and Subcontractors, Supplier quotations, and other information required.*

*For the Contract Times, state increase, decrease, or no change to Contract Times for Substantial Completion, readiness for final payment, and Milestones, if any. If increase or decrease, state specific number of days for changes to the Contract Times. Submit supporting data, including time impact analysis for the Progress Schedule.*

Description	Amount	Contract Times (days)	
		Substantial	Final
1. [Title 1]	\$0.00	0	0
2. [Title 2]	\$0.00	0	0
<b>Total This Change Proposal</b>	<b>\$0.00</b>	<b>0</b>	<b>0</b>

Changes to Milestones, if any: \_\_\_\_\_

Contractor represents that supporting data attached to this Change Proposal are accurate and complete. The requested time or price adjustment indicated in this Change Proposal is the entire adjustment to which Contractor believes it is entitled as a result of the proposed change(s) indicated herein.

Change Proposal by: \_\_\_\_\_

Signature of Proposer: \_\_\_\_\_

**SECTION 01 26 13**  
**REQUESTS FOR INFORMATION (RFI)**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section defines the process for handling Requests for Information (RFI).
- B. RFIs are intended to provide clarifications and interpretations of the Contract Documents and maintain progress of Work.
- C. RFIs are not intended for general communication, requesting substitutions, requesting proposed changes, resolution of nonconforming work, or coordination between contractors.

**1.2 REQUIREMENTS OF THE CONTRACT DOCUMENTS:**

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer 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.
  - 1. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- 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.
  - 1. 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 give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation.
  - 1. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in the General Conditions.

**1.3 RFI SUBMITTAL PROCEDURE**

- A. All RFIs shall be submitted on the form included with this Section, or on mutually agreeable forms.
- B. When needed, the RFI shall include backup information to clarify the request.
  - 1. Backup information can include verified field measurements, quantities, dimensions, photos showing existing conditions, and any other information that will assist the Engineer or Owner in reviewing and responding to the RFI.
- C. Within ten (10) working days of receipt of RFI, Engineer will return a response to the RFI, request additional information, or will provide a schedule of when a response will be issued.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 REQUESTS FOR INFORMATION**

- A. Review of Contract Documents and Field Conditions:
1. Before starting each portion of Work, carefully study and compare drawings, specifications and other contract documents, coordination drawings, shop drawings, prior correspondence or documentation relative to that portion of Work, and any other information furnished by Engineer and Owner.
  2. Evaluate field conditions and take field measurements related to that portion of Work.
  3. Any inconsistencies discovered in the above review of the contract documents and field conditions should be submitted to the Engineer in an RFI.
- B. Contractor's Responsibilities:
1. When interpretation, clarification or explanation of portion of Construction Documents is needed by Contractor or its Subcontractor, Vendor or Supplier, the request shall be processed through the Contractor.
    - a. Review the RFI for completeness, quality, proper referencing drawings, specification or other contract documents.
    - b. When submitting RFI's generated from subcontractors, suppliers, and others, make every attempt to validate, resolve or respond to RFI by thoroughly researching and reviewing Contract Documents and field conditions before transmitting to the Engineer.
    - c. If the RFI is not clear, concise, complete and easily understood, do not submit the RFI to Engineer for response.
  2. Follow these procedures in developing an RFI:
    - a. List relevant Contract Documents when seeking information being requested.
      - 1) Reference all applicable Contract Drawings by sheet number.
      - 2) Specifications by section and paragraph number
      - 3) Reference any other relevant documents.
    - b. Clearly state any additional information needed so request can be fully understood, including sketches, photos or other reference material.
    - c. Suggest any reasonable solutions and recommendations which will aid in determining a solution or response.
    - d. Any critical RFI's requiring a rapid response shall clearly indicate such with an explanation as to why RFI is critical.
    - e. Priority for responses shall be indicated when multiple RFI's are submitted within short period of time.
  3. A response to RFI shall not be considered a notice to proceed with a change that may revise the Contract Sum or Contract Time, unless authorized by Owner in writing.
  4. If response to RFI is determined incomplete, it shall be resubmitted with reason response is unacceptable and any necessary additional information within five (5) days of time of receipt of response to RFI.
- C. RFI Submittal Numbering:
1. RFI's shall be assigned unique numbers in sequential order (1, 2, 3, 4, etc.).
  2. A resubmitted RFI or a previously answered RFI requiring revising or further clarification shall be submitted using original RFI number proceeded by ".1 IN to indicate revision one of RFI (i.e.: RFI No. 34.1 for revision 1 to RFI No. 34).
- D. Invalid RFI:
1. Engineer may return RFI without response for following reasons:
    - a. Request is unclear or incomplete.
    - b. Request was answered in a previous RFI.
    - c. Requested information is readily available in the Construction Documents.
    - d. Request is related to construction means, methods or techniques.

- e. Request is related to health or safety measures.
  - f. Request is due to Contractor's lack of adequate coordination.
  - g. Issue relates to coordination between Subcontractors.
  - h. Request is a "Substitution Request."
  - i. Request is a "Contractor Proposed Change."
  - j. Request is due to non-conformance.
2. Should the invalid RFIs continue to be provided, the Owner may deduct the cost of the Engineer's time to process, review and return the RFI's.

**END OF SECTION**



EXHIBIT A

Request for Information Form

Contractor's RFI No. \_\_\_\_\_ Engineer's RFI No. \_\_\_\_\_

Contract: \_\_\_\_\_

Contractor: \_\_\_\_\_

Owner: \_\_\_\_\_ Owner's Contract No. \_\_\_\_\_

Engineer **HDR Engineering, Inc.** \_\_\_\_\_ Engineer's Contract No. \_\_\_\_\_

THIS REQUEST BY: \_\_\_\_\_ cc to: \_\_\_\_\_  
(Name of the Contractor's Representative)

REFERENCE: DIVISION \_\_\_\_\_ SECTION \_\_\_\_\_ PLAN SHEET NO. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENTS \_\_\_\_\_

INTERPRETATION BY: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_, 20\_\_\_\_  
(Name of the Engineer's Representative)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENTS \_\_\_\_\_

The General Conditions (GCs) specify that once the Engineer provides a response to a Contractor's RFI, that determination shall be final and binding on the Contractor unless the Contractor delivers to the Owner written notice of a change in the work within a certain period of time of receipt of that determination. See the GCs for further clarification.

cc to: \_\_\_\_\_  
\_\_\_\_\_

**SECTION 01 29 76**  
**PROGRESS PAYMENT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Administrative and procedural requirements for Contractor's progress payments.
- B. Scope:
  - 1. Contractor's requests for payment shall be in accordance with the Agreement, General Conditions and Supplementary Conditions, and the Specifications.
  - 2. Form: Applications for Payment shall be the Engineers Joint Contract Documents Committee (EJCDC) document EJCDC C-620, "Contractor's Application for Payment" (2018 edition or later) or other form acceptable to the Owner and Engineer.

**1.2 CONTENT AND PROCEDURE FOR REQUESTING PROGRESS PAYMENTS**

- A. Procedure:
  - 1. Review with Resident Project Representative (RPR) quantities and the Work proposed for inclusion in each progress payment request. Application for Payment shall cover only the Work and quantities recommended by the RPR.
  - 2. Contractor will review with Engineer or RPR the status of Project record documents, in connection with Engineer's review of each Application for Payment. Failure to maintain record document current will be cause for Engineer to recommend a reduction in payment for record documents and will entitle Owner to set-offs in accordance with the Contract Documents.
  - 3. Submit to Engineer 3 printed originals, each with Contractor's signature, of each complete Application for Payment and other documents to accompany the Application for Payment.
  - 4. Engineer will act on request for payment in accordance with the General Conditions and Supplementary Conditions.
- B. Content: Each request for payment shall include:
  - 1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Schedule of Values.
  - 2. Documentation for Stored Materials and Equipment:
    - a. For materials and equipment not incorporated in the Work but suitably stored, submit documentation in accordance with the General Conditions and Supplementary Conditions.
    - b. UCC-1 Financial Statement:
      - 1) For each lot or delivery of stored materials and equipment for which payment is requested prior to installation of the item(s) at the Site, complete UCC-1, "Financial Statement" form. On UCC-1 form, indicate Owner as "security party"; indicate Supplier as "debtor" when stored item(s) are in Supplier's custody, and indicate Contractor as "debtor" when stored item(s) are in Contractor's custody; and clearly indicate in detail all stored item(s) included in the filing as "collateral" on the form. Include attachments to the form when necessary to clearly and fully indicate in detail the associated "collateral".
      - 2) File completed UCC-1 form with the secretary of state in the state where the subject item(s) are stored.
      - 3) Include with Application for Payment the completed UCC-1 form together with evidence of filing with the required state(s). Submit UCC-1 form and related documentation once for each lot or delivery of stored items.

- c. Photographs of the stored items at the storage location. Submit photographs sufficient to clearly indicate each stored item, clearly showing marking of Owner's property in accordance with Paragraph 1.3.C of this section. For each month that such item(s) are stored, take and submit monthly new photographs of each stored item, with date-stamp on each photograph.
  - d. Legibly indicate on invoice or bill of sale the specific stored materials or equipment included in the payment request and corresponding bid/payment item number for each and the Supplier price for each item.
3. Listing of Subcontractors and Suppliers:
- a. In accordance with the General Conditions, submit not less than monthly updated listing of all Subcontractors and Suppliers known to Contractor, whether or not such entities have a contract directly with Contractor.
  - b. Submit complete information using the form attached to this Specifications section.
4. Partial Release or Reduction of Retainage:
- a. For each Application for Payment where Contractor requests partial release or reduction of retainage in any amount (other than request for final payment), submit with associated progress payment request consent of surety to partial release or reduction of retainage, duly completed by Contractor and surety.
  - b. Acceptable form includes AIA G707A, "Consent of Surety to Reduction in or Partial Release of Retainage" (1994 or later edition), or other form acceptable to Owner.
  - c. For payment requests that include reduction in or payment of retainage in an amount greater than that required by the Contract Documents, obtain Owner's concurrence for partial release or reduction in retainage prior to submitting such Application for Payment.
- C. Final Payment:
- 1. Requirements for request for final payment are in the General Conditions, as may be modified by the Supplementary Conditions.

### **1.3 ADDITIONAL PROCEDURES FOR PAYMENT FOR STORED MATERIALS AND EQUIPMENT**

- A. Observation of Stored Materials and Equipment as Condition Precedent to Eligibility for Payment:
- 1. General:
    - a. Prior to materials or equipment suitably stored but not yet incorporated into the Work can be eligible for payment, Engineer or Resident Project Representative (RPR) shall visit the storage location and verify the extent, condition, and storage environment of the stored items.
    - b. When the same material or equipment item is stored for more than two months, such visits to storage location shall be not less than once every two months.
  - 2. Cost Responsibility for Observations:
    - a. When storage location is less than 20 miles from the Site or less than 20 miles from Engineer's office, Contractor is not responsible for reimbursing Owner for cost of Engineer's time and expenses for observing stored materials and equipment.
    - b. When storage location is more than 20 miles from the Site and more than 20 miles from Engineer's office, Contractor shall reimburse Owner, via a set-off under the Contract Documents, for reasonable cost of Engineer's time and expenses, including travel time, to visit the storage location and observe the stored materials and equipment.
- B. Other Requirements for Stored Items: Regardless of storage location, perform the following for stored materials and equipment for which payment is sought:
- 1. Clearly mark each stored container, crate, or item as follows: "Property of \_\_\_\_\_" using permanent marking. Such marking shall not blemish or deface the finish of items that will be exposed to view after installation at the Site.



**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION**

**3.1 ATTACHMENTS**

- A. The forms listed below, following this Specifications section's "End of Section" designation, are part of this Specifications section:
  - 1. List of Subcontractors and Suppliers form (two pages).

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**SECTION 01 31 13**  
**PROJECT COORDINATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. General requirements for:
    - a. Project coordination when the Project is implemented using a single prime construction Contract.
    - b. Coordination meetings.
    - c. Coordination drawings and layout drawings.
- B. Scope:
  - 1. Contractor shall coordinate the Work, whether performed by Contractor's employees or by Subcontractors, Suppliers, or others for whom Contractor is responsible, to provide Work in accordance with the Contract Documents.
  - 2. Coordinate the Work with testing entities and inspectors (whether hired by Contractor, Owner, or others) employed on the Project, forces of Owner and facility manager (if other than Owner), and other contractors retained by Owner or facility manager, and other entities with which the Work needs to be coordinated.
  - 3. Requirements for preconstruction meetings are in the General Conditions (as may be modified by the Supplementary Conditions) and Section 01 31 19 - Project Meetings.
  - 4. Requirements for construction progress meetings are in Section 01 31 19 - Project Meetings.
- C. Related Requirements:
  - 1. Include, but are not necessarily limited to, the following:
    - a. Section 01 11 00 - Summary of Work.
    - b. Section 01 31 19 - Project Meetings.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordination – General:
    - a. In accordance with the General Conditions as may be modified by the Supplementary Conditions, and Section 01 11 00 - Summary of Work, Contractor shall coordinate the Work with, and cooperate with, other contractors, utility owners and their contractors, owners of transportation facilities and their contractors, Owner's and facility manager's workers at the Site, and other entities working at or adjacent to the Site.
  - 2. Advise other contractors (if any) of schedule for the Work to allow other contractors sufficient time to perform their work that must be performed prior to the Work. Coordinate and communicate with other contractors and other entities when the Work must be performed prior to the work of others and make good-faith efforts to avoid delaying work of others.
  - 3. Coordination, Inspection, and Observation to Ensure Quality:
    - a. Contractor shall continuously inspect the Work throughout the Project to ensure that the Work complies with the Contract Documents.
    - b. Inspect (including testing, where required or necessary) substrates and surfaces on which the Work will be constructed, applied, adhered, or attached, to ensure substrate and surface conditions are appropriate for providing Work in accordance with the Contract Documents.
  - 4. Contractor is not responsible for, or liable for, damage or loss unless damage or loss resulted from action, inaction, or negligence of Contractor, or Subcontractor(s), Supplier(s), or other entity for whom Contractor is responsible. This provision does not mitigate or reduce Contractor's responsibility for security for the Work, in accordance with the Contract.

- B. Coordination Meetings:
1. Contractor's Coordination Meetings:
    - a. Schedule, attend, chair, and actively participate in coordination meetings deemed appropriate by Contractor for purposes of coordinating the Work of Contractor's employees, Subcontractors, Suppliers, and others for whom Contractor is responsible.
    - b. Frequency, location, date, time, and duration of Contractor's coordination meetings are at Contractor's discretion. Record and distribute to attendees and other members of Contractor's team a record of topics discussed, decisions made, and other relevant matters at Contractor's coordination meetings.
    - c. Engineer, Resident Project Representative (if any), Owner, and Owner's Site Representative (if any) will not attend Contractor's coordination meetings.
  2. Coordination Meetings with Other Contractors:
    - a. When Section 01 11 00 - Summary of Work, indicates that others, whether or not under Owner's control, will be performing work at or adjacent to the Site, coordination meetings between the separate contractors may be necessary. When such meetings are deemed necessary by Owner, either Owner or Engineer will advise Contractor in writing of the location, date, time, duration, and frequency of such coordination meetings.
    - b. Such coordination meetings, when held, are anticipated to be once per month or less-often, and held either at the Site or in reasonable proximity to the Site. During periods when increased coordination among the separate projects is necessary, such as when adjacent contractors are in close proximity to each other, the potential exists that more-frequent coordination meetings may be necessary, although such increased frequency is not anticipated to be for extended periods.
    - c. Contractor's project manager and site superintendent shall attend such coordination meetings required by Owner.
    - d. Purpose of such coordination meetings will be to discuss scheduling and coordination of work by separate contractors and others as appropriate, sharing of space at the Site, and other coordination matters.
    - e. Owner and others deemed appropriate by Owner will attend such coordination meetings.
    - f. Owner or others for whom Owner is responsible will chair the meetings and prepare and distribute to participants a record of the topics discussed and decisions made at such meetings.
- C. Coordination Drawings and Layout Drawings:
1. Maintain sufficient, competent personnel; drafting implements; computer-aided drafting/design (CAD) or building information modeling (BIM) equipment, software, systems; and supplies at Contractor's office and at the Site (as deemed appropriate by Contractor) for preparing layout drawings and coordination drawings.
  2. With the Contract Documents and Shop Drawings, use coordination drawings and layout drawings for coordinating the Work of various trades.
  3. Where such coordination drawings or layout drawings are to be prepared by Subcontractors such as structural-architectural, fire suppression, plumbing, HVAC, civil-site, process-mechanical, or other Subcontractors, ensure that each such Subcontractor maintains required personnel, implements, equipment, and systems at Subcontractor's office and at the Site (as deemed appropriate by Contractor).

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION - (NOT USED)**

### **END OF SECTION**



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**SECTION 01 31 19**  
**PROJECT MEETINGS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Preconstruction, progress and other project meetings.
- B. Related Sections include but are not necessarily limited to:

**1.2 PRECONSTRUCTION MEETING**

- A. Meet with the Owner and Engineer for a pre-construction conference at a time mutually agreed upon after the contract is awarded, but before any work is performed,
- B. The Engineer will schedule a meeting of the Owner, Contractor, Contractor's Subcontractors, and their respective representatives.
  - 1. The purpose of the meeting will be to clarify construction contract administration procedures, to establish lines of authority and communication and identify duties and responsibilities of the parties.
- C. The Engineer will schedule the pre-construction conference after receipt of the Contractor's draft proposed schedule.
- D. Agenda:
  - 1. Procedural and Administrative:
    - a. Personnel and Teams:
      - 1) Designation of roles and personnel.
      - 2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
      - 3) Subcontractors and Suppliers in attendance.
      - 4) Authorities having jurisdiction.
    - b. Procedures for communications and correspondence, including electronic communication protocols.
    - c. Copies of the Contract Documents and availability.
    - d. The Work and Scheduling:
      - 1) General scope of the Work.
      - 2) Contract Times, including Milestones (if any).
      - 3) Phasing and sequencing.
      - 4) Preliminary Progress Schedule.
      - 5) Critical path activities.
    - e. Safety:
      - 1) Responsibility for safety.
      - 2) Contractor's safety representative.
      - 3) Emergency procedures and accident reporting.
      - 4) Emergency contact information.
      - 5) Confined space entry permits.
      - 6) Hazardous materials communication program.
      - 7) Impact of Project on public safety.
    - f. Permits.
    - g. Review of insurance requirements and insurance claims.
    - h. Coordination:
      - 1) Coordination of Subcontractors and Suppliers.
      - 2) Construction coordinator (for projects with multiple prime construction contracts).
      - 3) Coordination with Owner's operations.

- 4) Progress meetings – schedule and frequency.
- 5) Coordination meetings.
- i. Submittals:
  - 1) Current critical Submittals:
    - a) Preliminary Schedule of Submittals.
    - b) Other schedules (Progress Schedule, Schedule of Values).
    - c) Preconstruction photographic documentation.
    - d) List of proposed Subcontractors and Suppliers.
    - e) List of emergency contact information.
    - f) Notice of elements of Contractor’s safety program with which Owner and Engineer are to comply.
    - g) Site use plan.
    - h) Form of Contractor’s site superintendent’s daily reports.
  - 2) Work not eligible for payment without approved or accepted Submittals (as applicable).
  - 3) Submittal procedures.
    - a) Compliance with accepted Schedule of Submittals.
    - b) Actions required of Contractor prior to furnishing Shop Drawings and other Submittals
    - c) Contractor’s Submittal approval stamp required; Contractor’s coordination of Submittals.
    - d) Furnishing of Submittals.
    - e) Submittal types and meaning of Engineer’s action on each
    - f) Resubmittals—responsibility for, limitations on quantity.
  - 4) Identification of initial, critical Shop Drawings and product data.
  - 5) Construction photographic documentation.
- j. Substitutes and "Or-Equals":
  - 1) Product options.
  - 2) Procedures for proposing "or-equals".
  - 3) Procedures for proposing substitutes.
- k. Contract Modification Procedures:
  - 1) Requests for interpretation.
  - 2) Written clarifications.
  - 3) Field Orders.
  - 4) Proposal Requests.
  - 5) Change Proposals.
  - 6) Work Change Directives.
  - 7) Change Orders.
  - 8) Differing site conditions or discovery of Hazardous Environmental Condition.
  - 9) Substantiating and documenting Change Proposals and Claims.
  - 10) Claims.
- l. Progress Payment:
  - 1) Owner’s Project financing and funding, as applicable.
  - 2) Owner’s tax-exempt status.
  - 3) Preliminary Schedule of Values
  - 4) Procedures for measuring for payment (Unit Price Work).
  - 5) Retainage.
  - 6) Progress payment procedures; documents to accompany Applications for Payment.
  - 7) Payment for stored items not yet installed.
  - 8) Date of Owner’s payments; payment is due.
- m. Subcontractors and Suppliers:
  - 1) List of proposed Subcontractors and Suppliers; monthly updates.
  - 2) Coordination and management.
  - 3) Subcontracts and purchase orders.
  - 4) Diversity Business Enterprises (MBE, WBE, DBE, VBE, etc.) – when applicable:



- a) Goals.
  - b) Progress reports.
  - c) Requests for waivers.
- n. Testing and inspections:
  - 1) Owner-hired and contractor-hired.
  - 2) Identification of Owner-hired testing entity and special inspectors.
  - 3) Responsibility for advising testing entity and special inspectors of need for services.
  - 4) Results of code-required special inspections and tests.
  - 5) Prompt remedy of apparent defects.
  - 6) Notice of defective Work.
  - 7) Remedy of defective Work.
  - 8) Defective Work not eligible for payment.
  - 9) Covering up defective Work.
  - 10) Cost responsibility for defective Work and retesting/re-inspection.
- o. Disposal of demolition materials.
- p. Record documents.
- q. Preliminary discussion of Contract closeout:
  - 1) Procedures for Substantial Completion.
  - 2) Partial utilization procedures; property insurance.
  - 3) Contract closeout requirements.
  - 4) Correction period; duration of Contractor's general warranty and guarantee.
  - 5) Duration of bonds and insurance.
- 2. Authorities Having Jurisdiction (if not covered in a separate meeting):
  - a. Municipal licenses.
  - b. Municipal permits required.
    - 1) Permits required and status.
    - 2) Inspections for building code official.
    - 3) Code-required special inspections and tests (if not covered in Administrative and Procedures part of meeting).
  - c. Right-of-way work permits; status of occupancy permit(s).
  - d. Environmental permits:
    - 1) Spill prevention control and countermeasures plan (40 CFR 112).
- 3. Site Mobilization (if not covered in a separate meeting):
  - a. Working days, working hours, and overtime.
  - b. Use of Site and other areas; use of existing facilities.
  - c. Field offices, storage trailers, and staging areas.
  - d. Temporary facilities.
  - e. Temporary utilities and limitations on utility use (where applicable).
  - f. Utility company coordination (if not done as a separate meeting).
  - g. Access to Site, access roads, and parking for construction vehicles.
  - h. Traffic controls.
  - i. Temporary controls:
    - 1) Erosion and sediment control; storm water pollution prevention plans.
    - 2) Dust control and air pollution control (including emissions control).
    - 3) Water control (storm water, surface water, groundwater).
    - 4) Water pollution control; spill prevention control and countermeasures plan.
    - 5) Solid waste control.
    - 6) Pest control.
    - 7) Other temporary controls.
  - j. Security; temporary security fencing (where required).
  - k. Storage of materials and equipment to be incorporated into the Work.
  - l. Protection of the Work and property; protective barriers.
  - m. Field engineering:
    - 1) Reference points and benchmarks.

- 2) Surveys and layouts.
  - 3) Professional services for Contractor's means and methods (not delegated design).
  - 4) Contractor's site superintendent's daily records and submittal requirements.
  - n. Site maintenance during the Project:
    - 1) Progress cleaning; removal of trash and debris.
    - 2) Maintenance and cleaning of existing access roads and parking areas.
  - o. Restoration.
  - 4. Next meeting.
  - 5. Site visit, as necessary.
- E. The Engineer will compile meeting minutes from the transcribed record of the meeting and electronically distribute copies to all participants.
- F. Pre-Construction Conference Submittals:
- 1. The names and telephone numbers of Contractor's Superintendent and Office Manager.
  - 2. List of personnel authorized to sign change orders and receive progress payments.
  - 3. The name, address and telephone numbers of two or more persons employed by the Contractor who can be reached at any time of the day or night to handle emergency matters.
  - 4. A list of all subcontractors that will work on the project, a description of work they will perform, and a contact list for each subcontractor with phone numbers and address.
  - 5. A list of materials suppliers and products over \$5,000.
  - 6. A draft proposed Construction Schedule.
  - 7. Material Safety Data Sheets for all hazardous chemical products to be used by the Contractor on this project.
  - 8. Temporary Erosion and Sediment Controls Plan.
  - 9. Traffic Control Plan.

### 1.3 PROGRESS MEETINGS

- A. Bi-Weekly progress meetings will be held a location determined by the Engineer, unless otherwise arranged. Frequency of meetings is subject to change by the Owner and/or Engineer as progress is made on the Project.
- B. Attendees will include the Owner, Engineer, Contractor, subcontractors, and suppliers' representatives as may be needed, other Contractors working at the site, and other interested or affected parties.
- C. Preliminary Agenda: Be prepared to discuss in detail the topics indicated below. Revised agenda, if any, will be furnished to Contractor prior to associated progress meeting(s). Progress meeting agenda may be modified by Engineer during the Project as necessary.
- 1. Review, comment, and amendment (if necessary) of minutes of previous progress meeting.
  - 2. Review of progress since the previous progress meeting.
  - 3. Planned progress through next progress meeting.
  - 4. Review of Progress Schedule:
    - a. Review of the Contract Times; Contractor's ability to comply with Contract Times.
    - b. Identification of critical path activities.
    - c. Schedules for fabrication and delivery of materials and equipment.
    - d. Corrective measures, if necessary, including recovery schedule(s).
  - 5. Submittals:
    - a. Review status of critical Submittals.
    - b. Review revisions to Schedule of Submittals.
  - 6. Contract Modifications:
    - a. Requests for interpretation.
    - b. Written clarifications.
    - c. Field Orders.
    - d. Proposal Requests.
    - e. Change Proposals.
    - f. Work Change Directives.

- g. Change Orders.
  - h. Claims.
  - 7. Applications for progress payments:
    - a. Status and deadline for submittal.
    - b. Stored materials and equipment; observation by Engineer or RPR; documents required.
    - c. Set-offs to which Owner is entitled (as applicable).
    - d. Other matters related to progress payments.
  - 8. Problems, conflicts, and observations.
  - 9. Quality standards, testing, and inspections.
  - 10. Coordination between Project participants.
  - 11. Site management issues, including vehicular access and parking, traffic control, security, status of temporary controls and temporary utilities, site maintenance and cleaning, and other Site matters.
  - 12. Safety and protection.
  - 13. Permits.
  - 14. Construction photographic documentation.
  - 15. Record documents status.
  - 16. Completion matters (as appropriate):
    - a. Status of checkout, startup, field quality control activities.
    - b. Status of training of facility O&M personnel and O&M manuals.
    - c. Partial utilization; inspection for Substantial Completion.
    - d. Punch list status (as applicable).
    - e. Other closeout matters (if any).
  - 17. Other business.
- D. Bring a three-week look ahead schedule to each meeting, including the following items:
- 1. Work completed last week.
  - 2. Work anticipated for the next two weeks ("Look Ahead").
  - 3. Subcontractors on site the prior week.
  - 4. Subcontractors scheduled on site for the next two weeks.
  - 5. Contract document deficiencies or questions noted during prior week.
  - 6. Anything that could impede the progress of the work or affect the critical path on the project schedule.
  - 7. Corrective measures and procedures planned to regain planned schedule, cost or quality assurance, if necessary.
  - 8. Report of any accidents, and any site safety issues that need to be addressed.
- E. Other Agenda items to be discussed:
- 1. Review and revise as necessary and approve minutes of previous meetings.
  - 2. Status of submittals of equipment and shop drawings.
  - 3. Identify problems that impede planned progress.
  - 4. Other current business.
- F. Revision of Minutes:
- 1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
  - 2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
  - 3. Challenge to minutes shall be settled as priority item of "old business" at the next regularly scheduled meeting.
- G. Minutes of Meeting:
- 1. The Engineer will compile minutes of each project meeting and will furnish electronic copies to the Contractor.

#### **1.4 OTHER MEETINGS**

- A. Other meetings will be required to facilitate progress of the Work. These include, but are not limited to the following:
1. Pre-Installation Conferences:
    - a. Coordinate and schedule with Engineer for each material, product or system specified.
      - 1) Conferences to be held prior to initiating installation, but not more than two weeks before scheduled initiation of installation.
      - 2) Conferences may be combined if installation schedule of multiple components occurs within the same two week interval.
      - 3) Review manufacturers recommendations and Contract Documents Specification Sections.
  2. Facility Startup Planning and Coordination Meeting. See Section 01 75 00.

#### **PART 2 - PRODUCTS - (NOT USED)**

#### **PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

**SECTION 01 31 26**  
**ELECTRONIC COMMUNICATION PROTOCOLS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Procedures with which Users will comply regarding transmission or exchange of Electronic Documents for the Project.
- B. Related Requirements:
  - 1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, regarding transmitting Electronic Documents by Electronic Means.
  - 2. In addition to the requirements of this Specifications Section, comply with the requirements for Electronic Documents in the following Specifications:
    - a. Section 01 32 16 - Construction Progress Schedule.
    - b. Section 01 33 00 - Submittals.
    - c. Section 01 78 39 - Project Record Documents.

**1.2 DEFINITIONS**

- A. The following terms are defined for use in this Specifications Section and are indicated herein using initial capital letters. The terms have the associated meaning regardless of whether indicated in singular or plural.
  - 1. Electronic Documents Protocol (abbreviated as “EDP”): Procedures and requirements set forth in this Specifications Section for the exchange of Electronic Documents by Electronic Means.
  - 2. Project Website: An internet-based software platform, such as a website or other project management information system (PMIS) designated by Contract or mutual consent of Users as the means of exchanging Electronic Documents during the Project.
  - 3. System Infrastructure: Hardware, operating system(s) software, internet access, e-mail service and software, security software, and large-file transfer functions.
  - 4. Users: Owner, Contractor, Engineer, and others exchanging Electronic Documents on the Project in accordance with the EDP.

**1.3 ADMINISTRATIVE REQUIREMENTS.**

- A. Coordination:
  - 1. Contractor shall require all Subcontractors and Suppliers to comply with the EDP established in the Contract Documents.

**1.4 GENERAL PROVISIONS OF ELECTRONIC DOCUMENT PROTOCOL**

- A. EDP – General:
  - 1. To the fullest extent practical, Users agree to and will transmit and accept Electronic Documents transmitted by Electronic Means in accordance with the requirements of this Specifications Section. Use of the Electronic Documents and any information contained therein is subject to requirements of this Specifications Section and other provisions of the Contract Documents governing transmittal of Electronic Documents.
  - 2. Content of Electronic Documents will be the responsibility of transmitting User.
  - 3. Unless otherwise provided in: (1) the EDP, (2) elsewhere in the Contract Documents, or (3) or other agreement between two or more Users governing use of Electronic Documents, Electronic Documents exchanged in accordance with the Contract Documents may be used in the same manner as paper or other printed versions of the same documents exchanged using other than Electronic Means, subject to the same governing requirements, limitations, and restrictions set forth in the Contract Documents.

4. Except as otherwise explicitly indicated in the EDP, the terms of this EDP will be incorporated into any other agreement or subcontract between a party and a third party for a portion of the Work or Project-related services, where such third party is, either directly or indirectly, required to exchange Electronic Documents with Owner, Contractor, or Engineer. Nothing in this EDP modifies the requirements of the Contract Documents regarding communications between and among Owner, Contractor, and Engineer Subcontractors, Suppliers, consultants, and others for which each is responsible.
  5. When transmitting Electronic Documents, transmitting User makes no representations regarding long-term compatibility, usability, or readability of the items resulting from the receiving User's use of software applications or System Infrastructure differing from those established in this EDP.
  6. This EDP does not negate or mitigate any obligation: (1) in the Contract Documents to create, provide, or maintain an original paper record version of Drawings and Specifications, signed and sealed in accordance with Laws or Regulations; (2) to comply with Laws and Regulations governing signing and sealing of design documents or signing and electronic transmission of other documents; or (3) to comply with notice requirements of the General Conditions (as. May be modified by the Supplementary Conditions).
  7. Modifications to EDP:
    - a. When modifications to the EDP are necessary to address issues affecting System Infrastructure, Users shall cooperatively resolve the issues.
    - b. If resolution within a reasonable time is not achieved, Owner is empowered to require reasonable and necessary changes to the EDP consistent with the original intent of the EDP.
    - c. If such changes result in additional cost or delay to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in the Contract Price, Contract Times, or both in accordance with the Contract Documents.
- B. System Infrastructure and Systems for Exchanging Electronic Document:
1. Each User will provide System Infrastructure (as defined in this EDP) at its own cost and sufficient for complying with EDP requirements. Except for minimum standards set forth in this EDP, it is the obligation of each User to determine, for itself, such User's own System Infrastructure.
    - a. Maximum size of e-mail file attachment under this EDP is 14 megabytes (MB). Attachments larger than the maximum size indicated in this paragraph shall be exchanged via secure electronic transfer using method mutually acceptable to Owner, Engineer, and Contractor.
    - b. Each entity transmitting or receiving Electronic Documents has full responsibility for its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, and otherwise enabling its System Infrastructure for use in accordance with this EDP.
    - c. Each User will provide its own printing facilities and will be responsible for its own costs of printing Electronic Documents.
  2. Each User is responsible for its own system operations, security, back-up, archiving, audits, and other technology and resources for operations of its System Infrastructure during the Project, including coordination with the User's individual(s) or subcontractor(s) responsible for managing its System Infrastructure and capable of addressing communications and other technology issues affecting exchange of Electronic Documents.
  3. Security:
    - a. Each User will operate and maintain industry-standard, industry-accepted, ISO standard, commercial-grade security software and systems to protect against threats including software viruses and other malicious software including worms, trojans, adware; data breaches; loss of confidentiality; and other threats in transmission to, or storage of, Electronic Documents from other Users, including transmission of Electronic Documents by physical media including flash drives/thumb drives, hard

- drives, compact discs (CD), digital video discs (DVD), and other portable devices, whether connected physically or wirelessly.
- b. To the extent that a User maintains and operates such security software and appropriate System Infrastructure, such User will not be liable to other Users participating in the Project for breach of system security.
4. Archiving and Electronic Document Backup:
    - a. Each User is responsible for its own back-up and archive of Electronic Documents and data transmitted and received during the Project, unless this EDP establishes a Project Electronic Document archive, either as a mandatory Project Website or other communications protocol, upon which Users may rely for Electronic Document archiving for the duration of the Project Website or archiving system established in this EDP.
    - b. Each User is solely responsible for its own post-Project back-up and archive of Electronic Documents after the Project is complete or after termination of the Project Website or other Project archive (as applicable), for the longer of: (1) required by the Contract Documents, (2) required by Laws and Regulations, and (3) as each User deems necessary for its purposes.
  5. Receipt of Damaged, Incomplete, or Corrupt Electronic Documents: When a receiving User receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving User will advise the transmitting User of the incomplete transmission and transmitting User will retransmit the Electronic Document.
  6. Completion of Transmittals: Users will bring non-conforming Electronic Documents into compliance with the EDP. Users will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the transfer of the Electronic Documents.
  7. Principal means of exchanging Electronic Documents will be e-mail and files attached to e-mail, in accordance with the EDP.
- C. General Requirements and Limitations for Software for Electronic Document Exchange:
1. Software and file formats for exchange of Electronic Documents shall be as indicated in Article 1.5 of this Specifications Section.
  2. Software Versions:
    - a. Each User will acquire the software and associated licenses necessary to create, transmit, receive, read, and use Electronic Documents for the Project, using the software and file formats indicate in Article 1.5 of this Specifications Section.
    - b. Prior to using any updated version of the software required in the EDP for Electronic Document(s) transmitted to other User(s), the originating User will first notify and either (1) receive concurrence from receiving User(s) for use of the updated version, or (2) adjust its transmission to comply with the EDP.
  3. Preservation of Intellectual Property and Confidentiality of Electronic Documents:
    - a. Users agree to not intentionally edit, reverse-engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes Electronic Documents, and information and data contained therein, transmitted in a file format, including portable document format (PDF), intended by transmitting User to not be modified, unless the receiving User (1) obtains permission from owner of the Electronic Document and intellectual property contained therein, or (2) is expressly allowed by the EDP to edit or modify the Electronic Document.
    - b. Where modifying, editing, decryption, or reverse-engineering is allowed by the EDP, such use is conferred only for the Project.
    - c. The EDP does not transfer any ownership or rights of any sort regarding use outside of the Project of Electronic Documents.
    - d. Users shall not cite or quote excerpts of Electronic Documents for purposes outside of the Project unless required to do so by Laws and Regulations.
- D. Contractor's Requests for Electronic Documents in Other Formats:

1. Release of Electronic Documents in format(s) other than those indicated in in Article 1.5 of this Specifications Section and elsewhere in the Contract Documents will be at the discretion of Owner and subject to terms and conditions required by the owner of such files and documents, and the provisions indicated below.
2. To extent determined by Owner, in its sole discretion, to be appropriate, release of Electronic Documents in alternative format(s) requested by Contractor (“Request”) are subject to provisions of Owner’s response to the Request and to the following:
  - a. Contractor’s Request shall be in writing. Owner and others, as appropriate, will consider and respond to Request promptly, but neither Owner nor Engineer will be responsible for any time or cost impacts on Contractor associated with timing of the Request, or with Owner’s decision associated therewith.
  - b. When Engineer is the owner of the Electronic Documents requested by Contractor in native format, prior to Engineer transmitting such Electronic Documents to Contractor, Contractor shall sign and deliver to Engineer, without modifying or amending, Engineer’s “Electronic Media Release” agreement.
  - c. Content included in Electronic Documents created by Engineer and furnished in response to the Request was prepared by Engineer as an internal working document for Engineer’s purposes solely and, when provided to Contractor, is on an “as-is” basis without warranties of any kind, including, but not limited to any implied warranties of fitness for purpose. Contractor acknowledges that content of Electronic Documents furnished in response to the Request may not be suitable for Contractor’s purpose(s), or may require substantial modification and independent verification by Contractor. Content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other shown or indicated information that may affect subsequent use by Contractor or others for whom Contractor is responsible.
  - d. Electronic Documents containing text, graphics, metadata, or other types of data furnished by Engineer in response to the Request are only for Contractor’s convenience and any and all conclusions or information obtained or derived from such Electronic Documents will be at Contractor’s sole risk and expense. Contractor waives any and all claims against Engineer, Owner, or both arising from Contractor’s use of Electronic Documents furnished in response to the Request.
  - e. Contractor shall indemnify and hold harmless Owner, Engineer, and their respective consultants and subconsultants from any and all claims, damages, losses, and expenses, including attorneys’ fees and defense costs, fees and costs of engineers, architects, geologists, accountants, and other professionals, and any and all other costs, direct and indirect, resulting from Contractor’s use, adaptation, or distribution of Electronic Document(s) furnished in response to the Request.
  - f. Contractor shall not sell, copy, transfer, forward, give away or otherwise distribute the Electronic Documents (in source format or modified file format) to any third party without direct written authorization of Engineer or other entity that owns the Electronic document(s), unless such distribution is specifically indicated in the Request and is limited to Subcontractors and Suppliers. Contractor warrants that subsequent use by Subcontractors and Suppliers complies with terms and conditions of the Contract Documents, Owner’s response to the Request, and release agreement(s) (if any) by owner of the Electronic Documents (including Engineer, where applicable).
3. When the Request is for Electronic Documents in a format not other than that indicated in the Contract Documents, and Owner (and others, as applicable) decide to comply with the Request, and when the requested Electronic Documents are not easily available in the format(s) requested, Contractor shall reimburse Owner for costs incurred by Owner, either directly or indirectly, to furnish Electronic Documents in accordance with the Request at a rate of \$45.00 per labor-hour to furnish the requested format(s). In compensation, Owner may retain such amount(s) as set-off(s) under the Contract Documents.



## 1.5 EXCHANGE OF ELECTRONIC DOCUMENTS

- A. Comply with the Electronic Document formats, transmission methods, and permitted uses set forth in Table 01 31 26-A, Exchange of Electronic Documents, below, when transmitting or using Electronic Documents on the Project. Where a row in the table has no indicated means of transmitting Electronic Documents, use for such documents only paper copies transmitted to the receiving party via appropriate delivery method.

**TABLE 01 31 26-A – EXCHANGE OF ELECTRONIC DOCUMENTS**

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
1.5.A.1. Project communications						
General communications & correspondence	EM, PDF	O, E, C	EM, EMA	O, E, C	R	
Meeting notices and agendas	EM, PDF	E	EM, EMA	O, C	R	
Meeting minutes	PDF	E	EM, EMA	O, C	R	
1.5.A.2. Contractor's Submittals to Engineer						
Shop Drawings	PDF	C	EMA	E	M (1)	(1)
Product data Submittals, delegated design Submittals, and other action Submittals (except Samples)	PDF	C	EMA	E	M (1)	(1)
Informational and closeout Submittals:	PDF	C	EMA	E	M (1)	(1) (6)
Documentation of delivery of maintenance materials submittals	PDF	C	EMA	E	M (1)	
1.5.A.3. Engineer's return of reviewed Submittals to Contractor						
Shop Drawings	PDF	E	EMA	O., C	R	
Product data Submittals, delegated design Submittals, and other action Submittals	PDF	E	EMA	O., C	R	
Informational and closeout Submittals:	PDF	E	EMA	O., C	R	(6)
Documentation of delivery of maintenance materials submittals	PDF	E	EMA	O. C	R	
1.5.A.4. Contract Modifications Documents						
Requests for interpretation to Engineer	PDF	C., O	EMA	E	M (1)	(1)
Engineer's interpretations (RFI responses)	PDF	E	EMA	C, O	R	
Engineer's clarifications to Contractor	EM, PDF	E	EM, EMA	C, O	R	
Engineer's issuance of Field Orders	PDF	E	EMA	C, O	R	
Proposal Requests	PDF	E, O	EMA	C	R	
Change Proposals – submitted to Engineer	PDF	C	EMA	O, E	S	
Change Proposals – Engineer's response	PDF	E	EMA	C. O		

Electronic Document Type	Format	Transmitting User	Transmission Method	Receiving User	Allowed Uses	Notes
Work Change Directives (for Contractor signature)	PDF	E	EMA	C	R	(2)
Change Orders (for Contractor signature)	PDF	E	EMA	C	R	(2)
1.5.A.5. Applications for Payment						(3)
1.5.A.6. Claims and other notices						(4)
1.5.A.7. Closeout Documents						
Record drawings	DWG and PDF	C	EMA	E, O	M (5)	(5)
Other record documents	PDF	C	EMA	E. O	M (5)	(5)
Contract closeout documents						

1. Key to Table 01 31 26-A:

a. Data Format:

- 1) EM: .msg, .htm, .txt, .rtf, e-mail text.
- 2) W: .docx, Microsoft Word 2013 or later.
- 3) EX: .xlsx, Microsoft Excel 2013 or later.
- 4) PDF: .pdf. portable document format.
- 5) DWG: .dwg. Autodesk AutoCAD 2014 drawing.

b. Transmitting User:

- 1) O: Owner.
- 2) C: Contractor.
- 3) E: Engineer.

c. Transmission Method:

- 1) EM: Via e-mail.
- 2) EMA: Attachment to e-mail transmission.
- 3) PORT: Delivered via portable media such as flash drive/thumb drive, CD, or DVD
- 4) PW: Posted to Project Website.
- 5) FTP: FTP transfer to receiving FTP server.

d. Receiving User:

- 1) O: Owner.
- 2) C: Contractor.
- 3) E: Engineer.

e. Permitted Uses:

- 1) S: Store and view only.
- 2) R: Reproduce and distribute.
- 3) I: Integrate (incorporate additional electronic data without modifying data received)
- 4) M: Modify as required to fulfill obligations for the Project.

f. Notes:

- 1) Modifications by Engineer to Contractor's Submittals and requests for interpretations are limited to printing, marking-up, and adding comment sheets.
- 2) May be distributed only to affected Subcontractors and Suppliers. Print, sign document, and return signed paper originals to Engineer.
- 3) Submit printed Applications for Payment with original ("wet") signatures.
- 4) Submit notices, including Claims, in accordance with the notice provisions of the General Conditions, as may be modified by the Supplementary Conditions.

- 5) Submit record drawings in native CAD format indicated when Contractor has signed Engineer's standard agreement for release of electronic media. In addition, always submit record drawings as PDF files. Comply with Contract Documents requirements for Project record documents.
- 6) For operation and maintenance data, also submit paper copies as required by Section 01 78 23 - Operations and Maintenance Manuals.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 32 16**  
**CONSTRUCTION PROGRESS SCHEDULE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Administrative and procedural requirements for Contractor's construction Progress Schedules and related Submittals, including:
    - a. Administrative requirements regarding progress Schedules.
    - b. Qualifications of Progress Schedule preparer and related personnel.
    - c. Submittals of Progress Schedules and associated schedule-related Submittals..
    - d. Initial Progress Schedules.
    - e. Look-ahead schedules.
    - f. Progress Schedule updates.
    - g. Narrative reports.
    - h. Time impact analyses.
    - i. Recovery schedules.
- B. Scope:
1. Contractor shall prepare and submit to Engineer required Progress Schedules and related Submittals, as required by this Section and elsewhere in the Contract Documents. Maintain and update Progress Schedules and related Submittals throughout the Project.
  2. Owner, facility manager (if other than Owner), Engineer, and others involved with the Project have the right to rely on accuracy of Contractor-prepared Progress Schedule.
  3. Engineer's review or acceptance of the Progress Schedule or related Submittals, and Engineer's comments on and expressed opinions concerning activities in the Progress Schedule and related Submittals, and progress of the Work, does not control Contractor's independent judgment concerning construction means, methods, techniques, sequences and procedures, unless the associated means, method, technique, sequence, or procedure is required by the Contract Documents. Contractor is solely responsible for complying with the Contract Times.
- C. Related Requirements: Include, but are not necessarily limited to:
1. Section 01 11 00 - Summary of Work.
  2. Section 01 26 00 - Contract Modification Procedures.
  3. Section 01 31 19 - Project Meetings.

**1.2 REFERENCES.**

- A. Defined Terms and Terminology:
1. Defined terms, indicated with initial capital letters, are indicated in the General Conditions, as may be modified by the Supplementary Conditions.
  2. Terminology: The following are not defined terms and are not indicated with initial capital letters but, when used in this Section, have the meaning indicated below, whether applied to the singular or plural thereof.
    - a. "Activity" is an element of the Work that has the following specific characteristics: consumes time, requires resources, has a definable start and finish, is assignable, and is measurable.
    - b. "Baseline Progress Schedule" means, in addition to the General Conditions' definition of "Progress Schedule", the version of the Progress Schedule (for the entire Project) initially accepted by the Engineer. In the event of subsequent modifications to the Project, Contractor and Engineer may mutually agree that a subsequent revision of the Progress Schedule constitutes a new baseline Progress Schedule that supersedes the prior baseline Progress Schedule.

- c. “Constraint” means an imposed date on the Progress Schedule or an imposed time between activities. The Contract Times are constraints.
- d. “CPM Progress Schedule” means, in addition to the General Conditions’ definition of “Progress Schedule”, a computerized Progress Schedule in critical path method (CPM) format, for the entire Work, indicating interrelationships between elements of the Work; indicates sequences, dates, and durations for Work performed to date; indicates sequences, dates, and duration for incomplete Work yet to be performed; indicates constraints; and indicates the critical path for the Work.
- e. “Critical path” is the continuous chain of activities, from start to completion of the Work, with the longest duration for completion within the Contract Times.
- f. “Early finish” means the earliest date an activity can finish according to the assigned relationships among the activities in the Progress Schedule.
- g. “Early start” means the earliest possible date an activity can start according to the assigned relationships among activities in the Progress Schedule.
- h. “Float” means the time difference between the calculated duration of an activity chain on the Progress Schedule and the critical path.
- i. “Late finish” means the latest date an activity on the Progress Schedule can finish without extending the Contract Times.
- j. “Late start” means the latest date an activity on the Progress Schedule can start without extending the Contract Times.
- k. “Network diagram” means a time-scaled logic diagram showing the durations and relationships of the activities on the Progress Schedule.
- l. “Schedule date” (and similar terms, whether used in this Section or Project communications related to Progress Schedules) mean the “early start” and “early finish” date for the associated activity. “Late start” and “late finish” dates are for determining float and do not represent the schedule dates.
- m. “Total float” means the total number of days an activity (or chain of activities) on the Progress Schedule can be delayed without affecting the Contract Times.
- n. “Work areas” and “work system” means a logical breakdown of the Work elements or a group of activities which, when collectively assembled, are readily identifiable on the Project (for example: yard piping, a structure or building, a treatment process, or other logical grouping).

### **1.3 ADMINISTRATIVE REQUIREMENTS**

- A. General Provisions on Progress Schedules:
  - 1. This Section augments requirements for the Progress Schedule, and Contractor’s control of the Work, indicated in the General Conditions, as may be augmented by the Supplementary Conditions..
- B. Use of Float:
  - 1. Float belongs to the Project and may be used by Contractor or Owner to accommodate changes in the Work, or to mitigate the effect of events delaying the Work or compliance with the Contract Times.
  - 2. Changes or delays that influence activities that have float and do not extend the critical path do not justify changes in the Contract Times..
  - 3. Float Suppression: Pursuant to float sharing requirements of this Section, use of float suppression techniques in Progress Schedules, such as preferential sequencing logic, special lead/lag logic restraints, and extended activity durations are unacceptable.
- C. Factors Affecting the Progress Schedule:
  - a. In preparing and updating the Progress Schedule, take into consideration: preparing and signing subcontracts and purchase orders, complying with Submittal requirements and Submittal review times, fabricating materials and equipment, source quality control (including required shop tests and inspections), shipping and deliveries, field quality control (including required field tests and inspections at the Site), Work by Subcontractors, coordination with others (such as other contractors including those

indicated in Section 01 11 00 – Summary of Work, utility owners, and owners of transportation facilities), compliance with Laws and Regulations and permits, availability of construction equipment and machinery, abilities of workers, weather conditions, condition of the Site, seasonal restrictions, restrictions in operations at the Site and coordination with Owner’s (or facility manager’s) operations, training of facility operation and maintenance personnel, checkout, startup, adjusting and balancing, and other factors that have the potential to affect completion of the Work within the Contract Times.

D. Scheduling Workshop Conferences:

1. Prior to preparing the preliminary Progress Schedule, Contractor shall participate with Engineer in one workshop conference(s), each up to two hours in duration, to discuss technical requirements relative to sequencing and organizing the Work, Progress Schedule development, and Progress Schedule procedures.
2. Contractor and Engineer will mutually agree on the date, time, and location of scheduling workshop conference(s).
3. Required Attendees:
  - a. Contractor’s project manager, site superintendent, and Progress Schedule preparer.
  - b. Engineer
  - c. Owner or facility manager (if other than Owner) may attend scheduling workshop conferences.
4. Engineer will prepare minutes of the scheduling workshop conferences and distribute minutes to conference attendees and others as deemed appropriate by Engineer.

**1.4 QUALITY ASSURANCE**

A. Qualifications:

1. Progress Schedule Preparer.
  - a. Contractor shall retain services of a scheduling consultant to, or shall self-perform, preparation and updating of the Progress Schedule using qualified personnel experienced in: (1) construction scheduling, (2) the scheduling software required for the Project, and (3) serving as Progress Schedule preparer on construction projects of similar type, size, and complexity as the Project.

**1.5 SUBMITTALS**

A. Informational Submittals: Submit the following:

1. Qualifications Statements:
  - a. Submit qualifications of Progress Schedule preparer, and other personnel that will assist Progress Schedule preparer in preparing and updating the Progress Schedule.
  - b. Obtain Engineer’s acceptance of qualifications prior to starting preparation of preliminary Progress Schedule.
2. Planned Work Schedule:
  - a. Submit initial and updated (as necessary) planned work schedule, in accordance with this Section’s “Progress Schedule” Article.
3. Progress Schedule:
  - a. Preliminary Progress Schedule with associated narrative report.
  - b. Acceptable Progress Schedule (“baseline Progress Schedule”) with associated narrative report.
4. Look-Ahead Schedules:
  - a. Submit 30-day look-ahead schedule at each construction progress meeting, in accordance with this Section’s “Look-Ahead Schedules” Article.
5. Progress Schedule Updates:
  - a. Progress Schedule updates shall comply with requirements of this Section and shall include updated Progress Schedule and narrative report.
  - b. Submit updated Progress Schedule prior to each associated construction progress meeting. When a Progress Schedule remains unchanged from one construction

progress meeting to the next, submit written statement expressly so stating. In addition to monthly Progress Schedule update Submittals, also bring to construction progress meetings the number of paper copies of the updated Progress Schedule indicated in Section 01 31 19 - Project Meetings.

6. Time Impact Analyses: Submit in accordance with this Section.
7. Recovery Schedules: Submit in accordance with this Section.

## **1.6 INITIAL PROGRESS SCHEDULES**

- A. Applicability of this Article:
  1. This Article addresses the initial Progress Schedules and selected, related Submittals required at the outset of the Project's construction phase, through Engineer's acceptance of the Progress Schedule and its related Submittals.
  2. Subsequent Progress Schedule Submittals, including Progress Schedule updates, recovery schedules, and other schedule-related Submittals, shall comply with software, type, organization, content, and similar requirements of this Article.
- B. Type and Organization of Progress Schedules:
  1. Prepare Progress Schedules using Oracle Primavera P6 software, unless other scheduling software is acceptable to Engineer.
  2. Sheet Size: 22 inches by 34 inches, unless otherwise accepted by Engineer.
  3. Time Scale: Indicate first date of each work week.
  4. Activity Assignments and Designations:
    - a. Limit activities, where possible, excluding fabrication of materials and equipment, to durations not longer than 20 days. Activities shall be definable and measurable. For example, an activity described only as "Concrete" will likely be unacceptable.
    - b. Assign to each activity an appropriate, unique numerical designation and description.
    - c. Numerical designation shall incorporate the associated Specifications section number.
    - d. Activity description shall include sufficient detail to clearly communicate the intended activity. Descriptions shall include identifiers for physical locations of work area or work system, such as (where appropriate): column lines, stationing (for linear projects), and elevations. Indicate unique description for each activity.
    - e. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
    - f. Group construction into work area sub-schedules (that are part of the Progress Schedule) by activity.
    - g. Clearly indicate, as activities separate from installation, necessary and required curing periods.
  5. Organization of Progress Schedules:
    - a. Indicate interfaces and dependencies with preceding, concurrent, and follow-on activities, including those associated with the Work, other contractors at the Site, Owner and facility manager, Owner's consultants (including Engineer), authorities having jurisdiction, and others as appropriate. Clearly indicate activities not under Contractor's control.
    - b. Progress Schedules shall be CPM Progress Schedules.
    - c. Indicate on the separate Schedule of Submittals dates for submitting and reviewing Shop Drawings, product data Submittals, Samples, and other required Submittals. Coordinate Progress Schedule with the Schedule of Submittals.
    - d. Clearly indicate the critical path on the Progress Schedule.
- C. Planned Work Schedule:
  1. Within 30 days of the Effective Date of the Contract, indicate to Engineer the workdays and hours proposed by Contractor. Also indicate planned non-workdays, such as Contractor's holidays, weekends, and the like.
  2. Enforce Subcontractors' and Suppliers' (when at the Site) compliance with Contractor's work schedule submitted to Engineer.



3. In the event of changes, submit to Engineer revised work schedule. Furnish such Submittal not less than three days prior to changing Contractor's work schedule, except in event of unanticipated emergency.
- D. Preliminary Progress Schedule:
1. Within 14 days after the Contract Times commence running, Contractor shall submit to Engineer the preliminary Progress Schedule covering the entire Project, with associated schedule-related Submittals required in this Section's "Submittals" Article.
  2. Submit preliminary Progress Schedule in accordance with Section 01 31 26 - Electronic Communication Protocols and Section 01 33 00 - Submittal Procedures. Also submit preliminary Progress Schedule in its native (executable) format generated by the scheduling software, transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols.
  3. Engineer will perform timely review of the preliminary Progress Schedule.
  4. Preliminary Progress Schedule shall comply with the Contract Documents relative to Progress Schedules.
- E. Initial Acceptance of Progress Schedule:
1. Not less than 10 days before submission of the first Application for Payment, a scheduling conference attended by Contractor, Progress Schedule preparer, Engineer, and others as appropriate will be held at GCDWR Office to review for acceptability to Engineer the preliminary Progress Schedule and associated schedule-related Submittals. Following the scheduling conference, Contractor shall have five days to make corrections and adjustments and to complete and resubmit the Progress Schedule and associated schedule-related Submittals. Contractor will not be eligible for first progress payment until acceptable Progress Schedule and associated schedule-related Submittals are submitted to Engineer and are acceptable to Engineer.
  2. Submit acceptable Progress Schedule, together with associated schedule-related Submittals in accordance with this Section's "Submittals" Article, Section 01 31 26 – Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures. Also submit acceptable form of Progress Schedule in its native (executable) format generated by the scheduling software, transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols.
  3. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times, in accordance with the Contract Documents.
  4. Initially-accepted Progress Schedule shall be identified as the baseline Progress Schedule.
- F. Planned Completion Different from the Contract Times:
1. If the Progress Schedule accepted by Engineer indicates completion date(s) different than the Contract Times, the Contract Times are not thereby changed.
  2. Where the Progress Schedule accepted by Engineer indicates date(s) by which the Work, or designated portion thereof, will (a) achieve a Contractually stipulated Milestone, or (b) be substantially complete, or (c) all the Work will be complete and ready for final payment, earlier than the Contract Times ("early completion date"), Contractor shall, not less than 180 days prior to the associated Contract Time, prepare and submit a Change Proposal setting forth Contractor's request to modify the Contract Times to an earlier date, which may or may not be the same as the scheduled early completion date. The Contract Times can be modified only via a Change Order.
  3. In the event the Progress Schedule accepted by Engineer indicates one or more early completion dates and the Contract Times have not been reduced, Owner may, at Owner's option, use available float without Owner being liable for Contractor's costs to remain onsite, mobilized, and working (whether on the original scope of the Work or for modified Work) beyond the scheduled early completion date(s), as long as the Work will be completed within the Contract Times.

4. When the Work will not be completed within the Contract Times, the Contract Documents' provisions concerning delays and changes in the Contract Times govern.

## **1.7 LOOK-AHEAD SCHEDULES**

### **A. Look-Ahead Schedules – General:**

1. Look-ahead schedules are short-duration, often more-detailed, time-based schedules for the Work to be performed during the coming month or other required span of the look-ahead schedule.
2. Purpose of look-ahead schedules is to present, for Project stakeholders, including Owner, facility manager (if other than Owner), Engineer, Owner-hired testing and inspection entities, other contractors working at or adjacent to the Site, utility owners, transportation facility owners, and others as necessary, Contractor's detailed, time-based plan for performing the Work during the period covered by the time span of the look-ahead schedule.
3. This Section's "Submittals" Article indicates the required span and frequency of look-ahead schedules.
4. Each look-ahead schedule shall be fully coordinated and consistent with the current Progress Schedule update.
5. Submit look-ahead schedules concurrent with construction progress meetings, in accordance with Section 01 31 26 - Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures. Also submit look-ahead schedules in native (executable) format, in accordance with Section 01 31 26 - Electronic Communication Protocols.
6. As handouts, bring to each construction progress meeting the quantity of paper copies of the new look-ahead schedule indicated in Section 01 31 19 - Project Meetings. If quantity is not indicated in Section 01 31 19 - Project Meetings, furnish quantity equal to typical number of attendees of progress meetings.

### **B. Organization and Content of Look-Ahead Schedules:**

1. Look-ahead schedules shall be prepared from the current Progress Schedule update, of the same type, using the same software, content, and organization required in this Section for initial Progress Schedules.
2. Activity designations on look-ahead schedules shall incorporate the associated activity designations from the Progress Schedule.
3. Sheet Size: Format look-ahead schedules to sheet size of 11 inches by 17 inches, unless other sheet size is acceptable to Engineer.
4. Look-ahead schedules should generally be more-detailed than the Progress Schedule. Activity durations on look-ahead schedules should not exceed five days.

## **1.8 PROGRESS SCHEDULE UPDATES**

### **A. Updates – General:**

1. Update the Progress Schedule not less-often than once per month. If during progress of the Work events develop that necessitate changes in the initially accepted Progress Schedule (baseline Progress Schedule), identify updated Progress Schedules sequentially as "Progress Schedule Revision "1", "2", "3", and continuing in sequence as required. Number the Progress Schedule submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Progress Schedule updates shall comply with this Section's requirements for initial progress Schedule, relative to type, required software, organization, content, and related matters.
3. Starting with first Progress Schedule update, and continuing with each subsequent update, indicate on the Progress Schedule the actual start and finish dates of each activity that is completed or is currently underway. Inaccurate representation of completed or in-progress activities will be grounds for Engineer's non-acceptance of the Progress Schedule update.
4. Contractor's Progress Schedule update shall include a narrative report in accordance with this Section. Narrative report shall include description of: progress achieved to date and status of each work area of the Project, planned progress for the upcoming period, identification of the critical path, current or potential delays, Change Orders (pending and

approved since the previous Progress Schedule update), and other problems associated with performing the Work in accordance with the baseline Progress Schedule and complying with the Contract Documents, including the Contract Times. Indicate in the narrative report delays that have occurred since the previous updated Progress Schedule.

5. The update to the Progress Schedule shall be based on retained logic. Progress override logic is not allowed.
  6. Submit to Engineer updated Progress Schedule, together with associated schedule-related Submittals, in accordance with this Section's "Submittals" Article, Section 01 31 26 - Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures. Also submit updated Progress Schedule in its native (executable) format generated by the scheduling software, transmitted in accordance with Section 01 31 26 - Electronic Communication Protocols.
- B. Monthly Schedule Meeting:
1. During the month, utilizing the previous month's look-ahead schedule. Contractor shall record the percent complete, start and finish dates of each scheduled activity with the remaining duration for each activity started but not completed, including activities associated with procurement of materials and equipment.
  2. On the same day each month, not less than one week prior to a progress meeting, Contractor, Progress Schedule preparer, Engineer (or Resident Project Representative), and others as appropriate shall meet at the Site to tour the Work to review and recommend updates to the Progress Schedule and progress information gathered by Contractor during the month. After discussion of Contractor's current progress information and attendees' review of the current status of the Work, Progress Schedule preparer shall appropriately and accurately update the Progress Schedule.

## **1.9 NARRATIVE REPORTS**

### **A. Narrative Reports – General:**

1. Prepare and include with the preliminary Progress Schedule Submittal and each subsequent Progress Schedule Submittal, written narrative report describing the schedule-related constraints required by the Contract Documents and Contractor's plan and schedule for complying with such requirements. Narrative reports shall also include required content indicated above in this Section's "Progress Schedule Updates" Article.
2. Narrative report shall describe the methods of sequencing and operation, resources to be employed, time frames for the construction of each of the major work area or work system on the Project, and time frames for complying with the Contract Times and Contractor's interim schedule milestones.
3. Prepare narrative reports on Contractor's company letterhead and clearly indicate the Progress Schedule revision and date associated with the narrative report.
4. Narrative reports shall be written in English and typed. Use clear, concise, complete, and accurate language in narrative reports. Clearly indicate in narrative report the name of person preparing the narrative report and date of preparation
5. Narrative report Submittals do not constitute contractual Change Proposals, nor are they notice of a Claim.
6. Engineer's receipt, review, and acceptance of narrative reports does not mitigate or reduce Contractor's obligations to furnish contractually required notices.

## **1.10 TIME IMPACT ANALYSIS**

### **A. Time Impact Analyses – General:**

1. Prepare and submit time impact analysis when one or more of the following occurs: (a) Change Proposal is prepared; (b) Work Change Directive is issued that will affect the Progress Schedule; or (c) when delays occur.
2. Time impact analysis shall illustrate influence of each Change Order, Work Change Directive, allowance authorization, or delay, as applicable, on Contractor's ability to comply with the Contract Times and Progress Schedule constraints.

3. In performing time impact analysis, use Progress Schedule having revision date closest to and prior to the event giving rise to the delay or other change in the Work.
  4. Indicate in time impact analysis activities on the Project's critical path prior to the event giving rise to the delay or other Change in the Work; activities added, extended, or deleted as a result of the delay or change in the Work; and impact of such changes on the Project's critical path activities.
  5. Indicate in time impact analysis activities not within Contractor's control.
  6. Time impact analysis shall demonstrate the time impact, based on date the Change Order, Work Change Directive, or allowance authorization was given to Contractor or, as applicable, date the delay started to occur; the status of the Work at that time; and activity duration of affected activities. Activity duration used in time impact analysis shall be those included in most recent Progress Schedule update accepted by Engineer, closest to start of the delay or start of the Change Order, Work Change Directive, or allowance authorization as adjusted by mutual, written agreement of the parties and Engineer.
  7. Timing of Time Impact Analysis:
    - a. Submit time impact analysis with Change Proposal, in accordance with Section 01 26 00 - Contract Modification procedures.
    - b. When time impact analysis is not part of a Change Proposal, submit each time impact analysis within 15 days after the following, as applicable:
      - 1) Start of the delay.
      - 2) After Contractor's receipt of Work Change Directive.
    - c. When Contractor does not submit time impact analysis for a specific change or delay, within the specified period for such submittal, such non-submittal will indicate extension of the Contract Times is not needed.
- B. Evaluation by Engineer and Acceptance:
1. Engineer's evaluation of each time impact analysis comprised of complete information will be completed in timely manner (in accordance with the Contract Documents) after Engineer's receipt.
  2. When time impact analysis is incomplete or otherwise inappropriate, Engineer will furnish comments to Contractor. When time impact analysis is complete and apparently appropriate, its acceptability will be indicated by associated Contract modification or allowance authorization.
  3. Changes in the Contract Times will be made only by Change Order.
  4. When mutual agreement is reached between the parties on effect of the change or delay in the Project, incorporate into the next Progress Schedule update the associated fragnets illustrating the influence of changes and delays.

## **1.11 RECOVERY SCHEDULES**

- A. Recovery Schedules – General:
1. When updated Progress Schedule indicates the ability to comply with the Contract Times falls 14 days or more behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times, Contractor shall prepare and submit to Engineer Contractor's recovery schedule.
  2. Recovery schedule is a Progress Schedule demonstrating Contractor's plan to accelerate the Work to achieve compliance with the Contract Times. If achieving the Contract Times is not feasible, Contractor's recovery schedule shall indicate Contractor's plan to recover as much of the lost time as possible to complete the Work as close as possible to the Contract Times.
  3. Submit recovery schedule within 10 days after submittal of updated Progress Schedule where need for recovery schedule is indicated.
- B. Recovery Schedule Report:
1. With each recovery schedule Submittal, include recovery schedule narrative report, manually prepared by Contractor, on Contractor's company letterhead, indicating name of person responsible for preparing the recovery schedule and report.

2. Recovery schedule report shall verbally indicate Contractor's plan for accelerating the Work and recovering lost time and shall indicate the total number of days expected to be recovered by Contractor's implementation of the recovery schedule. Clearly indicate how the intended actions will recover lost time.
  3. Contractor is fully responsible for complying with the Contract Documents, including the contract Times.
- C. Implementation of Recovery Schedule:
1. At no additional cost to Owner, do one or more of the following, as appropriate: (a) furnish additional labor, (b) provide additional construction equipment and machinery, (c) provide suitable materials to accelerate the Work, (d) employ additional work shifts, (e) expedite procurement of materials and equipment to be incorporated into the Work or otherwise expedite delivery of such items, (f) provide other needed resources, and (g) provide other measures necessary to complete the Work within the Contract Times.
  2. Upon acceptance of recovery schedule by Engineer, incorporate recovery schedule into the next Progress Schedule update.
- D. Contractor's Failure to Recover Lost Time:
1. Contractor's refusal, failure, or neglect to take appropriate measures to recover lost time, or to submit a recovery schedule, shall constitute reasonable evidence that Contractor is not prosecuting the Work, or designated part of the Work, with diligence to ensure completion in accordance with the Contract Times. Such action or inaction by Contractor shall constitute sufficient basis for Owner to exercise remedies available to Owner under the Contract Documents.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 33 00**  
**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Definition of various types of Submittals.
  2. Coordination requirements for Submittals.
  3. General provisions concerning Submittals.
  4. Schedule of Submittals.
  5. Contractor's preparation of Submittals, including:
    - a. Numbering.
    - b. Marking.
    - c. Organization and content.
    - d. Proposed "or-equals", substitutes, and deviations from Contract requirements.
    - e. Electronic Documents Submittals.
    - f. Contractor's review and approval of each Submittal.
    - g. Resubmittals.
  6. Contractor's transmittal of Submittals, including transmittal letters, transmittal and delivery method, and delivery of Samples, Closeout Submittals, and Maintenance Materials Submittals.
  7. Engineer's review, including:
    - a. Timing.
    - b. Meaning of Engineer's Submittal action code(disposition) assigned.
    - c. Delivery of Engineer's responses on Submittals.
- B. Scope:
1. Contractor shall provide all labor, materials, equipment, tools, services, incidentals, and other effort necessary to furnish Shop Drawings, product data Submittals, Samples, and other Submittals in accordance with the Contract Documents.
  2. This Section's Article, "General Provisions Concerning Submittals" includes a summary of the Contract Documents' locations of Submittals requirements.
  3. Shop Drawings, product data Submittals, Samples, and other Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Engineer's approval or acceptance, as applicable, of a Submittal does not alter or modify the Contract Documents.
  4. Engineer and Owner have the right to rely on Contractor's representations and certifications made regarding each Submittal.
- C. Related Requirements: Include but are not limited to:
1. Section 01 31 26 - Electronic Communication Protocols.
  2. Section 01 32 16 - Construction Progress Schedule.

**1.2 REFERENCES**

- A. References – Introduction:
1. This Article presents definitions and terminology used in this Section and throughout the Contract Documents.
  2. Applicability of the Term "Submittals": Where reference is made to Shop Drawings, product data Submittals, Samples, or other Submittals in this Section and elsewhere in the Contract Documents, the term "Submittals", as defined in the Contract Documents, is intended. The foregoing applies regardless of whether such term is indicated with an initial capital letter, unless context of the subject provision clearly indicates otherwise.
  3. Types of Submittals:

- a. Submittal types are classified as follows: (1) Action Submittals, (2) Informational Submittals, (3) Closeout Submittals, and (4) Maintenance Materials Submittals.
  - b. Type of each required Submittal is indicated in the associated Specifications section. When Submittal type is not clearly indicated in the associated Specifications section, Submittal will be classified as indicated in this Article. Submit request for interpretation when Contractor is uncertain of required Submittal type.
- B. Action Submittals:
1. Action Submittals require an explicit, written approval or other appropriate action by Engineer (or other entity to whom the Submittal is required to be furnished, in accordance with the Contract Documents) before Contractor may release the associated item(s) for raw materials procurement, fabrication, production, and shipping.
  2. Unless otherwise indicated in the Contract Documents, Action Submittals include the following:
    - a. Shop Drawings.
    - b. Product data.
    - c. Samples.
    - d. Testing plans for quality control activities required by the Contract Documents.
  3. General Conditions' requirements for Shop Drawings and Samples hereby apply to all Action Submittals.
- C. Informational Submittals:
1. Informational Submittals are so indicated in the Contract Documents. Unless otherwise indicated, Informational Submittals include certifications, evaluation reports, results of source quality control activities, results of field quality control activities, Supplier instructions, reports of Suppliers' visits to the Site, sustainable design Submittals (that are not Closeout Submittals), delegated design Submittals that are not "instruments of service" Submittals, qualifications statements, and others.
  2. Informational Submittals, when submitted in accordance with the Contract and indicating full compliance with the Contract Documents, do not require explicit response from Engineer (or other entity to whom the Submittal is to be delivered); Engineer's (or other entity's) acceptance thereof will be indicated in the Engineer's Submittals log. Copy of Engineer's Submittals log is available to Contractor upon Contractor's written request.
  3. When Informational Submittal does not indicate full compliance with the Contract Documents, Engineer (or other entity to which Submittal is to be delivered) will indicate the non-compliance in a written response to Contractor.
- D. Closeout Submittals:
1. Closeout Submittals are so indicated in the Contract Documents and are, in general, required before the associated Work is completed, unless earlier submittal is required by the Contract Documents.
  2. Unless indicated otherwise in the Contract Documents, Closeout Submittals include maintenance contracts, operation and maintenance data, warranties, bonds (other than performance and payment bonds required prior to the start of construction), record documents, sustainable design closeout Submittals, software, keys, and others.
  3. Closeout Submittals are processed in the same manner as described above for Informational Submittals.
- E. Maintenance Materials Submittals:
1. Maintenance materials include spare parts, extra materials, tools, and similar items required to be furnished in accordance with the Contract Documents.
  2. Furnish required physical maintenance materials, delivered to Owner or facility manager (if other than Owner), as applicable, at the location(s) indicated in the Contract Documents, for the corresponding required Maintenance Materials Submittals.
  3. Maintenance Materials Submittals are documentation of delivery to Owner's or facility manager, and their acceptance of, required physical maintenance materials.



4. Maintenance Materials Submittals are processed in the same manner as described above for Informational Submittals.

F. Additional Terms:

1. The following terms have the meanings indicated below, regardless of whether such terms are indicated using initial capital letters, and apply to singular and plural of each:
  - a. "Product data" means illustrations, standard schedules, performance charts, Supplier's published instructions, brochures, diagrams, and other information furnished by Contractor to illustrate or describe materials or equipment for some portion of the Work. In general, product data are manufacturers' pre-published information on the items proposed to be incorporated into the Work. Product data includes manufacturer's catalog pages and similar documents with contractor-made markings and indications of proposed products and proposed options.
  - b. The term "Shop Drawings", defined in the General Conditions, is supplemented by the following: Shop Drawings include: (1) fabrication and assembly drawings, usually having a title block, or (2) schedules, prepared specifically for the Project. Here, "schedules" means a Project-specific summary of systems and components, such as a schedule of HVAC equipment, schedules of doors and door hardware, or windows, or a schedule of paint systems by room and surface, or other, similar Project information in a tabular format. In contrast, construction Progress Schedules, Schedules of Submittals, and Schedules of Values are not Shop Drawings.

### 1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Furnish Submittals well in advance of need for the associated material or equipment, or procedure (as applicable), in the Work and with ample time necessary for delivery of materials and equipment and to implement procedures following Engineer's approval or acceptance of the associated Submittal.
2. Work covered by a Submittal will not be included in payments by Owner until approval or acceptance (as applicable) of related Submittals has been obtained in accordance with the Contract Documents.

### 1.4 GENERAL PROVISIONS CONCERNING SUBMITTALS

A. Locations of Requirements:

1. Requirements concerning Submittals are generally located as follows:
  - a. General Conditions, as may be modified by the Supplementary Conditions, applicable to the Project.
  - b. This Section, which presents general requirements for Submittals applicable to the Project.
  - c. Other Division 01 Specifications that include general requirements for certain types of Submittals, such as Section 01 31 26 - Electronic Communications Protocols, Section 01 78 23 - Operation and Maintenance Data, and others.
  - d. The "Submittals" Article of the various Specifications sections, which indicates the required Submittals for the associated Work. Furnish all Submittals required by the Contract Documents regardless of whether explicitly indicated in the associated Specifications' "Submittals" Article.

- B. This Section augments and supplements the requirements of the General Conditions, as may be modified by the Supplementary Conditions, relative to Submittals.

### 1.5 SCHEDULE OF SUBMITTALS

A. Informational Submittals: Submit the following:

1. Schedule of Submittals:
  - a. Timing:
    - 1) Furnish Schedule of Submittals within time frames indicated in the General Conditions, as may be modified by the Supplementary Conditions.

- 2) Submit updated Schedule of Submittals with each submittal of the updated Progress Schedule.
- b. Content: In accordance with the General Conditions, as may be modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent Submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all Submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Clearly indicate Submittals that are on the Project's critical path. Indicate the following for each Submittal:
  - 1) Date by which Submittal will be received by Engineer.
  - 2) Whether Submittal will be for a substitution or "or-equal".
  - 3) Date by which Engineer's response is required. Allow not less than 14 days for Engineer's review, starting on Engineer's actual receipt of each Submittal. Allow increased time for large or complex Submittals.
  - 4) For Submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of others (if any).
- c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules in Section 01 32 16 - Construction Progress Schedule.
- d. Coordinate Schedule of Submittals with the Progress Schedule.
- e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate Submittals on the Project's critical path, or that places extraordinary demands on Engineer for time and resources, is unacceptable. Do not include Submittals not required by the Contract Documents.
- f. In preparing Schedule of Submittals:
  - 1) Considering the nature and complexity of each Submittal, allow sufficient time for reviews and revisions.
  - 2) Allow reasonable time for: Engineer's review and processing of Submittals, for Submittals to be revised and resubmitted, and for returning Submittals to Contractor.
  - 3) Identify and accordingly schedule Submittals that are expected to have long anticipated review times.

## 1.6 PREPARATION OF SUBMITTALS

- A. Prior to Submittal Preparation:
  1. The General Conditions, as may be modified by the Supplementary Conditions, address Contractor's responsibility for submitting for Owner's acceptance identification of Subcontractors and Suppliers. Obtain Owner's acceptance before entering into subcontracts and purchase orders for the Work.
  2. Comply with the Contract Documents relative to terms and conditions of subcontracts and purchase orders for the Work.
  3. Contractor's responsibilities for the following are set forth in the General Conditions, as may be modified by the Supplementary Conditions, and as may be augmented elsewhere in the Contract Documents:
    - a. Obtaining field measurements and dimensions.
    - b. Determining and verifying required quantities.
    - c. Verifying compatibility of materials.
    - d. Apportioning the Work among Subcontractors, Suppliers, and Contractor.
    - e. Reconciling required materials, equipment, and other Contract requirements with Contractor's means, methods, techniques, sequences, and procedures of construction and with Contractor's safety and protection programs and precautions incident thereto.
    - f. Reviewing applicable provisions of the Contract Documents and obtaining from Engineer necessary interpretations or clarifications.
- B. Submittal Identification:

1. **Submittal Number:** Shall be a unique number assigned to each individual Submittal. Assign Submittal numbers as follows:
  - a. First part of Submittal number shall be the applicable Specifications section number, followed by a hyphen.
  - b. Second part of Submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate Submittal furnished under the associated Specifications section.
  - c. Example: Submittal number for the third Submittal furnished for Section 10 14 00 - Signage, would be “10 14 00-003”.
2. **Review Cycle Number:** Each resubmittal of a given Submittal shall be indicated with a lower-case letter designation:
  - a. No letter designation for initial (first) submittal of the Submittal number.
  - b. “a” shall indicate first resubmittal of the Submittal number.
  - c. “b” shall indicate second resubmittal of the Submittal number.
3. **Examples:**

Example Description	Submittal Identification	
	Submittal No.	Review Cycle
Initial (first) review cycle of the third Submittal furnished under Section 10 14 00 – Signage	10 14 00-003-	
Second review cycle (first resubmittal) of third Submittal furnished under Section 10 14 00 - Signage	10 14 00-003-	a

**C. Marking of Submittals:**

1. Mark on each page of each Submittal and each individual component submitted with Submittal number and applicable Specification’s paragraph.
2. Mark each page of each Submittal with the Submittal page number.
3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Engineer.
4. For product data Submittals, operation and maintenance data Submittals, and other Submittals:
  - a. Mark options to be furnished using broad, dark arrows or “clouds” clearly drawn around the relevant text or diagrams. Do not use highlighter for indicating options and features.
  - b. Indicate options and features not furnished using clear strikeouts through the text or diagrams.

**D. Submittal Organization and Content – General:**

1. Page or Sheet Size; Furnish Submittals with one or more of the following page or sheet sizes: (a) 8.5 IN by 11 IN; (b) 11 IN by 17 IN; (c) 22 IN by 34 IN; unless another sheet size is acceptable to Engineer.
2. Language: All parts of each Submittal shall be in the English language.
3. Units of Measurement: Clearly indicate units of measurement on Shop Drawings, product data Submittals, record documentation, and operation and maintenance data Submittals.
4. Organize each Submittal logically to facilitate ease of understanding and review.
5. To the extent practicable, arrange Submittal information in same order as requirements are written in the associated Specifications section.
6. Each Submittal shall cover Work under only one Specifications section.
7. To the extent practicable, package together Submittals for the same Specifications section. Do not furnish required information piecemeal.
8. For large or complex Submittals, include a title page and table of contents.
9. Include appropriately labeled fly sheets to separate distinct parts of each Submittal.

10. Ensure legibility of all pages in each Submittal.
  11. Minimize extraneous and unnecessary information in Submittals for materials and equipment. Do not submit information not relevant to the Submittal and associated requirements of the Contract Documents.
  12. Contractor's, Subcontractor's, and Supplier's written comments on Shop Drawings and product data diagrams shall be colored green
  13. Do not submit under Specifications sections with title that include "Basic Requirements", unless the subject material or equipment is specified, in total, in a Specifications section with the words, "Basic Requirements" in its title.
- E. Electronic Documents Submittals:
1. Format: Electronic Documents Submittals shall be "portable document format" (.PDF) files unless expressly required otherwise by applicable provisions of the Contract Documents.
  2. Electronic Documents Submittals must be electronically searchable when delivered to Engineer and other recipients.
  3. Organization and Content:
    - a. Each Electronic Documents Submittal shall be one file; do not divide individual Submittals into multiple Electronic Documents files each unless file size will exceed 20 MB.
    - b. When Submittal is large or contains multiple parts, furnish PDF file with suitably titled electronic bookmark for each section of the Submittal.
    - c. Content shall be identical to paper or another original Submittal. First page of each Electronic Documents Submittal shall be transmittal letter required in this's Paragraph 1.7.A.
  4. Quality and Legibility: Electronic Documents Submittal files shall be made from the original and shall be clear and legible. Markings applied by Contractor, Subcontractor, or Supplier shall be clear, distinct, and readily apparent. Electronic Documents file shall be full size of original documents. Properly orient all pages for convenient reading on a computer display; do not furnish pages sideways or upside-down.
  5. Provide sufficient internet service, software, and systems for Contractor with capability appropriate for transmitting the necessary files and receiving responses from Engineer or other entities.
  6. Check not less than once per day for distribution of Electronic Documents Submittals responses and related Electronic Documents correspondence.
- F. Proposed "Or-Equals", Substitutes, and Deviations from Contract Requirements:
1. "Or-Equals":
    - a. Expressly and prominently indicate, "Proposed Or-Equal" on the associated Action Submittals when Submittal is for an "or-equal".
    - b. Submittals requesting approval of an "or-equal" but not accompanied by the required, supplemental information will be deemed incomplete by Engineer and returned to Contractor without approval.
  2. Substitutes:
    - a. The meaning of "substitute" is indicated in Section 01 25 13 – Product Substitutions.
    - b. Requests for approval of substitutes shall comply with relevant provisions of the Contract Documents.
    - c. Contractor's request for approval of substitute is separate from the associated Action Submittal(s). Action Submittals that request approval of a substitute when a separate, formal substitution request (furnished in accordance with the Contract Documents) was not previously furnished to Engineer, followed by formal approval in via an appropriate contract modification (typically either a Field Order or Change Order), will be deemed by Engineer as non-compliant with the Contract Documents and will be returned to Contractor without approval.
    - d. Contractor is solely responsible for delays incurred due to substitutes proposed via Submittals that have not been previously duly approved via an appropriate Contract modification.

- e. Action Submittals for items or procedures approved via an appropriate Contract modification shall include a copy of the Contract modification in which the substitute was approved.
- 3. Submittals with Proposed Deviations from Contract Requirements:
  - a. When Submittal proposes deviations from requirements of the Contract Documents, the Submittal shall clearly and expressly indicate each proposed deviation.
  - b. Also comply with this Section’s provision, in the Article below, on Contractor’s transmittal letter expressly alerting Engineer to the proposed deviations.
  - c. Comply with requirements of the Contract regarding substitutes and “or-equals”.
  - d. When deviation is proposed, also appropriately revise text of Contractor’s approval, from that required below in this Article.
  - e. When Submittal includes deviations from Contract requirements and either the Submittal itself, Contractor’s transmittal letter, or both, do not comply fully with Contract requirements for indicating deviations in Submittals and giving separate written notice thereof, Engineer’s approval of such deviations will be deemed null and void unless Engineer’s written response to the Submittal has expressly acknowledged such deviation and indicated Engineer’s approval thereof.
  - f. Contractor is solely responsible for delays and costs incurred due to any and all Submittals with deviations from Contract requirements that were not properly, expressly indicated and approved in accordance with the Contract Documents. Deviations not duly approved in accordance with the Contract Documents may be deemed defective Work. Contractor is solely responsible for remedying defective Work and all associated cost and time impacts.

G. Contractor’s Approval of Submittals:

- 1. Contractor’s Review: Before transmitting Submittals to Engineer, review each Submittal to:
  - a. Ensure proper coordination of the Work.
  - b. Determine that each Submittal is in accordance with Contractor’s desires.
  - c. Verify that Submittal contains sufficient information for Engineer to determine compliance with the Contract Documents.
- 2. Incomplete or inadequate Submittals will be returned without detailed review by Engineer.
- 3. Contractor’s Approval Stamp and Signature:
  - a. Each Submittal furnished shall bear Contractor’s approval stamp (or facsimile thereof) and signature, as evidence that the Submittal has been reviewed and approved by Contractor and verified as complete and in accordance with the Contract Documents.
  - b. Submittals without Contractor’s approval and signature (as required by the contract Documents) will be returned to Contractor without further review by Engineer and deemed incomplete.
  - c. Engineer reserves the right to reject as incomplete Submittals where Contractor’s approval signature appears computer-generated or reproduced without the active involvement or review of Contractor’s signatory.
  - d. Contractor’s approval shall contain the following text:

Project Name: \_\_\_\_\_  
 Contractor’s Name: \_\_\_\_\_  
 Contract Designation: \_\_\_\_\_  
 Date: \_\_\_\_\_

----- Reference -----

Submittal Title: \_\_\_\_\_  
 Specifications: \_\_\_\_\_  
 Section: \_\_\_\_\_  
 Page No.: \_\_\_\_\_  
 Paragraph No.: \_\_\_\_\_

Drawing No.: \_\_\_\_\_ of \_\_\_\_\_  
Location of Work: \_\_\_\_\_

Submittal No. and Review Cycle: \_\_\_\_\_  
Coordinated by Contractor with Submittal Nos.: \_\_\_\_\_

I hereby certify that Contractor has satisfied Contractor's obligations under the Contract Documents relative to Contractor's review and approval of this Submittal, including: (1) reviewed and coordinated the Submittal with other Submittals and with the requirements of the Work and the Contract Documents; (2) determined and verified all: field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal, (b) 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 (c) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; (3) confirmed the Submittal is complete with respect to all related data included in the Submittal; and (4) clearly and expressly indicated all proposed deviations (if any) from the requirements of the Contract Documents both in the Submittal itself and in the Submittal's transmittal letter. Accordingly, this Submittal is hereby approved for Contractor by:

Approved for Contractor by: \_\_\_\_\_

H. Resubmittals:

1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, for requirements regarding resubmitting required Submittals.
2. In addition to limits on the quantity of resubmittals, as indicated in the General Conditions, Contractor shall furnish Submittals with such completeness, accuracy, and compliance with the Contract Documents to obtain Engineer's approval or acceptance, as applicable, without the total quantity of Submittals furnished, including all initial Submittals and all resubmittals, exceeding 125% of the number of Submittals indicated on the Schedule of Submittals initially accepted by Engineer, plus a corresponding percentage of the quantity of Submittals required by Change Orders, Work Change Directives, and Field Orders.
3. Do not increase the scope of prior review cycle of the same Submittal.
4. Indicate on Contractor's transmittal letter how Submittal was revised from previous review cycle of the Submittal and where the revisions or corrections are located within the resubmittal.
5. Expressly address and provide response for all components previously transmitted by Engineer on prior review cycles of the subject Submittal. Where resubmittal lacks complete response to Engineer's prior comments, Engineer may deem such resubmittal as incomplete and return it to Contractor without further review.
6. Where part of the Submittal's prior review cycle was expressly approved or accepted, as applicable, by Engineer, do not include such items in subsequent resubmittals.
7. Indicate, "Not Yet Resolved—To Be Resubmitted at a Later Date" for any items not approved in prior review cycle of the Submittal for items not included in the subject resubmittal. Engineer reserves the right to deem incomplete Submittals "Not Approved" or "Revise and Resubmit". Furnishing incomplete or partial resubmittals is discouraged.
8. Resubmittal of Previously Approved or Accepted Items:
  - a. Do not resubmit on a given item previously approved or accepted, as applicable, by Engineer, without Engineer's advance consent. Consent will be given for bona-fide unavailability of a previously approved or accepted item where Contractor has acted in good faith in a timely manner with due diligence to comply with the Contract Times.
  - b. Destroy or conspicuously mark "SUPERSEDED" on all documents having previously received Engineer's approval or acceptance, as applicable, that are superseded by a resubmittal.

## **1.7 TRANSMITTAL OF SUBMITTALS BY CONTRACTOR**

- A. Contractor's Transmittal Letters for Submittals:
1. Furnish separate transmittal letter with each Submittal. Use transmittal form attached to this Section (as Exhibit 01 33 00-A) unless other transmittal form is acceptable to Engineer at the start of the Project's construction.
  2. When transmittal form other than this Section's Exhibit 01 33 00-A is acceptable to Engineer, at beginning of each transmittal, include a reference heading indicating: Contractor's name, Owner's name, Project designation, Contract designation, transmittal number, and Submittal number (with review cycle).
  3. "Or-Equals": When the Submittal is proposing an "or-equal", expressly so indicate on transmittal form submitted by Contractor.
  4. Proposed Deviations from Contract Requirements: When the Submittal proposes deviations from requirements of the Contract Documents, transmittal letter shall specifically describe each proposed deviation:
- B. Submittal Delivery Method:
1. This provision presents general requirements for delivery of all Submittals unless otherwise required elsewhere in the Contract Documents.
  2. Furnish Submittals as Electronic Documents delivered in accordance with Section 01 31 26 – Electronic Communication Protocols.
  3. Furnish Submittals to Engineer and each other entity indicated in the Contract Documents as receiving a Submittal directly from Contractor.
  4. Address Submittals to Engineer as follows: HDR, 600 Superior, Suite 1700, Cleveland, Ohio 44114, to attention of Engineer's contact person, contact person's e-mail address – contact name and email to be provided to Contractor at first Project Meeting.
- C. Closeout Submittals –Transmittal and Delivery:
1. Furnish the following Closeout Submittals in accordance with general requirements for transmitting and delivering Submittals, indicated above in this Article: maintenance contracts; warranty bonds (when required) and other bonds required for specific materials, equipment, or systems; warranty documentation; and sustainable design closeout documentation (when required). On documents such as maintenance contracts and bonds, include on each document furnished original ("wet") signature of entity issuing said document. When original "wet" signatures are required, furnish such Submittals to Engineer both on original paper and as Electronic Documents, and to other entities furnish as indicated above in this Article for general requirements for Submittals.
  2. Operations and Maintenance Manuals: Submit in accordance with Section 01 78 23 - Operation and Maintenance Data.
  3. Record Documents: Submit in accordance with Section 01 78 39 - Project Record Documents.
  4. Software: In addition to software installed on Owner's computer system, furnish number of copies of software required in the Specifications section where the software is specified. Preferred means of transmittal is via secure file transfer directly to Owner (or facility manager, if other than Owner) via secure file transfer method mutually acceptable to software developer and the receiving entity. When secure file transfer is used, submit to Engineer documentation signed or electronically acknowledged by Owner that the files were received. Where such software is available only on the software developer's portable media, furnish such software, on software developer's original, portable media, sealed in software developer's original, unopened, clearly labeled packaging.
- D. Maintenance Materials Submittals – Delivery:
1. Deliver physical maintenance materials required by the Contract Documents in accordance with applicable provisions of the Contract.
  2. Submit documentation of delivery of (Maintenance Materials Submittals) in accordance with general requirements for Submittals as indicated in this Section.

## 1.8 ENGINEER'S REVIEW OF SUBMITTALS

- A. This Article applies to review of all Submittals by Engineer or other entity to whom the Contract Documents require such Submittal be furnished.
- B. Timing:
  - 1. Timing of Engineer's review will be in accordance with the Schedule of Submittals accepted by Engineer.
  - 2. When Submittal is delivered to Engineer on a date other than that indicated in the Schedule of Submittals accepted by Engineer, duration of Engineer's review may differ from that indicated in the Schedule of Submittals, based on Engineer's availability and resources. Engineer will make good-faith effort to furnish responses to Submittals in a timely manner.
  - 3. Contractor is responsible for communicating to Engineer when a Submittal is on the Project's critical path.
- C. Engineer's Review:
  - 1. Markings:
    - a. Comments or responses marked directly on Submittal by Engineer (or other entity reviewing Submittal) will be colored red.
    - b. Engineer may also present narrative comments on a comment sheet inserted by Engineer into the Submittal or included on Engineer's transmittal letter for the Submittal. Such comments will be in black text. When a separate comment sheet is included by Engineer, such sheet will be clearly identified as Engineer's comments.
  - 2. Engineer's review and disposition assigned to Submittal are subject to the following:
    - a. Submittal disposition is subject to: Engineer's comments on the Submittal; disclaimer language on Engineer's Submittal transmittal letter; Engineer's Submittal review stamp (when used) or equivalent (when used); and this provision.
    - b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.
    - c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.
    - d. Engineer is not responsible for resubmittals not yet furnished by Contractor or tracking Contractor's progress on resubmittals.
  - 3. Documents not required by the Contract Documents but nonetheless furnished by Contractor as submittals will not be reviewed by Engineer.
- D. Meaning of Submittal disposition Assigned by Engineer:
  - 1. Action Submittals:
    - a. "Approved" (Action Code A): Upon return of Submittal marked "Approved", order, ship, or fabricate materials and equipment included in the Submittal (pending Engineer's approval or acceptance, as applicable, of production-related qualifications statements and certifications, and required source quality control Submittals) or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents.
    - b. "Approved as Noted" (Action Code B): Upon return of Submittal marked "Approved as Noted", order, ship, or fabricate materials and equipment included in the Submittal (pending Engineer's approval or acceptance, as applicable, of production-related qualifications statements and certifications, and required source quality control Submittals) or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents, and in accordance with Engineer's comments and notes indicated in Engineer's Submittal response



- c. “Revise and Resubmit” (Action Code C): Upon return of Submittal marked “Revise and Resubmit”, make the revisions necessary and indicated and resubmit to Engineer for approval.
  - d. “Not Approved” (Action Code D): This disposition indicates material or equipment that cannot be approved. “Not Approved” disposition may also be applied to Submittals that are incomplete. Upon return of Submittal marked “Not Approved”, repeat initial submittal procedure utilizing approvable material or equipment, with a complete Submittal clearly indicating all information required.
2. Informational, Closeout, and Maintenance Materials Submittals:
    - a. “Accepted” (Action Code F): Information included in Submittal complies with the applicable requirements of the Contract Documents and is acceptable. No further action by Contractor is required relative to such Submittal, and the Work covered by the Submittal may proceed. Materials and equipment with Submittals with this disposition may be shipped or operated, as applicable. Submittals assigned “Accepted” by Engineer (or other reviewing entity) does not indicate Engineer’s acceptance of the associated Work, which is indicated only as set forth in the General Conditions.
    - b. “Not Acceptable” (Action Code G): Submittal, or part thereof, does not indicate full compliance with applicable requirements of the Contract Documents and is not acceptable. Provide labor, materials, equipment, services, and incidentals necessary to properly and accurately revise Submittal and resubmit to indicate acceptability and compliance with the Contract Documents
  3. Other:
    - a. “Submittal Not Reviewed” (Action Code E): Documents so marked by Engineer are not required by the Contract Documents. Submittals may also be marked with this disposition when information in the document was previously reviewed and approved or accepted by Engineer, as applicable.
- E. Distribution of Engineer’s Responses:
1. Unless otherwise indicated in the Contract Documents, Engineer will distribute written responses (as Electronic Documents) to Submittals to the following:
    - a. Contractor.
    - b. Owner.
    - c. Engineer’s file.
  2. Engineer’s acceptance of Informational Submittals, Closeout Submittals, and Maintenance Materials Submittals will be recorded in Engineer’s Submittal log. Copy of Engineer’s Submittals log is available from Engineer upon written request of Owner or Contractor. If no such request is received by Engineer, Engineer will distribute copy of Engineer’s Submittals log once per month (when Submittals have been received or acted on by Engineer). Engineer may distribute copy of Engineer’s Submittals log as an Electronic Document or as handout at construction progress meetings.
  3. Paper copies of Engineer’s Submittal responses will not be distributed unless otherwise required by the Contract Documents or otherwise agreed to by Engineer.
  4. Contractor is responsible for forwarding Engineer’s Submittals responses to Subcontractors and Suppliers as appropriate, and for coordinating the Work of all trades.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 ATTACHMENTS**

- A. The documents listed below, following this Section’s “End of Section” designation, are part of this Specifications Section:
1. “Exhibit 01 33 00-A – Transmittal for Submittal No. \_\_\_” (one page).

**END OF SECTION**

# Transmittal for Submittal No. \_\_\_\_\_ - \_\_\_\_\_

Project Name:				Date Received:	
Project Owner:				Checked By:	
Contractor:		HDR Engineering, Inc.		Log Page:	
Address:		Address:		HDR No.:	
				Spec Section:	
				Drawing/Detail No.:	
Attn (Contractor):		Attn (HDR):		Review Cycle	
Date Transmitted by Contractor:			Date of Engineer's Response Transmittal:		
Item No.	Submittal No.	Description (indicate number of copies where paper copies of physical Samples are returned)	Manufacturer	Supplier Dwg or Data No.	Engineer's Disposition (Action Code) *
1					
2					
3					
4					
<b>Contractor's Remarks (insert text):</b>					
<b>Engineer's Remarks (insert text) :</b>					
<b>* Legend for Action Code indicated above, assigned by Engineer:</b>					
Action Submittal: A – Approved B – Approved as Noted C – Revise and Resubmit D – Not Approved			E – Submittal Not Reviewed  Informational, Closeout, or Maintenance Materials Submittal: F – Accepted (this code normally recorded in Engineer's Submittals log). G – Not Acceptable		
<b>Engineer's Disclaimer (for Submittals that do not involve delegated design):</b>					
a. Submittal action code is subject to: Engineer's comments on the Submittal, comment sheets (if any), and this transmittal letter; disclaimer language on Engineer's Submittal review stamp or equivalent; and Specifications Section 01 33 00 – Submittal Procedures.					
b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.					
c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.					
<b>Reviewed for HDR by:</b>				<b>Date of Engineer's Review:</b>	
<b>Distribution:</b>		Contractor	File	Field	Owner
					Other

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**SECTION 01 35 05**  
**ENVIRONMENTAL PROTECTION AND SPECIAL CONTROLS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Minimizing the pollution of air, water, or land; control of noise, the disposal of solid waste materials, and protection of deposits of historical or archaeological interest.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Division 00 - Procurement and Contracting Requirements.
  - 2. Division 01 - General Requirements.

**1.2 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
  - 2. Prior to the start of any construction activities submit:
    - a. A detailed proposal of all methods of control and preventive measures to be utilized for environmental protection.
    - b. A drawing of the work area, haul routes, storage areas, access routes and current land conditions including trees and vegetation.
    - c. A copy of the NPDES permit for storm water discharges from construction activities.
    - d. A copy of the approved pollution prevention plan.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Employ and utilize environmental protection methods, obtain all necessary permits, and fully observe all local, state, and federal regulations.
- B. Land Protection:
  - 1. Except for any work or storage area and access routes specifically assigned for the use of the Contractor, the land areas outside the limits of construction shall be preserved in their present condition.
    - a. Confine construction activities to areas defined for work within the Contract Documents.
  - 2. Manage and control all borrow areas, work or storage areas, access routes and embankments to prevent sediment from entering nearby water or land adjacent to the work site.
  - 3. Restore all disturbed areas including borrow and haul areas and establish permanent type of locally adaptable vegetative cover.
  - 4. Unless earthwork is immediately paved or surfaced, protect all side slopes and backslopes immediately upon completion of final grading.
  - 5. Plan and execute earthwork in a manner to minimize duration of exposure of unprotected soils.
  - 6. Except for areas designated by the Contract Documents to be cleared and grubbed, do not deface, injure or destroy trees and vegetation, nor remove, cut, or disturb them without approval of the Engineer.

- a. Any damage caused by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at no additional cost to the Owner.
- C. Surface Water Protection:
1. Contractor shall implement approved Soil Erosion and Sediment Control Plan. Revisions to the plan must be approved by the Soil Conservation Service Freehold District.
  2. Utilize, as necessary, erosion control methods to protect side and backslopes, minimize and the discharge of sediment to the surface water leaving the construction site as soon as rough grading is complete.
    - a. These controls shall be maintained until the site is ready for final grading and landscaping or until they are no longer warranted and concurrence is received from the Engineer.
    - b. Physically retard the rate and volume of run-on and runoff by:
      - 1) Implementing structural practices such as diversion swales, terraces, straw bales, silt fences, berms, storm drain inlet protection, rocked outlet protection, sediment traps and temporary basins.
      - 2) Implementing vegetative practices such as temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffers, hydroseeding, anchored erosion control blankets, sodding, vegetated swales or a combination of these methods.
      - 3) Providing Construction sites with graveled or rocked access entrance and exit drives and parking areas to reduce the tracking of sediment onto public or private roads.
  3. Discharges from the construction site shall not contain pollutants at concentrations that produce objectionable films, colors, turbidity, deposits or noxious odors in the receiving stream or waterway.
  4. The plans designate an area for the Contractor to set up operations for dewatering the sludge that is removed from the wastewater lagoons. The liquid that is separated out from the solids shall be directed back into the wastewater lagoons.
- D. Solid Waste Disposal:
1. Collect solid waste on a daily basis.
  2. Provide disposal of degradable solid waste to an approved solid waste disposal site.
  3. Provide disposal of nondegradable solid waste to an approved solid waste disposal site or in an alternate manner approved by Engineer and regulatory agencies.
  4. No building materials wastes or unused building materials shall be buried, dumped, or disposed of on the site.
- E. Fuel and Chemical Handling:
1. Store and dispose of chemical wastes in a manner approved by regulatory agencies.
  2. Take special measures to prevent chemicals, fuels, oils, greases, herbicides, and insecticides from entering drainage ways.
  3. Do not allow water used in onsite material processing, concrete curing, cleanup, and other waste waters to enter a drainage way(s) or stream.
  4. Provide containment around fueling and chemical storage areas to ensure that spills in these areas do not reach waters of the state.
- F. Control of Dust:
1. The control of dust shall mean that no construction activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so that it remains visible beyond the limits of construction.
    - a. Reasonable measures may include paving, frequent road cleaning, planting vegetative groundcover, application of water or application of chemical dust suppressants.
    - b. Utilize methods and practices of construction to eliminate dust in full observance of agency regulations.
  2. The Engineer will determine the effectiveness of the dust control program and may request the Contractor to provide additional measures, at no additional cost to Owner.

- G. Burning:
  - 1. Do not burn material on the site.
  - 2. If the Contractor elects to dispose of waste materials by burning, make arrangements for an off-site burning area and conform to all agency regulations.
- H. Control of Noise:
  - 1. Control noise by fitting equipment with appropriate mufflers.
- I. Completion of Work:
  - 1. Upon completion of work, leave area in a clean, natural looking condition.
  - 2. Ensure all signs of temporary construction and activities incidental to construction of required permanent work are removed.
  - 3. Grade, fill and seed all disturbed areas.

**END OF SECTION**

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**SECTION 01 35 05**  
**MAINTENANCE OF WASTEWATER TREATMENT OPERATIONS**

**PART 1 - PART 1 - GENERAL**

**1.1 1.01 DESCRIPTION OF WORK**

A. The work covered in this section includes maintaining sewage treatment capability during construction.

**1.02 MAINTENANCE OF TREATMENT OPERATIONS DURING CONSTRUCTION**

A. During construction, the treatment facilities shall be operated and maintained by GCDWR except as otherwise described in this Section. The Contractor may modify the site and structures as necessary for construction, as identified in the submittal referenced below and the project schedule, but the Contractor shall not make any modifications, excavations, or storage of materials which will prevent continuous access, operation, and maintenance of the facilities by the GCDWR.

B. The Contractor shall coordinate and maintain close communication with the plant operator to assure proper plant operation.

**1.03 SUBMITTALS**

A. The Contractor shall submit to the Engineer for review, a detailed description of methods to be used to accomplish the following:

1. Switchover plans as described in Subsection 1.05.
2. Procedures and schedule to remove and relocate or store all equipment from the lagoons, including aerators and associated control and power wiring, support cables, docks, and baffling.

**1.04 CONCEPTUAL CONSTRUCTION SEQUENCING PLAN**

A. The construction sequence identified below is intended to outline the intended work sequence as shown on the Drawings. The contractor is responsible for selecting their own means and methods of construction.

1. Phase 1 Work:

- a. Remove aerators from Lagoon A. Divert all flow from the headworks to Lagoon B by closing the valve in the influent chamber to Lagoon A. The valve in the effluent control structure associated with Lagoon A shall also be closed.
- b. Complete Lagoon A dredging and biosolids disposal.
- c. Pump remaining contents of Lagoon A into Lagoon B. Coordinate with GCDWR staff, who will lower Lagoon B level with effluent pumping.
- d. Complete Lagoon A demo work, liner installation, and leak testing.

2. Phase 2 Work:

- a. Once Lagoon A is operational, divert all flow to Lagoon A from the headworks utilizing the valves in the influent chamber.
- b. Isolate Lagoon B. Remove and store Lagoon B aerators.
- c. Complete Lagoon B dredging and biosolids disposal.
- d. Pump remaining contents of Lagoon B into Lagoon A. Coordinate with GCDWR staff, who will lower Lagoon A level with effluent pumping.
- e. Complete Lagoon B demo work, liner installation, and leak testing.
- f. Reinstall existing aerators.
- g. Once Lagoon B work is complete, return treatment plant to normal operation.

3. Phase 3 Work:

- a. Install meters on effluent lines where indicated
- b. Replace overland flow piping, valves and supports
- c. Install new disinfection system
- d. Relocate sampling manhole.

**END OF SECTION 01 35 05**

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**SECTION 01 65 00**  
**PRODUCT DELIVERY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. General requirements for:
    - a. Coordination of deliveries.
    - b. Preparing materials and equipment for shipping from the production or fabrication facility, including packaging.
    - c. Shipment.
    - d. Delivery of materials and equipment to the Site.
    - e. Inspection upon delivery and remedy of damaged, deteriorated, or otherwise defective items, and remedy of missing or lost items.
- B. Scope:
1. Contractor shall make all arrangements for packaging, shipping, delivering, inspecting upon delivery, and unloading upon delivery materials and equipment necessary and required for the Work.
  2. Contractor shall provide all labor, materials, equipment, tools, incidentals, and services necessary to have materials and equipment properly packaged, shipped, and delivered to the Site, and all related Work required by the Contract Documents.
- C. Related Requirements: Include but are not limited to:
1. Section 01 29 76 - Progress Payment Procedures.
  2. Section 01 66 00 - Product Storage and Handling Requirements.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
1. To extent practicable, coordinate shipping and delivery of materials and equipment with anticipated shipping requirements, such as allowing sufficient time for customs inspections on international shipments, availability of shipping services and facilities, and seasonal concerns (such as shipments that may be influenced by major tropical storms and predictable, typical weather).
  2. Coordinate shipping and delivery of materials and equipment to the Site and other locations where such items may be stored prior to delivery to the Site. Coordinate such shipments and deliveries with the progress of the Work and status of adequate facilities, whether temporary storage or permanent installation locations, necessary to properly store and safeguard materials and equipment to be incorporated into the Work.
  3. Where possible, deliver to the Site materials and equipment as close as possible to when such items will be incorporated into appropriately protected, permanent installation location.

**1.3 PREPARATION FOR SHIPMENT**

- A. Factory Assembly:
1. When practical, factory-assemble materials and equipment. Mark or tag separate parts and assemblies to facilitate field assembly.
- B. Temporary Protection:
1. Appropriately cover, with strippable, protective coating or other material, machined parts and unpainted, uncoated, or unprotected surfaces subject to damage or deterioration caused by weather elements or environment,
  2. To extent practical, strippable, removable, disposable protective materials shall be recyclable.

3. To extent practical, avoid strippable, removable, and disposable protective items shall be type resulting in minimum waste and cleanup upon removal.
  4. Protection of Electrical Equipment, Instrumentation and Controls, Items with Computer Chips Solid-State Devices, and Other Electronics:
    - a. Provide appropriate temporary protection of electrical equipment, microprocessors, and other electronics from humidity, moisture, and corrosion by appropriate packaging, protection, desiccants, and volatile corrosion inhibitor (VCI) blocks.
    - b. Immediately prior to shipment, provide new, fresh desiccants and ensure integrity of other protective materials.
- C. Packaging:
1. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage.
  2. Mark, label, or tag, on outside of each package, crate, and container, to indicate associated:
    - a. Purchase order number.
    - b. Bill of lading number.
    - c. Delivery address (including facility name, where applicable).
    - d. Owner's contract designation or Project name.
    - e. Contractor name.
    - f. Purchasing Subcontractor's name (as applicable).
    - g. Contents by name and designation within the Work (for example, "Influent Pump No. 1"),
    - h. Approximate weight of container, crate, package, including packaging.
    - i. Special instructions for handling and protection during shipment and unloading.
  3. The Site may be listed as the "ship to" or "delivery" address; but Owner or facility manager shall not be listed as recipient of shipment unless otherwise directed in writing by Engineer.
  4. Truthfully and accurately mark, label, or tag items for shipment and delivery.
  5. Include complete packing lists and bills of materials with each shipment.
  6. Protect materials and equipment with appropriate, temporary packaging or protection when such items may rotate or move during shipment.
  7. Protect materials and equipment from exposure to weather elements, adverse environments, and keep thoroughly dry and dust-free. Protect painted surfaces against impact, abrasion, discoloration, and other damage and deterioration.
  8. Lubricate bearings and other items requiring lubrication, in accordance with manufacturer's written instructions.

#### **1.4 SHIPPING**

- A. Notification of Shipments:
1. Keep Engineer, Owner, and facility manager informed of delivery of all materials and equipment to be incorporated into the Work.
- B. Do not ship materials and equipment until:
1. Related Shop Drawings, product data, Samples, shop testing plan Submittals, and other Submittals required by the Contract Documents are approved by Engineer, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
  2. Manufacturer's written instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by Engineer, in accordance with the Specifications.
  3. Results of source quality control activities (factory testing and inspections), when required by the Contract Documents for the subject materials or equipment, have been submitted to and accepted by Engineer.
  4. Facilities required for handling materials and equipment, in accordance with the Contract Documents and manufacturer's instructions, are in place and available at the delivery location.
  5. Required storage facilities and protection measures have been provided.

- C. Loss or Damage During Shipment:
  - 1. Unless otherwise indicated in the Contract Documents (whether expressly or in provisions regarding builder's risk insurance), Contractor is responsible for all loss, damage, and deterioration to materials and equipment incurred during shipment and delivery.
  - 2. Contractor is not eligible for additional Contract Times or increase in the Contract Price due to delays or costs incurred due to loss, damage, or deterioration during shipment, unless Owner was responsible for shipping the subject materials or equipment to the Site or other delivery location.

## 1.5 DELIVERY

- A. Scheduling and Timing of Deliveries:
  - 1. Arrange deliveries of materials and equipment in accordance with the Progress Schedule accepted by Engineer and in ample time to facilitate inspection and observation prior to installation.
  - 2. Schedule deliveries to minimize space required for, and duration of, storage of materials and equipment at the Site or other delivery location, as applicable.
  - 3. Coordinate deliveries to avoid conflicting with the Work and conditions at the Site, and to accommodate the following:
    - a. Work of other contractors at or adjacent to the Site, Owner, and others.
    - b. Storage space limitations.
    - c. Availability of appropriate construction equipment and machinery, tools, and qualified personnel for inspecting, unloading, and handling materials and equipment.
    - d. Owner's use of premises.
  - 4. Deliver materials and equipment to the Site during regular working hours.
  - 5. Deliver materials and equipment to avoid delaying the Work and the Project.
- B. Deliveries:
  - 1. Provide Contractor's telephone number to shipper; do not provide Owner's or facility manager's telephone number to shipper or carrier.
  - 2. Arrange for deliveries while Contractor's personnel are at the Site. Contractor shall receive and coordinate shipments upon delivery. Shipments delivered to the Site when Contractor is not present will be refused by Owner or facility manager, and Contractor shall be responsible for the associated delays and costs, including demurrage.
- C. Containers and Marking:
  - 1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
  - 2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.
- D. Inspection of Materials and Equipment Upon Delivery:
  - 1. Immediately upon delivery, visually but critically inspect shipment to verify that:
    - a. Materials and equipment comply with the Contract Documents and approved or accepted (as applicable) Submittals.
    - b. Quantities are correct.
    - c. Materials and equipment are undamaged and of required quality.
    - d. Containers and packages are intact and labels are complete and legible.
  - 2. Eligibility for Payment:
    - a. Materials and equipment are not eligible for payment until duly inspected and determined to be in accordance with the Contract Documents and Engineer-approved Submittals, without damage or deterioration.
    - b. No payment can be made for damaged, deteriorated, or otherwise defective items.
    - c. No payment can be made for missing or lost items.
    - d. Other provisions of the Contract Documents may establish other preconditions for payment for delivered material and equipment, including Section 01 29 76 – Progress Payment Procedures.

3. Damaged, Deteriorated, and Otherwise Defective Items:
  - a. Promptly remove from the Site damaged, deteriorated, or defective materials and equipment and expedite delivery of new, undamaged materials and equipment.
  - b. Promptly remedy incomplete or lost materials and equipment.
  - c. Furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.
  - d. Promptly advise Engineer in writing: (1) when damaged, deteriorated, incomplete, or otherwise defective materials and equipment are delivered, and (2) associated impact on the Progress Schedule.
- E. Handling of Materials and Equipment Upon Delivery:
  1. Provide construction equipment and machinery, tools, and qualified personnel necessary to unload and handle materials and equipment, including those furnished by Owner, by methods that prevent damaging, defacing, and soiling materials and equipment and packaging.
  2. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
  3. Provide additional protection during unloading and handling as necessary to prevent scraping, marring, and otherwise damaging materials and equipment and adjacent surfaces.
  4. Unload and handle materials and equipment by methods that prevent bending, warping, and overstressing.
  5. Lift heavy components only at designated lifting points.
  6. Unload and handle materials and equipment in safe manner and as recommended by manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during unloading and handling.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

**SECTION 01 66 00**  
**PRODUCT STORAGE AND HANDLING REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. General requirements for:
    - a. Payment considerations for stored materials and equipment.
    - b. Handling of materials and equipment.
    - c. Storage of materials and equipment, including:
      - 1) General provisions for storage.
      - 2) Storage locations.
      - 3) Protection of stored items.
      - 4) Storage of items containing Constituents of Concern.
      - 5) Outdoor, uncovered storage.
      - 6) Outdoor, covered storage.
      - 7) Fully-protected storage.
      - 8) Removal of temporary storage facilities and restoration of storage areas.
    - d. Maintenance of storage.
- B. Scope:
1. Contractor shall provide all labor, materials, equipment, tools, services, lands, and incidentals necessary and required to store and handle materials and equipment to be incorporated into the Work, and other materials and equipment at the Site, adjacent areas, and offsite storage areas.
  2. Comply with Section 01 71 33 - Protection of the Work and Property, relative to handling and storing materials and equipment.
- C. Related Requirements: Include but are not limited to:
1. Section 01 29 76 - Progress Payment Procedures.
  2. Section 01 65 00 - Product Delivery Requirements.
  3. Section 01 71 33 - Protection of the Work and Property.

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment:
1. Materials and equipment delivered but not suitably stored and protected will not be eligible for payment.
  2. Engineer may recommend reduction in payment, and Owner may reduce payments to Contractor (“set-offs”) by an appropriate amount when stored items are subsequently revealed to be improperly stored or protected.
  3. Payment for Suitably Stored Items:
    - a. Requirements for payment for materials and equipment delivered and suitably stored, but not yet incorporated into the Work, are in the General Conditions, as may be modified by the Supplementary Conditions, and Section 01 29 76 - Progress Payment Procedures.
    - b. Materials and equipment delivered and suitably stored, but not yet incorporated into the Work, will not be eligible for payment until the inspection upon delivery, required in Section 01 65 00 - Product Delivery Requirements, is completed and Engineer concurs that such items generally appear to be in good condition, in accordance with the Contract Documents, and are of the required quality and quantity.

**1.3 SUBMITTALS**

- A. Informational Submittals: Submit the following:

1. Affidavits of Inspection and Maintenance Performed on Mechanical and Electrical Equipment in Long-Term Storage:
  - a. Submit in accordance with requirements of Article 3.1 of this Section.
2. Other Records of Inspection and Maintenance of Stored Materials and Equipment:
  - a. Establish and maintain such records as required by this Section.
  - b. Submit to Engineer or Owner (as applicable) within three days of Contractor's receipt of such request.

#### **1.4 HANDLING**

- A. Handling of Materials and Equipment – General:
  1. Handle materials and equipment to be incorporated into the Work in accordance with the Contract Documents and manufacturer's written instructions.
  2. During handling and assembling of materials and equipment:
    - a. Maintain validity of manufacturers' warranties.
    - b. Comply with:
      - 1) Section 01 65 00 - Product Delivery Requirements.
      - 2) Section 01 71 33 - Protection of the Work and Property.
    - c. Do not drop, drag (without appropriate rollers or skids), or scrape materials and equipment.
    - d. Use proper construction equipment and machinery, and tools, operated by sufficient number of qualified personnel.
    - e. Maintain materials and equipment in neutral position.
    - f. Do not exert undue stress on materials and equipment.
    - g. Do not deform, bend, or damage materials and equipment.
    - h. Do not deform or mar shafts, bearings, or other parts.
- B. Additional Requirements for Hoisting and Lifting:
  1. When lifting or hoisting, support materials and equipment from appropriate lifting points using proper hooks and suitable nylon lifting straps, chains, and cables. Do not mar or scrape surfaces of materials and equipment during handling.

#### **1.5 STORAGE**

- A. Storage – General:
  1. Contractor shall make all arrangements and provide all measures necessary and required for, and pay all costs associated with, storing materials and equipment.
  2. Store materials and equipment in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions regarding storage and protection, comply with the more-stringent, more-protective requirements.
  3. Comply with Section 01 71 33 - Protection of the Work and Property.
  4. Records:
    - a. Establish and maintain up-to-date account of materials and equipment in storage, to facilitate preparation of progress payment requests, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.
    - b. Submit affidavits of inspection and maintenance of mechanical and electrical equipment in long-term storage in accordance with this Section's Article 3.1 ("Maintenance of Storage").
  5. Inspect and maintain stored materials and equipment in accordance with this Section's Article 3.1 ("Maintenance of Storage").
- B. Storage Location:
  1. Area(s) available at the Site for storing materials and equipment are addressed in Section 01 14 19 - Use of Site.
  2. When onsite storage is insufficient, Contractor shall provide additional lands for storage facilities as necessary and required for the Work.



3. Restrictions on Storage Locations:
    - a. Do not use lawns, landscaped areas, or private property for storage without written permission of property owner.
    - b. Comply with:
      - 1) Section 01 14 19 - Use of Site.
      - 2) Section 01 71 33 - Protection of the Work and Property.
- C. Protection of Stored Items – General:
1. Store materials and equipment indicated below to ensure preservation of quality and fitness for intended uses in the Work, including proper protection against damage and deterioration resulting from: water (including precipitation, flood, and other), moisture, humidity, wind, dust, freezing, and outdoor ambient air high temperature as high as 85 degrees F. Temperature and humidity inside crates, containers, storage structures, and packaging may be significantly higher than outdoor ambient air temperature.
  2. Store in indoor, climate-controlled storage all materials and equipment subject to damage or deterioration by water, moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner and Engineer.
  3. Do not open manufacturer’s crates, containers, and packaging until time of installation, unless recommended by the manufacturer or otherwise required in the Contract Documents.
  4. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
  5. Electrical Equipment, Instrumentation and Controls, Items Containing Computer Chips, Solid-State Devices, and Other Electronics:
    - a. Contractor shall obtain, coordinate, and comply with specific temperature, humidity, and environmental limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
    - b. Protect from water, moisture, humidity, dust, heat, cold, and other potentially harmful elements and environments. Space heaters provided in equipment shall be connected and operating at all times until equipment is connected to active, permanent, electrical power.
    - c. Provide inside each electrical panel, control panel, and other enclosures with electronic device(s) each of the following: (1) desiccant, (2) volatile corrosion inhibitor (VCI) blocks, (3) moisture indicator, and (4) maximum- and minimum-indicating thermometer.
    - d. Check panels and equipment not less than once per month. Replace desiccant, VCI, and moisture indicator the earlier of: (1) as often as necessary, or (2) every six months.
    - e. Establish and maintain certified record of daily maximum and minimum temperature and humidity in storage facility. Such records shall be available for Engineer’s and Owner’s inspection upon request. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available to Engineer and Owner upon request..
  6. Finished Surfaces:
    - a. Protect finished surfaces against impact, abrasion, discoloration, and other damage.
    - b. Remedy, in accordance with requirements of item manufacturer and finishing system manufacturer damaged, marred, or deteriorated finishes, to Engineer’s satisfaction.
  7. Contractor is fully responsible for loss, damage, and deterioration, including theft and vandalism, to stored materials and equipment.
- D. Uncovered Storage:
1. The following materials may be stored outdoors without cover on supports, so there is no contact with the ground:
    - a. Reinforcing steel.
    - b. Precast concrete materials.
    - c. Structural steel.
    - d. Metal stairs.
    - e. Handrails and railings.

- f. Grating.
  - g. Checker plate.
  - h. Metal access hatches, such as floor doors, roof hatches, and the like.
  - i. Castings.
  - j. Fiberglass items.
  - k. Rigid electrical conduit, except PVC-coated conduit.
  - l. Fencing intended for permanent, outdoor installation.
  - m. Piping, except PVC or chlorinated PVC (CPVC) pipe.
- E. Covered Storage:
- 1. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
    - a. Grout and mortar materials.
    - b. Masonry units.
    - c. Metal decking.
    - d. Rough lumber.
    - e. Soil materials and granular materials such as aggregate.
    - f. PVC and CPVC pipe.
    - g. PVC-coated electrical conduit.
    - h. Filter media.
  - 2. Properly and fully secure covers against coming loose in strong winds.
  - 3. Install coverings properly sloped to prevent accumulation of water.
  - 4. Loose Soil Material and Loose Granular Material:
    - a. Store such materials in well-drained areas.
    - b. Prevent mixing of such materials with foreign matter. Provide underlying separation layer or store on solid, impervious surface, where appropriate.
- F. Fully-Protected Storage:
- 1. Store all materials and equipment not indicated in the provisions above regarding uncovered storage and covered storage on supports, in buildings, trailers, or other suitable temporary storage facility with concrete or wood flooring, solid and impervious roof, and fully closed walls on all sides.
  - 2. Covering with visqueen plastic sheeting or similar material in storage space without floor, roof, and walls is unacceptable.
  - 3. Provide heated storage for materials and equipment that could be damaged or deteriorate by low temperatures or freezing.
  - 4. Provide air-conditioned storage for materials and equipment that could be damaged or deteriorate by high temperature or humidity.
  - 5. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
  - 6. Maintain temperature and humidity at levels recommended by materials and equipment manufacturers.
  - 7. Prevent infestation of stored items by pests and rodents. Promptly and properly remedy such infestation when apparent.
- G. Removal of Temporary Storage Facilities and Restoration of Storage Areas:
- 1. Completely remove temporary storage facilities when no longer necessary for the Work.
  - 2. Restore areas used for storage and areas occupied by temporary storage facilities, in accordance with the Contract Documents, including Section 01 71 33 - Protection of the Work and Property.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 MAINTENANCE OF STORAGE**

- A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
  - 1. Condition and status of storage facilities is adequate to provide required storage conditions.
  - 2. Required environmental conditions are maintained on continuing basis.
  - 3. Materials and equipment exposed to weather elements or other environment are not adversely affected.
  
- B. Mechanical and Electrical Equipment in Long-Term Storage:
  - 1. Meaning of the term “long-term storage” is as established in written instructions of manufacturer of associated materials or equipment.
  - 2. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer’s written instructions for servicing each item, with notice of enclosed instructions shown on exterior of crate, container, or packaging.
  - 3. Frequency of inspections and maintenance of stored items shall be in accordance with manufacturer’s written instructions.
  - 4. For mechanical equipment with bearings and shafts, manually rotate shaft during inspection and maintenance, as recommended by equipment manufacturer.
  - 5. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is connected to permanent electrical power supply.
  - 6. Other requirements for maintenance during storage of electrical equipment, instrumentation and controls, items with computer chips, solid-state devices and other electronics are in this Section’s provision on general protection during storage.
  
- C. Affidavits:
  - 1. Submit to Engineer affidavit for each time maintenance and inspection was performed on materials and equipment in long-term storage. Affidavit shall be signed by Contractor and entity performing the inspection and maintenance on the stored items.
  - 2. Indicate on affidavit:
    - a. Date of inspection.
    - b. Personnel involved and employer of each.
    - c. Condition of storage environment.
    - d. Specific stored items inspected, equipment condition, problems observed, problems corrected, maintenance tasks performed, and other relevant information.
    - e. Signature of Contractor’s person responsible for the inspection and maintenance.
    - f. Signed and notarized statement by items’ manufacturer indicating whether storage conditions and tasks performed are suitable for continued compliance with manufacturer’s warranties.
  - 3. Submit each affidavit, complete, not later than seven days after performing associated inspection and maintenance.

**END OF SECTION**

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**SECTION 01 71 14**  
**MOBILIZATION AND DEMOBILIZATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Construction mobilization and demobilization.
- B. Scope:
  - 1. Contractor shall provide all labor, materials, equipment, tools, services, and incidentals to perform mobilization and demobilization for the Work.
  - 2. This Section is general and does not necessarily indicate all activities required for mobilization and demobilization, which may be indicated in other parts of the Contract Documents.,
- C. Related Requirements: Include, but are not necessarily limited to:
  - 1. Section 01 14 19 - Use of Site.
  - 2. Section 01 22 00 - Measurement and Payment.
  - 3. Section 01 71 33 - Protection of the Work and Property.

**1.02 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment:
  - 1. Where costs of mobilization and demobilization are to be included in a specific bid/pay item, such item is indicated in the Contract, including Section 01 22 00 - Measurement and Payment.
  - 2. Where the Contract does not expressly require costs for mobilization and demobilization are to be under specific bid/pay item(s), Contractor may allocate such costs among bid/pay items as Contractor deems appropriate.
- B. If costs for mobilization, demobilization, or both change as a result of Contract modifications, include the total cost of such changes to mobilization and demobilization in Change Proposal submitted for each associated change. Make no subsequent claim, whether via Change Proposal, Claim, or dispute, for additional compensation for mobilization, demobilization, or both.

**1.03 MOBILIZATION AND DEMOBILIZATION - GENERAL**

- A. Do not commence mobilization at the Site or other areas until:
  - 1. The Contract is signed by both parties and is effective.
  - 2. Required insurance documentation, performance bond, and payment bond have been submitted by Contractor and accepted by Owner, and builder's risk insurance complying with the Contract Documents is furnished and in place, and documentation thereof accepted by the parties.
  - 3. Conditions, if any, of Owner-issued Notice to Proceed, if any, have been complied with by the applicable party.
  - 4. Preconstruction conference(s), including items on agenda for site mobilization matters, is completed.
  - 5. Preconstruction photographic documentation is obtained and submitted in accordance with the Contract Documents.
- B. Mobilization Work includes, but is not limited to:
  - 1. Establishing Contractor's staging and laydown areas, in accordance with Section 01 14 19 - Use of Site.
  - 2. Establishing temporary utilities and temporary facilities in accordance with the Contract Documents.
  - 3. Establishing required and necessary temporary project signage.

4. Other mobilization Work required by the Contract Documents, including Section 01 22 00 - Measurement and Payment.
- C. Demobilization Work includes, but is not limited to:
1. Removing from the Site and other areas Contractor's temporary utilities, temporary facilities, temporary signage, temporary security measures; construction equipment, machinery, and tools; unused items of materials and equipment; and other items.
  2. Final restoration and repair of damage caused by Contractor.
  3. Final cleaning.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**SECTION 01 71 33**  
**PROTECTION OF THE WORK AND PROPERTY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. General requirements for protecting the Work and property, including:
    - a. Accessing or entering property.
    - b. Temporary barricades and temporary warning lights and signs.
    - c. Responsibility to remedy damaged property.
    - d. Protecting natural habitats, including trees, plants, lawns and meadows, and wildlife.
    - e. Protecting Underground Facilities.
    - f. Protecting existing surface structures.
    - g. Protecting floors, walls, and roofs.
    - h. Protecting other installed items and landscaping.
- B. Scope:
1. This Section augments requirements of the General Conditions as may be modified by the Supplementary Conditions regarding protection of the Work and property, including Underground Facilities.
  2. Contractor shall provide all labor, materials, equipment, tools, services, and incidentals necessary and required for protecting the Work and property in accordance with the Contract Documents.
- C. Related Requirements: Include, but are not necessarily limited to:
1. Section 01 65 00 - Product Delivery Requirements.
  2. Section 01 66 00 - Product Storage and Handling Requirements

**1.2 PROTECTION – GENERAL**

- A. Contractor shall provide all precautions and programs and perform all actions necessary to protect personnel health and safety, and to protect the Work and all public and private property and facilities from damage, in accordance with the Contract Documents, Laws and Regulations, and other applicable requirements.
- B. To prevent damage, injury, and loss, Contractor's actions shall include the following:
1. Providing measures for safety of all personnel at and adjacent to the Site, whether engaged in performing the Work, operating or maintaining the facility, or performing other functions for Owner or others.
  2. Storing construction equipment, machinery, tools, and similar items, materials and equipment to be incorporated into the Work, supplies, and other items in an orderly, safe manner that does not unduly interfere with progress of the Work or work of others, including Owner and facility manager (if other than Owner).
  3. Suitably storing materials and equipment to be incorporated into the Work, in accordance with the Contract Documents, including Section 01 66 00 - Product Storage and Handling Requirements.
  4. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction and facilities.
  5. Frequently removing and disposing of rubbish, scrap materials, and debris, in accordance with the Contract Documents resulting from Contractor's operations.
  6. Providing temporary controls, including controlling pests and rodents, in accordance with the Contract Documents.

## **PART 2 - PRODUCTS**

### **2.1 TEMPORARY BARRICADES**

- A. Materials and Construction:
  - 1. Temporary barricades shall be of materials that are either new or of good quality and sufficient for the intended purpose, exposure, and duration of use.
  - 2. Provide temporary barricades of sturdy materials of grade, thickness, and durability sufficient for the probable loads to which they will be subject. Temporary barricades intended for fall prevention, such as railings and handrails on temporary stairs and temporary walkways and at openings, shall be in accordance with Laws and Regulations, including the applicable building and safety codes.
  - 3. Color: Use appropriately colored and reflective barricades, or paint barricades accordingly, to be visible at night and during periods of low visibility.
  - 4. Where owner of transportation right-of-way or transportation facility having jurisdiction or other authority having jurisdiction requires compliance with standards more stringent than the Contract Documents, comply with both the Contract Documents and requirements of the authorities having jurisdiction.

## **PART 3 - EXECUTION**

### **3.1 ACCESSING OR ENTERING PROPERTY**

- A. Accessing or Entering Property – General:
  - 1. Use and occupy only lands and easements furnished by Owner, unless appropriate consent from property owner and occupants is obtained by Contractor.
  - 2. The foregoing applies to personnel, construction equipment and machinery, tools, vehicles, materials or equipment to be incorporated into the Work, supplies, temporary facilities, and other items or obstructions.

### **3.2 BARRICADES**

- A. Temporary Barricades and Temporary Warning Lights and Signs – General:
  - 1. All Work Areas:
    - a. Provide temporary barricades, warning lights, and warning signs for both indoor and outdoor Work, in accordance with Laws and Regulations and requirements of owners of affected property and facilities.
    - b. Warning Lights and Signage: From 30 minutes before terrestrial sunset to 30 minutes after terrestrial sunrise, provide and maintain not less than one temporary flashing light at each vehicle barricade and at other barriers and barricades as necessary.
    - c. Promptly replace temporary barricades that are damaged or are otherwise no longer capable of serving their intended function.
  - 2. Where the Work is performed on or adjacent to roadway, access road, other area travelled by motor vehicles, railroad, or similar transportation right-of-way, or public place:
    - a. Provide temporary barricades, temporary fences, temporary guard rails, temporary lights and warning signs, temporary danger signals, and other precautions for protecting persons, property, vehicles, and the Work.
    - b. Provide sufficient temporary barricades to keep vehicles from being driven on or into excavations and the Work under construction.
  - 3. Temporary Barriers for Areas Not Subject to Vehicular Traffic:
    - a. Provide temporary barriers around:
      - 1) Openings.
      - 2) Scaffolding.
      - 3) Temporary stairs and ramps.
      - 4) Around excavations.
      - 5) Around elevated walkways, slabs, and platforms.
      - 6) Other areas that may present a fall-hazard or hazard to persons and property.



- b. Provide appropriate temporary barriers, warning signs and, where necessary, warning lights, at ground level and other low elevations, and at higher elevations. Protect persons and property from fall-hazards and protect persons and property at lower elevations from falling objects.
- 4. Duration of Temporary Barriers, Barricades, Signs, and Warning Lights:
  - a. Contractor's responsibility for maintaining temporary barriers, barricades, signs, warning lights shall continue until the associated Work is substantially complete in accordance with the Contract Documents, unless other provision for protection are agreed to by the parties.
  - b. After Substantial Completion, protect Work and property during periods when Contractor is onsite: completing the remaining Work, performing correction period work, and performing warranty work.

**3.3 RESPONSIBILITY TO REMEDY DAMAGED PROPERTY**

- A. Contractor to Remedy Damage:
  - 1. Contractor has full responsibility for preserving public and private property and facilities on and adjacent to the Site.
  - 2. Direct or indirect damage done by, or on account of, any act, omission, neglect (including inadvertent acts), or misconduct by Contractor (including any person or entity for whom contractor is responsible) in performing the Work, shall be promptly remedied by Contractor, at Contractor's expense, in accordance with the Contract Documents.
  - 3. If the Contract Documents do not show or indicate the required restoration, or remedy, restore or remedy the damage to condition equal or better than that existing before damage was done.
- B. Owner May Remedy:
  - 1. Should Contractor fail to protect and safeguard property and the Work after requests from Engineer or Owner, Owner reserves the right to implement measures to protect property and the Work.
  - 2. Cost of such Owner-implemented measures shall be paid by Contractor. Owner may deduct from payments due Contractor such amounts as set-offs in accordance with the Contract Documents.
  - 3. Such right, however, does not obligate Owner or Engineer to continuously monitor or have responsibility for protection of property and the Work, which responsibility is exclusively Contractor's.
  - 4. In exercising its rights under this provision, Owner will endeavor to give Contractor sufficient notice to allow Contractor to remedy the damage or defect within a reasonable time. However, if Owner or Engineer deems that the situation requires prompt remedy, Owner may act as quickly as Owner deems appropriate, without infringing on or mitigating Owner's rights under this provision and elsewhere in the Contract Documents

**3.4 PROTECTION OF NATURAL HABITATS**

- A. Tree and Plant Protection – General:
  - 1. Protect existing trees, shrubs, and plants on or adjacent to the Site, against unnecessary cutting, breaking, damage, and skinning of trunk, branches, bark, and roots.
  - 2. Protect irrigation servicing existing trees, shrubs, and plants on or adjacent to the Site that remain in place.
  - 3. Do not store materials or equipment or park construction equipment, machinery, or vehicles within foliage drip lines.
  - 4. In areas subject to traffic, provide temporary fencing or temporary barricades to protect trees and plants.
  - 5. Burning is not allowed at or adjacent to the Site, including burning, in open fires or otherwise, trees, plants, debris, or other combustible materials.
  - 6. Within the limits of the Work, water trees and plants that are to remain, to maintain their health during construction operations.

7. Cover exposed roots with burlap, and keep such burlap continuously wet. Cover exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by storm water runoff, erosion, flooding, and noxious materials in solution.
- B. Remedy of Damaged Trees:
1. If branches are damaged, prune branches immediately and protect as indicated below.
  2. If bark on trunk or major branches is scraped or damaged, using a sharp knife or other suitable cutting implement, clean the edge of the wound, leaving the bark smooth and tight against the wood. Avoid exposing more live tissue and do not remove too much healthy bark. Apply material indicated below.
  3. After pruning and cutting back damaged wood and bark, protect cut or damaged wood by applying emulsified asphaltic sealant specifically manufactured for sealing pruned and damaged trees. Apply sealant in accordance with sealant manufacturer's instructions, in manner acceptable to Engineer and tree owner.
  4. When directed by Engineer, remove and dispose of (at location away from the Site) damaged trees and plants (and parts thereof) that die or suffer permanent injury, and replace each such damaged tree and plant with new tree or plant of equal or better species and quality.
- C. Protection of Lawns and Meadows:
1. Protect lawns and meadows from unnecessary damage during performance of the Work.
  2. To extent practicable, do not drive vehicles, construction equipment, machinery, or wheeled items such as carts and wheelbarrows, across lawns and meadows.
  3. Remedy damaged lawns and meadows in accordance with the Contract Documents. If not otherwise addressed in the Contract Documents, restore to preconstruction condition or better with the same or substantively similar species.
- D. Protection of Wildlife:
1. To extent practicable, avoid harming wildlife and damaging or destroying wildlife habitats, except for areas where the Work is to be located.
  2. In the event a threatened or endangered species is discovered at the Site for which provisions was not otherwise provided, stop work in the vicinity and immediately orally advise Engineer by telephone or in-person, promptly followed by written notice in accordance with the Contract's provisions for notice for differing Site conditions. If species is not threatened or endangered, promptly resume work; no change in Contract Price or Contract Times is due for misidentification of threatened or endangered species.
  3. Contractor is not responsible for wholesale inventorying or Site-wide evaluation of wildlife at the Site, except as indicated in the paragraph immediately above this paragraph.

### **3.5 PROTECTION OF UNDERGROUND FACILITIES**

- A. Underground Facilities – General:
1. Underground Facilities known to Owner and Engineer, except laterals or services to individual structures or properties, such as water, wastewater, storm water, gas and fuel, hydronic, steam, electric, and communications laterals or services, are shown on the Drawings. Information shown for Underground Facilities is the best available to Engineer but, in accordance with the General Conditions, as may be modified by the Supplementary Conditions, is not guaranteed to be correct or complete.
  2. Comply with Laws and Regulations regarding notification of utility owners prior to performing the Work, including necessary "call before you dig" notifications.
  3. Contractor shall explore ahead of trenching and excavating Work and shall sufficiently uncover Underground Facilities that will or may interfere with the Work to determine their location, to prevent damage to Underground Facilities, and to prevent service interruption to structures and properties served by Underground Facilities.
  4. If Contractor damages an Underground Facility, Contractor shall promptly restore the damaged Underground Facility in accordance with requirements of the owner of the

- damaged facility and the Contract Documents. If the Contract Documents do not address repair or remedy of the damaged facility, restore to not less than preconstruction condition.
5. Necessary changes in the location of the Work may be directed by Engineer to avoid Underground Facilities not shown or indicated on the Contract Documents.
  6. If permanent relocation of an existing Underground Facility is required and is not otherwise shown or indicated in the Contract Documents, Contractor may be directed in writing to perform the required work. When such relocation Work results in a change in the Contract Price, Contract Times, or both, the associated Contract modification procedures and payment for such Work shall be in accordance with the Contract Documents.

### **3.6 PROTECTION OF EXISTING SURFACE STRUCTURES**

#### **A. Surface Structures – General:**

1. Surface structures are existing buildings, structures, and other facilities at or extending above ground surface, including their foundations and any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage routes, exposed piping and utilities, poles, exposed wires and cabling, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.
2. Protect surface structures as necessary and promptly remedy damage and defects resulting or arising from Contractor's operations. Unless expressly shown or indicated otherwise in the Contract Documents, protect such items regardless of whether shown or indicated on the Drawings or elsewhere in the Contract Documents.
3. Protection of Overhead Utilities:
  - a. Protect visible, overhead utilities, including electrical power, communications, and piped utilities, and related supports, regardless of whether such items are shown or indicated in the Contract Documents.
  - b. When required by the Contract Documents or when acceptable to owner of such utility or facility, temporarily relocate overhead utilities or facilities as necessary perform the Work.
  - c. Provide temporary barriers, barricades, and warning signs identifying overhead utilities within reach of Contractor's construction equipment, machinery, or operations...

#### **B. Temporary Removals of Surface Structures:**

1. Existing surface facilities, including but not limited to guard rails, handrails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are temporarily removed to facilitate the Work shall be replaced and restored promptly after the associated Work is performed.
2. Replace and restore such items in accordance with the Contract Documents. If not addressed in the Contract Documents, replace and restore such items to preconstruction condition or better.
3. Remedy damage to all items temporarily removed and later replaced and restored.
4. All such temporary relocations, replacement, and restoration is at Contractor's cost.

#### **C. Protection of Surface Structures:**

1. Sustain in their original location and protect from direct and indirect injury all surface structures located within or adjacent to the Site. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure or facility.
2. Before proceeding with the Work of sustaining and supporting such structure or facility, Contractor shall, upon Engineer's request, promptly satisfy Engineer that methods and procedures to be used have been approved by party owning the surface structure or facility.
3. Regardless of approval or acceptance by owner of property, structure, or facility, responsibility for protecting the Work and property is solely Contractor's.

### **3.7 PROTECTION OF FLOORS, WALLS, AND ROOFS**

#### **A. Protection of Floors, Walls, and Roofs – General:**

1. Use proper protective covering when moving equipment, handling materials or other loads, when painting, handling mortar or grout, and when cleaning walls, ceilings, or structure contents.
2. Use metal pans to collect oil and cuttings from piping, conduits, and rod threading machines, and under metal cutting machines.
3. Maintain at the Site and use spill kits and absorbent pads for remedying spills.
4. Do not load concrete floors less than 28 days after concrete placement without Engineer's written permission.
5. Do not load slabs, floors, walls, or roofs in excess of design loading.
6. Do not load roofs without Engineer's written permission.
7. Restrict access to roofs, and keep Contractor's workers and personnel off existing roofs, except as necessary for the Work.
8. If access to roofs is necessary, roofing, parapets, openings, and all other construction on or adjacent to roof shall be protected with suitable plywood, barricades, or other appropriate means.

### **3.8 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING**

- A. General:
  1. Protect existing facilities and installed Work to prevent damage from subsequent operations.
  2. Remove protective items when no longer needed, prior to Substantial Completion of the associated Work.
  3. Where work will continue in adjacent area(s) after Substantial Completion of a portion of the Work, protect the substantially completed Work until all work in the area is complete.
- B. Control traffic (foot traffic, wheeled items such as carts, vehicles, and other traffic) to prevent damage to equipment, materials, and surfaces.
- C. Coverings:
  1. Provide temporary coverings to protect materials and equipment from damage.
  2. Cover: projections, wall corners and jambs, sills, and soffits of openings, in areas used for traffic and for passage of materials and equipment in subsequent work.
  3. Fasten protective items without harming the Work. Use tape or adhesives that do not leave residue when removed.
  4. residue when removed.

**END OF SECTION**

**SECTION 01 75 00**  
**CHECKOUT AND START-UP PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Administrative and procedural requirements for checkout and startup of equipment, systems, and facilities.
- B. Scope:
1. Contractor shall initially check out, start up, and place equipment and systems installed under the Contract into successful operation, in accordance with the material and equipment manufacturers' written instructions, Suppliers' recommendations at the Site, and the Contract Documents.
  2. Provide the following:
    - a. All labor, tools, materials, and equipment required to complete equipment and system checkout and startup.
    - b. Chemicals, lubricants, and other required operating fluids necessary for checkout, startup, and initial operation of the Work.
    - c. Filters and other temporary or consumable items necessary for checkout, startup, and initial operation of the Work.
    - d. Fuel, electricity, water, and other temporary utilities and temporary facilities necessary for checkout and startup of equipment and systems, unless otherwise specified.
  3. The General Conditions, as may be modified by the Supplementary Conditions address requirements for documenting Substantial Completion.
- C. Related Sections include but are not necessarily limited to:
1. Section 01 78 23 - Operation and Maintenance Data

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
1. Coordinate checkout and startup with other contractors, as necessary.
  2. Do not start up equipment or system(s) for continuous operation until all components of that equipment item or system, including instrumentation and controls, have been tested to the extent practicable and proven to be operable as intended by the Contract Documents.
  3. Subject to the constraints of this Specifications section, Owner will furnish sufficient personnel to assist Contractor in starting up equipment and system(s), but responsibility for proper operation of the Work is Contractor's.
  4. Supplier shall be present during checkout, startup, and initial operation, unless otherwise acceptable to Engineer or otherwise required by the Contract Documents.
  5. For startup of heating equipment, air conditioning equipment, and other equipment and systems that provide temperature control, that are dependent upon the time of year, return to the Site at beginning of next heating or cooling season (as applicable) to recheck and start the appropriate equipment and system(s).
  6. Do not start up equipment and system(s), without submitting acceptable preliminary operations and maintenance manuals by Contractor in accordance with the Contract Documents.
- B. Checkout and Startup Planning Meeting:
1. Contractor, with appropriate Subcontractors and Suppliers, shall attend and participate in a meeting with Owner, facility manager, and Engineer to discuss planning, scheduling, and coordination of checkout and startup activities.

2. Meeting shall be held by the earlier of: (1) not less than 60 days prior to first scheduled training session for the equipment and system(s) to be checked out and started-up, and (2) not less than 60 days prior to the checkout and startup of the associated equipment and system(s).
  3. Attend meeting prepared to knowledgably and effectively discuss:
    - a. Status of the Work and schedule-to-complete for requirements prerequisite to checkout and startup.
    - b. Schedule for and status of training required for each equipment item and system.
    - c. Schedule for checkout, startup, and field quality control activities for the subject Work.
    - d. Status and quantities of required consumables, lubricants, and utility services necessary for checkout and startup.
  4. Meeting will be chaired by Engineer. Engineer will prepare and distribute a record of topics discussed and decisions made during the meeting.
  5. Comply with decisions made at the meeting and the Contract Documents.
- C. Scheduling:
1. Progress Schedule:
    - a. Clearly indicate in the Progress Schedule planned and actual dates for checkout, startup, and field quality control activities, including all demonstration testing activities addressed in this Specifications section and elsewhere in the Contract Documents. Separately indicate checkout, startup, and field quality control activities for each equipment item and system.
    - b. Perform startup and field quality control activities on the associated, scheduled dates, unless otherwise acceptable to Owner, facility manager, and Engineer.
  2. Restrictions for Scheduling:
    - a. Checkout of materials, equipment, and systems by Contractor that do not involve or require Owner's or facility manager's personnel may be performed at any time during normal working hours. Where required by the Contract Documents or requested by Engineer, perform checkout in the presence of Engineer or Resident Project Representative (RPR).
    - b. Startup, including initial operation of materials, equipment, and systems, shall not be initiated on: Monday, Friday, Saturday, Sunday, Owen's holidays, the day immediately prior to a holiday, or the day immediately following a holiday, unless otherwise acceptable to Owner, facility manager, and Engineer.
    - c. Unless otherwise indicated in the Contract Documents or acceptable to Owner, facility manager, and Engineer, perform all startup during normal working hours of the day shift.
    - d. To the extent practicable, where extended-duration startup or field quality control activities are required by the Contract, avoid having such activities extend into evening, night, weekend, or holiday hours.
    - e. Owner reserves the right to require a minimum seven days' notice of rescheduled startup when Contractor cannot perform the associated activities as scheduled.
  3. Operation and Maintenance Data:
    - a. Comply with Section 01 78 23 - Operation and Maintenance Data.
    - b. A preliminary copy of all operation and maintenance manuals shall be received by Engineer prior to the start of the demonstration period.
  4. Spare Parts, Tools, and Extra Materials.
    - a. Deliver to Owner or facility manager (as applicable) all required spare parts, tools, and extra materials prior to commencing the demonstration period, unless earlier delivery is required elsewhere in the Contract Documents.

### 1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Do not start up equipment or systems or place into initial operation until required operating permits are obtained from authorities having jurisdiction.

2. Where Owner (with or without assistance of Engineer) has applied for and obtained initial approvals or permits necessary for operation, Contractor shall furnish information and assistance to Owner or Engineer for Owner to secure final approvals from authorities having jurisdiction for required operating permits.

B. Qualifications:

#### **1.4 SUBMITTALS**

A. Action Submittals: Submit the following:

1. Data collection and reporting log for each required Demonstration Period.

B. Informational Submittals: Submit the following:

1. Progress Schedules indicating dates for checkout, startup, and field quality control activities.
2. Completed checkout and startup log required in Paragraph 3.2.C of this Specifications section.
3. Manufacturer's installation check letters (also known as Manufacturer's Field Services Report) required in Paragraph 3.2.C of this Specifications section.
4. Instrumentation Supplier's Instrumentation Installation Certificate, required in Paragraph 3.2.C of this Specifications section.
5. Letter verifying completion of all pre-demonstration startup activities, required in Paragraph 3.2.C of this Specifications section.
6. Report of data collected during each required Demonstration Period.
7. Qualifications Statements:
  - a. Qualifications, including resume' and copy of license, of Contractor-retained licensed operator.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 CHECKOUT AND STARTUP – GENERAL**

A. Facility Startup Divided into Two Periods:

1. Pre-Demonstration Period including:
  - a. Obtain Engineer's approval or acceptance (as applicable) of Submittals required prior to checkout and startup, including all Shop Drawings, Samples, source quality control (shop testing) Submittals, preliminary operation and maintenance manuals, and other Submittals required by the Contract Documents, other than Submittals that cannot be furnished until after startup.
  - b. Complete the Work to a point ready for checkout and startup, including operation available in all manual, automatic, and other modes.
  - c. Checkout and initial field quality control activities that can be performed prior to startup of the equipment or system.
  - d. Startup of the associated Work.
  - e. Field quality control activities for the subject Work as indicated elsewhere in the Specifications and other Contract Documents, other than this section.
  - f. Training of operations and maintenance personnel.
2. Demonstration Period, including:
  - a. Demonstration of functional integrity of equipment, system, or PCS.

### **3.2 PRE-DEMONSTRATION PERIOD**

A. Prior to the Pre-Demonstration Period, complete the Work to the point where it is ready for checkout and startup.

B. Startup:

1. Comply with requirements for startup of materials, equipment, and systems indicated in the associated Specification sections and elsewhere in the Contract Documents.
2. Prepare the Work so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
3. Perform startup (to extent possible) without introducing process flow.
4. Procedures include but are not necessarily limited to the following:
  - a. Test or check and correct deficiencies of:
    - 1) Power, control, and monitoring circuits for continuity prior to connection to power source.
    - 2) Voltage of all circuits.
    - 3) Phase sequence.
    - 4) Cleanliness of connecting piping systems.
    - 5) Alignment of connected machinery.
    - 6) Vacuum and pressure of all closed systems.
    - 7) Lubrication.
    - 8) Valve orientation and position status for manual operating mode.
    - 9) Tankage for integrity using process flow.
    - 10) Proper connections, alignment, calibration and adjustment.
  - b. Calibrate safety equipment.
  - c. Manually rotate or move moving parts to assure freedom of movement.
  - d. "Bump-start" electric motors to verify proper rotation.
  - e. Perform other tests, checks, and activities required to make the Work ready for Demonstration Period.
  - f. Checkout and Startup Log:
    - 1) Prepare a log showing each equipment item and system requiring checkout and startup. Indicate in the log activities to be accomplished during checkout and startup.
    - 2) Provide a place for Contractor to record date and person performing required checkout and startup. Indicate associated date(s), personnel, and employer of each.
    - 3) Submit completed checkout and startup log to Engineer and obtain Engineer's acceptance.
5. Obtain Suppliers' certifications of the installed and operational Work, without restrictions, and submit to Engineer:
  - a. Manufacturer's installation check letters (sometimes referred to as Manufacturer's Field Services Report).
  - b. Instrumentation Supplier's Instrumentation Installation Certificate.
6. Letter verifying completion of all pre-demonstration startup activities including receipt of all specified items from Suppliers as final item prior to initiation of Demonstration Period.

### **3.3 DEMONSTRATION PERIOD**

- A. Demonstration Period – General:
  1. Demonstrate the operation and performance of mechanical, electrical, instrumentation, and control interfaces of the Work undergoing the Demonstration Period, in accordance with the Contract Documents.
  2. Duration of Demonstration Period: 120consecutive hours.
  3. If, during the Demonstration Period, the aggregate time used for repair, alteration, or unscheduled adjustments to any part of the Work that renders the affected Work inoperative or operation outside of recommended ranges exceeds 10% of the Demonstration Period, the demonstration of operation and performance will be deemed unacceptable and Contractor shall provide appropriate adjustments and remedies and re-perform the Demonstration Test, at no additional cost to Owner or facility manager, until acceptable results are obtained. Re-performance of the Demonstration Period shall comply with the same requirements as the original Demonstration Period.
  4. Perform the demonstration of operation and performance of the Work under full operational conditions.



5. Owner's or Facility Manager's Personnel:
    - a. Owner or facility manager (as applicable) will make available operations personnel to make process decisions affecting facility performance and compliance with applicable operating permits.
    - b. Owner's or facility manager's assistance will be available only for process decisions.
    - c. Contractor will perform all other functions associated with the Demonstration Period including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period in accordance with the Contract Documents.
  6. Owner or facility manager reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, and similar actions and events during the Demonstration Period to verify the operation and performance of the Work in automatic, manual, and other types of operating modes, backup systems, and alternate operating modes.
  7. Prior to Starting Demonstration Period:
    - a. Prepare data collection and reporting log for sampling, analytical data, and data to be obtained by manually recording data from field or panel indicators. Not less than 30 days prior to the start of the Demonstration Period, submit the data collection and reporting log to Engineer for acceptance.
  8. Timing of Start and End of Demonstration Period:
    - a. Schedule the end of the Demonstration Period at a convenient time such as midnight, so the Owner or facility manager can assume operational responsibility on a new day beginning immediately after completion of the Demonstration Period.
    - b. Time of beginning and ending Demonstration Period shall be agreed upon by Contractor, Owner (and facility manager, if other than Owner), and Engineer in advance of initiating Demonstration Period.
- B. Demonstration Period, Evaluation, and Acceptance:
1. Throughout the Demonstration Period, provide knowledgeable personnel to answer Owner's or facility manager's questions, provide final field instruction on select systems (where appropriate) and to respond to problems or failures of the Work.
  2. Responsibilities for Sampling and Data Collection:
    - a. Use the data collection and reporting log format accepted by Engineer. Indicate data clearly and legibly.
  3. Responsibilities for Data Reporting:
    - a. Submit data collected to Engineer for evaluation of acceptability of results.
  4. Data Evaluation:
    - a. Engineer, in consultation with Owner and facility manager (as applicable) as necessary, will evaluate the data collected during the Demonstration Period and other information obtained during the Demonstration Period for compliance with the Contract Documents.
    - b. Engineer will advise Contractor in writing of whether the data and information obtained indicate that the Demonstration Period was successfully completed.

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**SECTION 01 78 23**  
**OPERATION AND MAINTENANCE DATA**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Requirements for Contractor-furnished, manufacturers' operation and maintenance (O&M) data, including:
    - a. Required operation and maintenance data groupings into operation and data manuals and timing of such Submittals.
    - b. Requirements for paper copies of operation and maintenance data and related Electronic Documents.
    - c. Content of operation and maintenance data Submittals.
  2. Requirements for furnishing program code and configuration files
- B. Scope:
1. Contractor shall submit operation and maintenance data, and related information, in accordance with this Section and requirements elsewhere in the Contract Documents, as instructional and reference information for use by: (a) Owner's facility manager's operation and maintenance personnel, and (b) others retained by or working for Owner or facility manager.
  2. In addition to operation and maintenance data expressly required elsewhere in the Contract Documents, also submit operation and maintenance data for:
    - a. All equipment and systems, including facility equipment, conveying equipment, fire suppression systems, plumbing equipment, HVAC equipment, electrical equipment, communications equipment, electronic safety and security systems, utility equipment, transportation equipment, waterway and marine equipment, and process equipment, and other equipment.
    - b. Valves, gates, actuators, and related accessories.
    - c. Instrumentation and control devices and systems.
    - d. Building materials, systems, and finishes that need post-construction troubleshooting, cleaning, or maintenance, such as roofing, doors, windows, louvers, flooring, paint and coatings, other finishes, and other items.
- C. Related Requirements:
1. Section 01 31 26 - Electronic Communication Protocols.
  2. Section 01 33 00 - Submittal Procedures.
  3. Section 01 78 36 - Warranties.

**1.2 SUBMITTALS**

- A. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data:
    - a. Submit operation and maintenance data, required by the Contract Documents, grouped into operation and maintenance manual Submittals indicated in Table 01 78 23-A.
    - b. Where operation and maintenance data required by the Contract Documents, is not expressly indicated in table 01 78 23-A, obtain written clarification or interpretation from Engineer prior to preparing and transmitting such Submittal.
    - c. For each required operation and maintenance manual Submittal, furnish preliminary Submittal and final Submittal,. Timing of preliminary and final operation and maintenance manual Submittals, and differences between preliminary and final Submittals, are indicated in this Section.

**Table 01 78 23-A**

**Required Groupings of Operation and Maintenance Data Submittals**

Name of O&M Manual/Data	For Materials or Equipment Specified in Section(s)

- B. Timing of Submittals and Quantity Required:
  - 1. Preliminary Operation and Maintenance Manual Submittals:
    - a. Electronic Documents: In accordance with Section 01 31 26 - Electronic Communication Protocols.
    - b. Submit to entity indicated in Section 01 33 00 – Submittal Procedures, by the earlier of: 90 days following approval of Shop Drawings and product data Submittals, or 14 days prior to starting training of operation and maintenance personnel, or 14 days prior to field quality control testing at the Site.
    - c. Do not perform checkout, startup, and training without Engineer’s acceptance of preliminary operation and maintenance data Submittals for the associated Work.
  - 2. Final Operation and Maintenance Manual Submittals: Furnish final Submittal prior to Substantial Completion of the associated Work, unless submittal is required prior to an interim Milestone.
    - a. Paper Copies: Three copies, exclusive of copies required for Contractor’s use.
    - b. Electronic Documents: In accordance with Section 01 31 26 - Electronic Communication Protocols.
    - c. Work will not be eligible for Substantial Completion until associated, required final operation and maintenance data Submittals are accepted by Engineer.

**1.3 PAPER COPIES OF O&M MANUALS**

- A. Binding and Cover:
  - 1. Bind each operation and maintenance manual in durable, permanent, stiff-cover binder(s), comprising one or more volumes per copy, as necessary.
  - 2. Binders shall be not less than one inch wide and maximum of three inches wide. Binders for each copy of each volume shall be same size and color.
  - 3. Binders shall be locking three-ring (“D”-ring) type, or three-post type. Three-ring binders shall be riveted to back cover and include plastic sheet lifter (page guard) at front and back of each volume.
  - 4. Do not overfill binders.
  - 5. Covers shall be oil-, moisture-, and wear-resistant, including identifying information on cover and spine of each volume.
  - 6. Indicate the following information on cover of each volume:
    - a. Title: “OPERATING AND MAINTENANCE INSTRUCTIONS”. For submittal of preliminary operation and maintenance data, include the word, “PRELIMINARY” in the title.
    - b. Name or type of material or equipment covered in the manual.
    - c. Volume number, if more than one volume is submitted, listed as “Volume \_\_ of \_\_”, with appropriate volume-designating numbers filled in.
    - d. Name of Project and, when applicable, Contract name and number.
    - e. Name of building or structure, as applicable.
  - 7. Provide the following information on spine of each volume:

- a. Title: “OPERATING AND MAINTENANCE INSTRUCTIONS”. For submittal of preliminary operation and maintenance data, include the word, “PRELIMINARY” in the title.
  - b. Name or type of material or equipment covered in the manual.
  - c. Volume number, when more than one volume is submitted, listed as “Volume \_\_ of \_\_”, with appropriate volume-designating numbers filled in.
  - d. Project name and building or structure name.
- B. Pages:
1. Print pages in paper copies of operation and maintenance manuals on 30-pound (minimum) paper, 8.5-inch by 11-inch size.
  2. Reinforce binding holes in each individual paper sheet with plastic, cloth, or metal. When published, separately-bound booklets or pamphlets are part of manuals, reinforcing of pages within booklet or pamphlet is not required.
  3. Furnish each page with binding margin not less than 3/4-inch wide.
  4. Properly punch each paper page with holes suitable for associated binding. Provide not less than 3/8-inch of paper between outer edge of punched holes and edge of paper. Manuals with improperly punched holes will be returned to Contractor as unacceptable.
  5. In paper copies of manuals, each page in each copy shall be properly bound-through by the binder’s rings or posts. Paper manuals where some pages are not so bound will be returned to Contractor as unacceptable.
- C. Drawings:
1. Bind into operation and maintenance manuals drawings, diagrams, and illustrations up to and including 11-inch by 17-inch size, with reinforcing and punched holes specified for paper pages.
  2. Drawings or sheets larger than 11-inch by 17-inch shall be:
    - a. Paper Copies: Neatly folded and inserted into clear plastic pockets bound into the manual. Neatly and permanently label each pocket with printed text indicating content and drawing numbers. Include not more than two drawings or sheets per pocket.
    - b. Electronic Documents Copies: Included in electronic file at appropriate location.
- D. Copy Quality and Document Clarity:
1. Provide original-quality copies. Documents in operation and maintenance manuals shall be either original manufacturer-printed documents or first-generation photocopies indistinguishable from originals. If original is in color, copies shall be in color. Manuals with copies that are unclear, not completely legible, off-center, skewed, or where text or drawings are cut by binding holes, are unacceptable. Pages that contain approval or date stamps, comments, or other markings that cover text or drawing are unacceptable.
  2. Clearly mark, using ink, to indicate all components of materials and equipment on catalog pages for ease of identification. In standard or pre-printed documents, indicate options furnished and cross out inapplicable content. Using highlighters to so indicate options furnished is unacceptable.
- E. Organization:
1. Indexed tabs between major categories of information, such as operating instructions, preventive maintenance instructions, and other major subdivisions of data in each manual.

#### **1.4 ELECTRONIC DOCUMENTS O&M MANUALS**

- A. Electronic Documents of Operation and Maintenance Manuals:
1. Each Electronic Document copy of operation and maintenance data shall include all information included in the corresponding paper copy.
  2. Submit Electronic Documents operation and maintenance data in accordance with Section 01 31 26 - Electronic Communication Protocols, and Section 01 33 00 - Submittal Procedures.
  3. File Format:

- a. Unless otherwise required by Section 01 31 26 - Electronic Communication Protocols, or Section 01 33 00 - Submittal Procedures, operation and maintenance data Electronic Documents shall be “portable document format” (PDF) files.
- b. Electronic Documents shall be electronically searchable upon delivery.
- c. Electronic Documents shall not be password-protected and shall not be protected against Owner’s or facility manager’s copying and printing such files for Owner’s or facility manager’s use in operating and maintaining the facility.
- d. Electronic Documents shall open to its first page.
- e. Submit each operation and maintenance manual as a single Electronic Document file, unless file size is over-large, in which case divide into as few separate files, each with similar filename, as possible.
- f. Within each Electronic Document, provide bookmarks for the following:
  - 1) Each chapter and subsection indicated in the corresponding printed copy document’s table of contents.
  - 2) Each figure.
  - 3) Each table.
  - 4) Each appendix and attachment.

## **1.5 CONTENT OF OPERATION AND MAINTENANCE MANUALS**

### **A. Operation and Maintenance Manual Content – General:**

1. Prepare each operation and maintenance manual specifically for the Project. Include in each manual all pertinent instructions, as-constructed drawings as applicable, bills of materials, technical information, installation and handling requirements, maintenance and repair instructions, and other information required for complete, accurate, and comprehensive data for safe and proper operation, maintenance, and repair of materials and equipment furnished for the Project. Include in manuals specific information required in the Specification Section for the material or equipment, data required by Laws and Regulations, and data required by authorities having jurisdiction.
2. Provisions of this Article were written for equipment. Where operation and maintenance data are required for building products, such as finishes, openings, thermal and moisture protection, and similar items, comply with this Article to the extent practical and reasonable for the associated item.
3. Completeness and Accuracy:
  - a. Operation and maintenance manuals that include language stating or implying that the manual’s content may be insufficient or stating that the manual’s content is not guaranteed to be complete and accurate are unacceptable.
  - b. Operation and maintenance manuals shall be complete and accurate.
  - c. Operation and maintenance manuals shall indicate the specific alternatives and features furnished, and the specific operation and maintenance provisions for the material or equipment furnished.
4. Provide dividers and Include manufacturer’s information, diagrams, schematics, and equipment cutaways. Avoid submitting catalog excerpts unless they are the only document available showing identification or description of particular component of the equipment. Where published documents, included in operation and maintenance data, pertain to multiple models or types, mark the literature to indicate specific material or equipment supplied. Marking may be in the form of checking, arrows, or underlining to indicate pertinent information, or by crossing out or other means of obliterating information that does not apply to the materials and equipment furnished.
5. Identify each equipment item consistent with names and identification numbers shown or indicated in the Contract Documents, rather than manufacturer’s model numbers.
6. Neatly type data not furnished in computer-printed text. Handwriting, except for strikeouts, arrows, and the like, is unacceptable.
7. Include copy of warranty in accordance with the Contract Documents, including Section 01 78 36 - Warranties.
8. Include copy of proposed service contract, when applicable.

9. When copyrighted material is used in operation and maintenance manuals, obtain copyright holder's written permission to use such material in the operation and maintenance manual.
- B. Differences Between Preliminary and Final Operation and Maintenance Manuals:
1. In preliminary operation and maintenance manuals, include flysheet or placeholder for information to be included in final operation and maintenance manual Submittal.
  2. In final operation and maintenance manuals, include information such as the following, as applicable for the associated materials and equipment:
    - a. Equipment data that requires collection after startup, for example: (1) system and equipment balancing reports, including those for HVAC systems; and (2) final settings for electrical switchgear, automatic transfer switches, and circuit breakers; and (3) materials and equipment field testing results.
    - b. Equipment startup reports and Suppliers' field service reports (the latter on form in Section 01 75 00 - Checkout and Startup Procedures).
- C. Initial Documents in Operation and Maintenance Manuals:
1. Table of Contents:
    - a. Provide table of contents in each volume of each operation and maintenance manual.
    - b. In table of contents and not less than once in each chapter or section, identify materials and equipment by their functional names. Thereafter, abbreviations and acronyms may be used if their meaning is clearly indicated in a table bound at or near beginning of each volume. Using material or equipment model or catalog designations for identifying items is unacceptable.
  2. Equipment Record:
    - a. Provide "Equipment Record" section of operation and maintenance manual immediately following the table of contents. "Equipment Record" section is not required for operation and maintenance data for other than equipment (such as building materials and finishes).
    - b. Provide "Equipment Record" on forms included as this Section's Attachments 1, 2, and 3.
    - c. For instrumentation and control equipment, International Society of Automation (ISA) data sheets are acceptable in lieu of the forms included as this Section's Attachments 1, 2, and 3.
    - d. This Section's Attachments 1, 2, and 3 are available from Engineer as "fillable PDF forms".
    - e. Complete in detail each section of "Equipment Record". Merely referencing the associated equipment's operation and maintenance data for nameplate, maintenance, spare parts, lubricants, or other required information, is unacceptable.
    - f. For equipment or systems with multiple, separate components (for example, motor and gearbox), fully completed "Equipment Record" is required for each component.
    - g. Operation and maintenance data Submittals without complete and accurate "Equipment Record" sheets are unacceptable.
  3. Supplier's Field Service Reports:
    - a. Include in final operation and maintenance manuals copies of associated Supplier's field services reports in accordance with Section 01 75 00 - Checkout and Startup Procedures.
    - b. Include Supplier's completed field service reports in operation and maintenance manual in section immediately following "Equipment Record" section.
- D. Operation and Maintenance Instructions:
1. Safety Considerations:
    - a. Submit written descriptions of safety considerations relating to operation and maintenance procedures for materials and equipment.
    - b. Describe safety devices and alarms provided with materials and equipment and proper operation and use.

- c. Indicate procedures for proper, safe operating and maintenance of materials and equipment furnished, including manufacturer’s recommended personal protection equipment, apparatus, and devices not furnished under the Contract.
  - d. Describe recommended safety-related training for personnel operating and maintaining the subject materials or equipment.
  - e. Include in appendix to operation and maintenance manual manufacturers’ relevant “safety data sheets” (SDS), formerly “material safety data sheets” (MSDS).
  - f. Engineer’s review of operation and maintenance data expressly does not extend to adequacy, completeness, and accuracy of SDS or other safety and protection practices and procedures indicated in the operation and maintenance data.
2. Operation:
- a. Include in operation and maintenance data Submittals complete, detailed written operating instructions for each material or equipment item including: function; operating characteristics; limiting conditions; and regulation and control. Also include, as applicable, written descriptions of alarms generated by equipment and proper responses to such alarm conditions.
  - b. Include pre-startup instructions and checklists and complete startup instructions for each material and equipment item.
  - c. Indicate recommended operating instructions for all operating modes and conditions, with associated recommendations for safe operation.
  - d. Explain available controls and instrumentation and associated function(s).
  - e. Indicate required shutdown checklists and procedures for: normal shutdown, emergency shutdown, and long-term shutdowns.
  - f. Troubleshooting instructions.
3. Maintenance – General:
- a. Include in operation and maintenance data complete, written instructions for necessary and recommended maintenance, including mechanical maintenance and electrical/instrumentation and controls maintenance, as applicable.
  - b. Include in operation and maintenance data complete instructions for necessary assembly, disassembly, installation, re-installation, storage, and shipping for materials and equipment.
  - c. Tools: Include list of required maintenance tools and equipment.
  - d. Spare Parts and Extra Materials:
    - 1) Submit complete instructions for ordering replaceable parts, including reference numbers (such as shop order number or serial number) that will expedite the ordering process.
    - 2) Submit manufacturer’s recommended inventory levels for spare parts, extra stock materials, and consumable supplies for the initial two years of operation. Consumable supplies are items consumed or worn by operation of materials or equipment, and items used in maintaining the operation of material or equipment, including items such as lubricants, seals, reagents, and testing chemicals used for calibrating or operating the equipment. Include estimated delivery times, shelf life limitations, and special storage requirements.
    - 3) Also refer to this Article’s provision, “Bills of Materials”, below, for additional requirements regarding ordering replacement parts.
4. Routine and Preventative Maintenance:
- a. Submit complete, detailed, written instructions for routine and preventive maintenance including all information and instructions to keep materials, equipment, and systems properly lubricated, adjusted, and maintained so that materials, equipment, and systems function economically throughout their expected service life. Instructions shall include:
    - 1) Written explanations with illustrations for each routine and preventive maintenance task such as inspection, adjustment, anchor bolt torque checks, lubrication, calibration, cleaning, replacement of filters, and the like.
    - 2) Recommended schedule for each routine and preventive maintenance task.
    - 3) Lubricants:



- a) Provide lubrication charts indicating recommended types of lubricants, frequency of application or change, and where each lubricant is to be used or applied.
    - b) Table of alternative lubricants.
  - 5. Major Maintenance:
    - a. Include detailed, written instructions and illustrations for required periodic (non-routine, non-preventative) maintenance.
    - b. Indicate relative level of training and expertise required to perform such maintenance and recommended tools and equipment.
  - 6. Special Maintenance:
    - a. Include maintenance instructions for long-term shutdowns and storage.
- E. Bills of Materials:
  - 1. Include in operation and maintenance manuals complete bills of material or parts lists for materials and equipment furnished. Lists or bills of material may be furnished on a per-drawing or per-equipment assembly basis. Bills of material shall indicate:
  - 2. Manufacturer's name, physical address, telephone number, internet website address.
  - 3. Manufacturer's local service representative's or local parts supplier's name, physical address, telephone number, internet website address, and e-mail addresses.
  - 4. Manufacturer's shop order and serial number(s) for materials, equipment or assembly furnished.
  - 5. For each part or piece include the following information:
    - a. Parts cross-reference number. Cross-reference number shall be used to identify the part on assembly drawings, Shop Drawings, or other type of graphic illustration where the part is clearly shown or indicated.
    - b. Part name or description.
    - c. Manufacturer's part number.
    - d. Quantity of each part used in each assembly.
    - e. Current unit price of the part at the time the operation and maintenance manual is submitted. Price list shall be dated.
- F. Record Copy of Shop Drawings, Product data, and Other Previously Approved and Accepted Submittals:
  - 1. Submit original-quality copies of each approved and accepted (as applicable) Shop Drawing, product data Submittal, written results of source quality control activities, and other Submittals, updated to indicate as-installed condition. Do not include prior Submittals that were not approved or were not accepted. Reduced drawings are acceptable only when reduction is to not less than one-half original size and all lines, dimensions, lettering, and text are completely legible on the reduction.
- G. Electrical Schematics, Diagrams, and Information:
  - 1. Submit complete electrical schematics and wiring diagrams, including complete point-to-point wiring and wiring numbers or colors between all terminal points.
  - 2. Include as-constructed drawings of layouts of electrical panels (such as switchgear and motor control centers) and control panels.
- H. NFPA 70 (National Electric Code) Documentation:
  - 1. Include in operation and maintenance manuals for electrically-powered equipment documented calculations of: (1) arc-fault current, equipment available fault current and (2) short-circuit current rating (SCCR), provided as part of equipment Submittals.

## **PART 2 - PRODUCTS - (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 ATTACHMENTS**

- A. The following, bound after this Section's "End of Section" designation, are part of this Section:
1. Attachment 1 - Equipment Data and Spare Parts Summary form (one page)
  2. Attachment 2 - Recommended Maintenance Summary form (one page)
  3. Attachment 3 - Lubrication Summary form (one page)

**END OF SECTION**





**Equipment Data and Spare Parts Summary**

Project Name		Specification Section:
Equipment Name		Year Installed:
Project Equipment Tag No(s).		
Equipment Manufacturer		Project/Order No.
Address		Phone
Website	Web Site	E-mail
Local Representative/Service Center		
Address		Phone
Website		E-mail

**MECHANICAL NAMEPLATE DATA**

Equip.		Serial No.		
Make		Model No.		
ID No.	Frame No.	HP	RPM	Cap.
Size	TDH	Imp. Size	CFM	PSI
Other:				

**ELECTRICAL NAMEPLATE DATA**

Equip.		Serial No.						
Make		Model No.						
ID No.	Frame No.	HP	V.	Amp.	Hertz	PH	RPM	SF
Duty	Code	Ins. Cl.	Type	NEMA	C Amb.	Temp. Rise	Rating	
Other:								

**SPARE PARTS PROVIDED PER CONTRACT**

Part No.	Part Name	Quantity

**RECOMMENDED SPARE PARTS**

Part No.	Part Name	Quantity

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Lubrication Summary

Equipment Description	Project Equip. Tag No(s).
-----------------------	---------------------------

Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

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## **SECTION 01 78 36 WARRANTIES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
1. General requirements for warranties required in the various Specifications.
  2. Provisions addressing:
    - a. Suppliers' standard warranties.
    - b. Suppliers' special or extended warranties.
    - c. Implied warranties.
    - d. Commencement and duration of warranties.

#### **1.2 SUBMITTALS**

- A. General:
1. For each item of equipment furnished under the Contract, submit Supplier's standard warranty, regardless of whether such warranty or Submittal thereof is required by the associated Specifications for that item. Submit such warranties for materials where such Submittal is required in the Specifications for the material.
  2. For each item of material or equipment where Supplier's special (or extended) warranty is required by the Contract Documents, submit appropriate special warranty that complies with the Contract Documents.
  3. Supplier's warranties shall be specifically endorsed to Owner, Contractor, and the entity purchasing the item (if other than Contractor) by the entity issuing such warranty.
  4. Submit Suppliers' standard warranties and special warranties as Submittals in accordance with the Schedule of Submittals accepted by Engineer.

#### **1.3 CONTRACTOR'S GENERAL WARRANTY AND CORRECTION PERIOD OBLIGATIONS**

- A. Contractor's General Warranty and Guarantee: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.
- B. Contractor's Warranty of Title: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.
- C. Correction Period: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

#### **1.4 SUPPLIERS' WARRANTIES FOR MATERIALS AND EQUIPMENT**

- A. Warranty Types:
1. Required by the General Conditions:
    - a. Warranties specified for materials and equipment shall be in addition to, and run concurrent with, Contractor's general warranty and guarantee and requirements for the Contract's correction period.
    - b. Disclaimers and limitations in specific materials and equipment warranties do not limit Contractor's general warranty and guarantee, nor does such affect or limit Contractor's performance obligations under the correction period.
  2. Material or equipment manufacturer's standard warranty is pre-printed, written warranty published by item's manufacturer and specifically endorsed by manufacturer to the entities indicated in this Specifications Section's Article 1.2.
  3. Special warranty is written warranty that either extends the duration of material or equipment manufacturer's standard warranty or provides other, increased rights to Owner and other beneficiaries (if any) of such warranty. Where the Contract Documents indicate

specific requirements for warranties that differ from the manufacturer's standard warranty for that item, special warranty is implied.

- B. Requirements for Special Warranties:
  - 1. Submit written special warranty document that contains appropriate provisions and identification, ready for signature by material or equipment manufacturer, Owner, and other beneficiaries indicated in Article 1.2 of this Specifications Section. Submit draft warranty with Submittals required prior to fabrication and shipment of the item from the Supplier's facility.
  - 2. Manufacturer's Standard Form: Modified to include Project-specific information and properly signed by product manufacturer and other entities as appropriate.
  - 3. Specified Form: When specified forms for special warranties are included in the Contract Documents, prepare written document, properly signed by item manufacturer, Owner, and other beneficiaries indicated in Article 1.2 of this Specifications Section, using the required form.
  - 4. Refer to the Specifications for content and requirements for submitting special warranties.

## **1.5 IMPLIED WARRANTIES**

- A. Warranty of Title and Intellectual Property Rights:
  - 1. Except as may be otherwise indicated in the Contract Documents, implied warranty of title required by Laws and Regulations is applicable to the Work and to materials and equipment incorporated therein.
  - 2. Provisions on intellectual property rights, including patent fees and royalties, are in the General Conditions, as may be modified by the Supplementary Conditions.
- B. Warranty of Merchantability:
  - 1. Notwithstanding any other provision of the Contract to the contrary, implied warranties of merchantability required by Laws and Regulations apply to the materials and equipment incorporated into the Work.
- C. Warranty of Fitness-for-Purpose:
  - 1. Implied warranty of fitness-for-purpose for materials and equipment to be incorporated into the Work, for which specific material or features are indicated in the Contract Documents, is hereby disclaimed by Owner and Contractor.
  - 2. When Supplier is aware of, or has reason to be aware of, specified materials or features of the Work that are contrary to the intended use, purpose, service, application, or environment in which the material or item will be used, submit request for interpretation in accordance with Section 01 26 00 - Contract Modification Procedures. Where appropriate, such request for interpretation shall indicate the apparent discrepancy and propose appropriate, alternative materials or equipment.

## **1.6 COMMENCEMENT AND DURATION OF WARRANTIES**

- A. Commencement of Warranties:
  - 1. Contract correction period and Contractor's general warranty commence as indicated in the General Conditions, as may be modified by the Supplementary Conditions.
  - 2. Suppliers' standard warranties and special warranties commence running on the date that the associated item is certified by Engineer as substantially complete in accordance with the Contract Documents. In no event shall special warranties commence running prior to Engineer's review and acceptance of special warranty Submittal for the item.
  - 3. Implied warranties commence in accordance with Laws and Regulations.
- B. Duration of Warranties:
  - 1. Duration of correction period is set forth in the General Conditions, as may be modified by the Supplementary Conditions.
  - 2. Duration of Contractor's general warranty and guarantee is in accordance with Laws and Regulations.



3. Duration of Suppliers' standard warranties is in accordance with the applicable standard warranty document accepted for the Project by Engineer.
4. Duration of required Suppliers' special warranties shall be in accordance with the requirements of the Contract Documents for the subject item.
5. Duration of implied warranties shall be in accordance with Laws and Regulations.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 01 78 39**  
**PROJECT RECORD DOCUMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Requirements for Project record documents, to supplement record documents requirements of the General Conditions, as may be modified by the Supplementary Conditions.
- B. Scope:
  - 1. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Engineer Project record documents in accordance with the Contract Documents.
- C. Related Sections include but are not necessarily limited to:
  - 1. Section 01 31 26 - Electronic Communication Protocols.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
  - 2. Promptly after obtaining measurements and information, record the data and information on Project record documents.
  - 3. Where a licensed, registered professional land surveyor is retained on the Project, whether by Contractor or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient time and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.
- B. Monthly Status Evaluation:
  - 1. Not less than once per month, as a condition precedent to submitting Application for Payment, Contractor's site superintendent will meet with either Engineer or Resident Project Representative (RPR) at the Site to review status of Contractor's Project record documents.
  - 2. When Engineer or RPR directs corrections to Project record documents, promptly make such corrections on the Project record documents. Engineer's or RPR's directions or lack thereof do not in any way relieve or mitigate Contractor's sole responsibility for the accuracy, completeness, and clarity of Project record documents.

**1.3 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Recorder of Changes and Field Conditions on Project Record Documents:
    - a. Contractor's staff at the Site shall include not less than one person with suitable training and drafting (drawing) experience to record on the Project record documents changes made and field conditions encountered.
    - b. Recorder of changes and field conditions on the Project record documents shall possess not less than two semesters of drafting (drawing) training in a classroom, either in high school, college, or bona-fide vocational school.
    - c. Upon Engineer's request, submit name of proposed recorder at the Site, resume', or list of relevant experience, and copy of credentials of completion of such drafting (drawing) course(s).

- d. If original recorder of changes and field conditions is replaced, promptly advise Engineer and RPR in writing and submit to Engineer qualifications of proposed replacement.
- B. Samples of Similar Prior Work:
- 1. Submit Samples of the personal work of Contractor's designated recorder of changes and field conditions on the Project record documents from not less than two prior projects of similar type(s) of work at the Work. Submit copies of not less than two marked-up drawings from each prior project and copies of two pages of marked-up specifications from each prior project.
  - 2. Samples shall be in the same form as proposed for the Project record documents. For example, where Contractor intends to submit hand-drawn mark-ups of the Drawings and Specifications, Samples shall be copies of hand-drawn markups. Where Contractor intends to submit Project record documents in native (executable) file format (such as CAD files), Samples shall be developed using the same software to be used in preparing the Project record documents.
  - 3. If original recorder of changes and field conditions is replaced by Contractor, replacement recorder shall provide the same standard of work on Project record documents as indicated in the approved Samples.

#### 1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
- 1. Samples:
    - a. Sample of field-recorded project record documents from prior projects, in accordance with this Specifications section's "Quality Assurance" Article, to establish quality and style for markups of Project record documents. Submit within 15 days of the date the Contract Times commence running.
- B. Informational Submittals: Submit the following:
- 1. Qualifications Statements:
    - a. When requested by Engineer, submit qualifications of proposed recorder of changes and field conditions for Project record documents at Contractor's field office at the Site. Qualifications shall comply with the "Quality Assurance" Article of this Specifications section.
- C. Closeout Submittals: Submit the following:
- 1. Record Documentation:
    - a. Prior to readiness for final payment, submit to Engineer one copy of Project's final record documents and obtain Engineer's acceptance of same. Submit complete record documents; do not make partial Submittals without Engineer's concurrence.
    - b. Submit the following Project record documents:
      - 1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
      - 2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
    - c. Submit record documents with transmittal letter on Contractor's letterhead in accordance with requirements in Section 01 33 00 - Submittal Procedures.
  - 2. Certifications:
    - a. Record documents Submittal shall include certification, with original signature of official authorized to sign legally binding contracts on behalf of Contractor, reading as follows:
      - 1) (Contractor's legal/contractual entity name) has maintained, continuously updated, and submitted Project record documentation in accordance with the General Conditions and Supplementary Conditions, Section 01 78 39 - Project Record Documents, and other elements of Contract Documents, for the (Owner's

organization's name), (Municipality and state of the Site), (Site name and Project name). We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

By: \_\_\_\_\_ (signature)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

## 1.5 MAINTENANCE OF RECORD DOCUMENTS

- A. Promptly make Project record documents available for observation and review upon request of Engineer, RPR, or Owner.
- B. Do not use Project record documents for any purpose other than serving as Project record. Do not remove Project record documents from Contractor's field office without Engineer's approval.

## 1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- A. Recording Changes, Field Conditions, and Other Information – General:
  - 1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
  - 2. Keep record documents current consistent with the progress of the Work. Make entries on record documents within two working days of receipt of information required to record the change, field condition, or other pertinent information.
  - 3. Do not permanently conceal the Work until required information has been recorded for Project record documents.
  - 4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted Project record documents.
  - 5. Marking of Entries:
    - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project record documents.
    - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files in "portable document format" (.PDF) files.
    - c. Date each entry on record documents.
    - d. Indicate changes by drawing a "cloud" around the change(s) indicated.
    - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.
- B. Drawings:
  - 1. Record changes on copy of the Drawings. Submittal of Contractor-originated or -produced drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
  - 2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
  - 3. Record actual construction including:
    - a. Depths of various elements of foundation relative to Project datum.
    - b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements and Project elevation datum. For each Underground Facility, including pipe fittings, show and indicate dimensions to not less than two permanent, visible surface improvements.

- c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure and, where applicable, to Project elevation datum.
  - d. Changes in structural and architectural elements of the Work, including changes in reinforcing.
  - e. Field changes of dimensions, arrangements, and details.
  - f. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
  - g. Changes in details on the Drawings. Submit additional details prepared by Contractor when required to document such changes.
4. Recording Changes for Schematic Layouts:
- a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Contractor subject to acceptance by Engineer.
  - b. Record on the Project record documents all revisions to schematics on the Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.
  - c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project record documents, by dimensions accurate to within one inch in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items
    - 1) Clearly identify each item of the Work by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.
    - 2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.
    - 3) Descriptions shall be sufficiently detailed to be related to the Specifications.
  - d. Engineer may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Engineer’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.
5. Supplemental Drawings:
- a. In some cases, drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with Project record documents submitted by Contractor. Supplemental record drawings shall include drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.
  - b. Supplemental drawings submitted with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
  - c. When supplemental drawings developed by Contractor using computer-aided drafting/design (CAD), building information models (BIM), or civil information models (CIM) software are to be included in record drawings, submit electronic files for such drawings in accordance with Section 01 31 26 – Electronic Communication Protocols, as part of record drawing Submittal. Label such files, “Supplemental Record Drawings”, including with Contractor’s name, Project name, and Contract designation.

C. Specifications and Addenda:

- 1. Mark each Specifications section to record:

- a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.
- b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION - (NOT USED)**

**END OF SECTION**

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**SECTION 02 41 00**  
**DEMOLITION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. General provisions applicable to all demolition and removals.
  - 2. Civil/site demolition and removals.
  - 3. Architectural and structural demolition and removals.
  - 4. Mechanical demolition and removals
  - 5. Electrical demolition and removals.
  - 6. Disposal of demolition debris, materials, and equipment.
- B. Scope:
  - 1. Contractor shall provide all labor, materials, equipment, tools, and incidentals as shown, specified and required for demolition, removals, and disposal Work.
  - 2. The Work under this Specifications section includes, but is not necessarily limited to:
    - a. Demolition and removal of existing materials and equipment as shown or indicated in the Contract Documents. The Work includes demolition of existing wastewater lagoon liners and similar existing materials, equipment, and items.
  - 3. Demolitions and removals indicated in other Specifications sections shall comply with requirements of this Specifications section.
  - 4. Perform demolition Work within areas shown or indicated.
  - 5. Pay all costs associated with transporting and, as applicable, disposing of materials and equipment resulting from demolition and removals Work.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. National Fire Protection Association (NFPA):
    - a. 241, Safeguarding Construction, Alteration, and Demolition Operations.
- B. Regulatory Requirements:
  - 1. Demolition, removals, and disposal Work shall be in accordance with 29 CFR 1926.850 through 29 CFR 1926.860 (Subpart T – Demolition), and all other Laws and Regulations.
  - 2. Comply with requirements of authorities having jurisdiction.
- C. Qualifications:
  - 1. Electrical Removals: Entity and personnel performing electrical removals shall be electrician(s) legally qualified to perform electrical construction and electrical work in the jurisdiction where the Site is located.
  - 2. Plumbing Removals: Entity and personnel performing plumbing removals shall be plumber(s) legally qualified to perform plumbing construction and plumbing work in the jurisdiction where the Site is located.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Review procedures under this and other Specifications sections and coordinate the Work that will be performed with or before demolition and removals.

**1.4 SUBMITTALS**

- A. Informational Submittals: Submit the following:
  - 1. Procedure Submittals:

- a. Demolition and Removal Plan: Not less than ten days prior to starting demolition Work, submit acceptable plan for demolition and removal Work, including:
  - 1) Plan for coordinating shut-offs, capping, temporary services, and continuing utility services.
  - 2) Other proposed procedures as applicable.
  - 3) Equipment proposed for use in demolition operations.
  - 4) Recycling/disposal facility(ies) proposed, including facility owner, facility name, location, and processes. Include copy of appropriate permits and licenses, and compliance status.
  - 5) Planned demolition operating sequences.
  - 6) Detailed schedule of demolition Work in accordance with the Schedule accepted by Engineer.
- 2. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.1.A of this Specifications Section.
- 3. Field Quality Control Test Results:
  - a. Results of megger-testing of existing motors to remain Owner's property.
- 4. Qualifications Statements:
  - a. Name and qualifications of entity performing electrical removals, including copy of licenses required by authorities having jurisdiction.
  - b. Name and qualifications of entity performing plumbing removals,

**1.5 SITE CONDITIONS**

- A. Owner makes no representation of condition or structural integrity of area(s) to be demolished or where removals are required by the Contract Documents.

**PART 2 - PRODUCTS - (NOT USED)**

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Notification:
  - 1. Not less than 48 HRS prior to commencing demolition or removal, advise Engineer in writing of planned start of demolition Work. Do not start removals without permission of Engineer.
  - 2. Where demolition or removals has potential to affect adjacent properties, occupants, streets, or other public thoroughfare, transportation facilities, and utilities, furnish required notices to owners and occupants of properties, buildings, and structures that may be affected by the demolition of removal.
  - 3. In accordance with Laws and Regulations, furnish to authorities having jurisdiction, including emergency services as necessary, appropriate notices of planned demolition and removals.
  - 4. Submit to Engineer copies of notices furnished to adjacent property owners, occupants, and authorities having jurisdiction.
- B. Protection of Adjacent Areas and Facilities:
  - 1. Perform demolition and removal Work in manner that prevents damage and injury to property, structures, occupants, the public, and facilities. Do not interfere with use of, and free and safe access to and from, structures and properties unless allowed by the Contract Documents otherwise allowed in writing by Owner.
  - 2. Closing or obstructing of roads, drives, sidewalks, and passageways adjacent to the Work is not allowed unless indicated otherwise in the Contract Documents. Conduct the Work with minimum interference to vehicular and pedestrian traffic.
  - 3. Provide temporary partitions between demolition work areas and (a) areas that will be occupied during demolition and removals, and (b) areas accessible to the public or visitors.

Temporary partitions shall be sturdy, braced plywood in good condition, of dimensions sufficient to adequately screen demolition work from view of occupants, public, and visitors. Maintain temporary partitions in place until demolition and removals work in the subject area is complete or until other Work requires removal of temporary partitions.

4. Provide appropriate temporary barriers, lighting, sidewalk sheds, and other necessary protection.
  5. Repair damage to facilities that are to remain which such damages results from Contractor's operations.
- C. Existing Utilities: In addition to requirements of the General Conditions, Supplementary Conditions, and Division 01 Specifications, perform the following:
1. Should unforeseen, unknown, or incorrectly shown or indicated Underground Facilities be encountered, Contractor responsibilities shall be in accordance with the General Conditions as may be modified by the Supplementary Conditions. Cooperate with utility owners in keeping adjacent services and facilities in operation.
  2. Sanitary Sewerage: Before proceeding with demolition, locate and cap all sewer lines and service laterals discharging from the building or structure being demolished.
  3. Storm Water Sewerage: Existing storm water system shall remain in place until demolition of existing building or structure is complete. Upon completing demolition, cut and cap storm sewerage at locations shown on the Drawings. Remove existing storm water piping and related structures between points of cutting, and backfill, restore to grade, and stabilize the area over the removed facilities in accordance with the Contract Documents.
  4. Water Piping and Related Facilities: Before proceeding with demolition, locate and cap all potable and non-potable waterlines and service laterals serving the building or structure being demolished. Ensure compliance with Laws and Regulations regarding water quality.
  5. Other Utilities: Before proceeding with demolition, locate and cap as required all other utilities, such as fuel and gas; compressed air; heating, ventilating, and air conditioning; electric; and communications; and service laterals serving the building or structure being demolished.
  6. Shutdown of utility services shall be coordinated by Contractor, assisted by Owner as required relative to contacting utility owners.
- D. Remediation:
1. If unanticipated Hazardous Environmental Condition is believed to be encountered during demolition and removals, comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

### **3.2 DEMOLITION - GENERAL**

- A. Locate construction equipment used for demolition Work and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.
- B. Salvage and Ownership:
1. Materials and equipment to remain Owner's property shall be:
    - a. Carefully removed and appropriately handled by Contractor to avoid damage and invalidation of warranties in effect. Brace motors attached to flexible mountings until reinstallation or delivery to Owner's storage location. Fully remedy to pre-construction condition or replace items damaged during removal or handling by Contractor.
    - b. Removed as functional units, together with all appurtenances required for operation.
    - c. Cleaned, listed, and tagged for storage.
    - d. Protected from damage.
    - e. Delivered to designated storage location at the Site or other site indicated in the Contract Documents, at place designated by Engineer or Owner.
  2. Items to be and delivered to Owner are as indicated in Table 02 41 00-A.

**Table 02 41 00-A – Items to be Salvaged**

Equipment Name/ Designation	Equipment Location	Deliver to Owner's Location

3. Preparation of Owner's existing equipment for storage:
  - a. Where appropriate, identify each component with markings or tags to indicate its position in the assembly and the assembly of which it is part.
  - b. Place small parts in appropriate, durable boxes and clearly mark contents on the outside of box or container.
  - c. Remove oil from oil-lubricated bearings and gear boxes and replace with storage oil.
  - d. Grease grease-lubricated bearings.
  - e. Replace breather plugs with solid plugs.
  - f. Megger-test motor windings: Attach report of the test results to the associated motor and submit copy to Engineer.
  - g. Attach unit to suitable crate bottom.
  - h. Enclose unit in polyethylene film and seal all seams and the film to the base of the unit with tape.
  - i. Construct crate of wood slats around top and sides of unit.
  - j. Attach permanent instruction tag to outside of crate stating "This unit has been prepared for storage. Replace oil, vent plugs, and lubricant in accordance with manufacturer's instructions before start-up."

### 3.3 ELECTRICAL REMOVALS

- A. Electrical demolition Work includes removing existing:
  1. Disconnecting cabling from motors, electrical sources, control panels, control stations, instrumentation and control items, and similar devices and equipment.
  2. Conduits, raceways, cable trays, hangers and supports, cabling, and related items.
  3. Switches, panelboards, control stations, and similar items.
  4. Transformers, distribution switchboards, control panels, motors, starters, variable speed controllers, and similar items.
  5. Lighting fixtures and related items.
  6. Utility poles, site lighting standards, and overhead cabling.
  7. Appurtenances and miscellaneous electrical equipment, as shown, specified, or required.
- B. Electrical Removals – General:
  1. Comply with Laws and Regulations, including the National Electric Code.
  2. Lock Out and Tagging:
    - a. Contractor shall lock out and tag circuit breakers and switches operated by Owner and shall verify that affected cabling are de-energized to ground potential before commencing electrical removals Work.
    - b. Upon completion of electrical removals Work, remove the locks and tags and promptly advise Resident Project Representative (RPR) or Engineer and Owner that existing facilities are available for use.
  3. Remove existing electrical equipment, fixtures, and systems to avoid damaging systems to remain, to keep existing systems in operation, and to maintain integrity of grounding systems.
  4. Disconnect and remove motors, control panels, and other electrical gear where shown or indicated.
  5. Store removed motors, microprocessors and electronics, and other electrical gear to be reused in accordance with its manufacturer's recommendations and requirements of the Contract Documents.

- C. Motor Control Centers and Switchgear:
  1. Remove or modify motor control centers and switchgear as shown or indicated.
  2. Modified openings shall be cut square and dressed smooth to dimensions required for installation of equipment.
- D. Removal of Cabling, Conduits, Raceways and Similar Items:
  1. Verify the function of each cable before disconnecting and removing.
  2. Remove cabling, conduits, hangers and supports, and similar items back to the power source or control panel, unless otherwise shown or indicated.
  3. Remove cabling, conduits, and similar items where shown or indicated for removal. Abandoned conduits concealed in floor, ceiling slabs, or in walls shall be cut flush with the slab or wall (as applicable) at point of entrance, suitably capped, and the area repaired in a flush, smooth manner acceptable to Engineer.
  4. Disassemble and remove exposed conduits, junction boxes, other electrical appurtenances, and their supports.
  5. Repair all areas of the Work to prevent rusting on exposed surfaces.
  6. Underground Electric:
    - a. Conduits in Underground Facilities not scheduled for reuse shall be suitably capped watertight where each enters building or structure to remain.
    - b. Where shown or indicated, remove direct-burial cabling. Openings in buildings for entrance of direct-burial cabling shall be patched with repair mortar or other material approved by Engineer for such purpose, and made watertight.
- E. Lighting fixtures, wall switches, receptacles, starters, and other miscellaneous electrical equipment, not designated as remaining as Owner’s property, shall be removed and properly disposed off-Site as required in accordance with Laws and Regulations.

**3.4 DEMOLITION OF SITE IMPROVEMENTS**

- A. Pavement, Sidewalks, Curbs, and Gutters:
  1. Demolition of asphalt or concrete pavement, sidewalks, curbs, and gutters, as applicable, shall terminate at cut edges. Edges shall be linear and have a vertical cut face.
  2. To cut pavement, sidewalks, curbs, and gutters, use machinery or tools that provides a smooth-cut edge, appropriate for the required. Where cut edges are not smooth, repair the cut edge to remain to provide a smooth, even appearance.
- B. Fencing, Guardrails, and Bollards:
  1. Remove to the limits shown or indicated on the Drawings.
  2. Completely remove below-grade posts and concrete.
- C. Manholes, Vaults, Chambers, and Handholes:
  1. Remove to the limits shown or indicated on the Drawings.
  2. If not shown or indicated on the Drawings, remove to not less than three feet below finished grade indicated on the Drawings.
- D. Underground Facilities Other than Manholes, Vaults, Chambers, and Handholes:
  1. Remove to the extent shown or indicated on the Drawings.
  2. Unless otherwise shown or indicated, cap ends of piping to remain in place in accordance with the “Mechanical Removals” Article in this Specifications section.
- E. Other Site Improvements: When the Contract Documents require removal of other site improvements not addressed above, copy with Contract requirements for removal of buildings or structures.

**3.5 DISPOSAL OF DEMOLITION DEBRIS**

- A. Disposal – General:
  1. Promptly remove from the Site all debris, waste, rubbish, material, and equipment resulting from demolition and removal operations. Promptly upon completion of demolition and removal operations, remove from the Site construction equipment used in demolition Work.

2. Do not sell at the Site demolition materials or removed equipment. If materials, equipment or debris will be sold by Contractor, remove the items from the Site and perform the sale or transaction elsewhere, in accordance with Laws and Regulations.
  3. Cleaning and Removal of Debris: Comply with the General Conditions and Supplementary Conditions.
- B. Transportation and Disposal:
1. Non-Hazardous Materials, Equipment, and Debris: Properly transport and dispose of non-hazardous demolition materials, equipment, and debris at appropriate landfill or other suitable location, in accordance with Laws and Regulations. Non-hazardous material does not contain Constituents of Concern such as (but not limited to) asbestos, PCBs, petroleum, hazardous waste, radioactive material, or other material designated as hazardous in Laws or Regulations.
  2. Hazardous Materials, Equipment, and Debris: When handling and disposal of items containing Constituents of Concern is included in the Work, properly transport and dispose of such items in accordance with the Contract Documents and Laws and Regulations.
- C. Submit to Engineer information required in this Specification Section on proposed facility(ies) where demolition materials, equipment, and debris will be recycled. Upon request, Engineer or Owner, shall be allowed to visit recycling facility(ies) to verify adequacy and compliance status. During such visits, recycling facility operator shall cooperate and assist Engineer and Owner.

**END OF SECTION**

**SECTION 03 01 30**  
**REPAIR AND REHABILITATION OF EXISTING CONSTRUCTION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Preparation and assessment of existing concrete for repair and rehabilitation:
    - a. Concrete removal for repairs.
    - b. Preparation of exposed reinforcing steel.
    - c. Preparation for joint sealant installation.
  2. Repair of damaged (and deteriorated) concrete.
    - a. Application of repair mortar.
    - b. Repair of exposed items embedded in concrete.
  3. Expansion joint repair.
- B. Scope:
1. Contractor shall provide all materials, equipment, labor, tools, services, and incidentals necessary to repair and rehabilitate existing concrete, whether damaged or deteriorated, at locations shown on the Drawings or at locations indicated by Engineer, in accordance with the Contract Documents.
  2. Re-sealing concrete joints as shown on the Drawings, and at other locations directed by Engineer, and indicated in this Section.
    - a. Included in the unit price(s) for joint sealant Work are repairs of existing concrete adjacent to the associated joint sealant Work, in accordance with this Section.

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Unit Prices:
1. The Work of this Section is Unit Price Work unless otherwise shown or indicated.
  2. When directed by the Owner to complete work covered in this Section, the form provided in Section 01 21 00 Allowances shall be completed and presented to the Owner with the proposed Unit Prices for review and approval prior to proceeding with the Work.
  3. Unit Price Work of this Section is classified as follows:
    - a. Concrete Surface Repair - Type I (Thin): Repair of spalled, delaminated, or deteriorated concrete up to 1.5 IN deep below concrete's original surface.
    - b. Concrete Surface Repair - Type II (Moderate): Repair of spalled, delaminated, or deteriorated concrete greater than 1.5 IN deep to 3 IN below original concrete surface.
    - c. Concrete Surface Repair - Type III (Severe): Repair of spalled, delaminated, or deteriorated concrete greater than 3 IN below original concrete surface.
    - d. Expansion Joint Repair - Type A: Replacement of existing expansion joint material including removing existing backer rod, joint filler, and sealant and providing new materials and repair, in accordance with this Section. Expansion joint repair not designated in the Contract Documents as other types is Type A unless directed otherwise by Engineer.
    - e. Expansion Joint Repair - Type B: Provide where shown or indicated on the Drawings or where directed by Engineer. Includes sealing existing expansion joints by providing new epoxy resin adhesive sealant system over existing expansion joints.
    - f. Expansion Joint Repair - Type C: Provide where shown or indicated on the Drawings or where directed by Engineer. Includes sealing existing expansion joints by providing new polyurethane joint sealing system over existing expansion joints.
- B. Measurement:

1. Criteria for measurement for payment of this Section's Unit Price Work are in the General Conditions (as may be modified by the Supplementary Conditions), Section 01 22 00 - Measurement and Payment, and this Section.
2. Quantities of this Section's Unit Price Work:
  - a. Unit Price Work of this Section shall be measured for payment prior to commencement of the associated Work in each work area.
  - b. Work not measured in advance for payment will not be eligible for payment by Owner.
  - c. Engineer will observe the associated concrete repair and rehabilitation Work performed. Such Work shall be in accordance with the Contract Documents for to such Work to be eligible for payment by Owner, even when such Work was measured (for payment) in advance.
3. Repair of new concrete Work provided by Contractor is not eligible for payment under the Unit Price Work bid/pay items covered by this Section. Such repairs are included in the Work of the associated bid/pay item under which the subject new concrete Work was provided.

### 1.3 REFERENCES

#### A. Terminology:

1. This provision indicates terminology used in this Section and in other Contract Documents that coordinate with this Section. Such terminology may or may not be indicated using initial capital letters and, when used in relation to the Work of this Section, have the meanings indicated below.
2. "Existing concrete damage" means damage to existing concrete surfaces deeper than 1/8 IN, such as:
  - a. Concrete corrosion.
  - b. Corroded items embedded within concrete or through the concrete surface.
  - c. Spalls.
3. "Installer" means the entity installing or applying repair materials at the Site. The terms "installer" and "applicator" have the same meaning. Installer or applicator may be Contractor or Subcontractor.
4. "MPII" means, "manufacturer's printed installation instructions".
5. "Rehabilitation" means repairing and restoring concrete to structurally-sound, durable condition suitable for the structure's intended purpose as determined by Engineer, including repair of existing concrete damage in accordance with this Section and other applicable provisions of the Contract Documents.
6. "Water-bearing structure" means concrete structure with a surface that is normally, or may be, in contact with water or process fluids or slurries during typical operation of the completed Project, including, but not limited to: tanks, channels, wet wells, distribution chambers, dams, and the like. Also, where specifically indicated on the Drawings, "water-bearing structures" includes basements and structures extending below the ordinary, wet-season groundwater surface.
7. Other terminology used in this Section is consistent with terminology of ACI CT.

#### B. Reference Standards:

1. American Concrete Institute (ACI):
  - a. CT, Concrete Terminology.
  - b. 117, Specification for Tolerances for Concrete Construction and Materials.
  - c. 308, Standard Practice for Curing Concrete.
2. ASTM International (ASTM):
  - a. C150, Standard Specification for Portland Cement.
  - b. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - c. C881, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
  - d. C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.



- e. D1682, Breaking Load and Elongation of Textile Fabric.
  - f. D1876, Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
  - g. D4060, Abrasion Resistance of Organic Coatings by the Taber Abraser.
  - h. D4258, Standard Practice for Surface Cleaning Concrete for Coating.
  - i. D4259, Standard Practice for Abrading Concrete.
  - j. D4263, Indicating Moisture in Concrete by the Plastic Sheet Method.
  - k. D7234, Standard Test Method for Pull-off Adhesion Strength of Coatings on Concrete Using Portable Pull-off Adhesion Tests.
3. International Concrete Repair Institute (ICRI).
    - a. 310.1R, Guide for Surface Preparation.
    - b. 310.1R, Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Steel Corrosion.
  4. Society for Protective Coatings/NACE International (SSPC/NACE):
    - a. SP 13/NACE No. 6, Surface Preparation of Concrete.

#### 1.4 QUALITY ASSURANCE

##### A. Qualifications:

1. Installer:
  - a. Installer of materials for rehabilitation of existing concrete shall possess not less than five years of relevant experience performing concrete rehabilitation of similar type, scope, and complexity to that required for this Project.
  - b. Certification or Approval by Materials Manufacturer:
    - 1) Installer (as either business entity or individual) of materials associated with rehabilitation of existing concrete shall be certified or expressly approved in writing, by manufacturer of materials to be provided.
    - 2) As an option, installer may be certified or approved, in writing, at the Site during initial Work of this Section, in accordance with this Section's Paragraph 3.4.D.
  - c. Submit documentation of qualifications and experience in sufficient detail to demonstrate to Engineer's satisfaction compliance with requirements of this Section's qualifications requirements.
2. Structural Concrete Repairer:
  - a. This provision is in addition to qualifications requirements applicable to installers of the Work under this Section. This provision applies to business entities physically performing rehabilitation of structural concrete.
  - b. Structural concrete repairer shall have not less than [five] years' current, relevant experience in repairing and rehabilitating concrete structures in facilities of generally similar environmental exposures as the Work of this Section for this Project
  - c. Submit documentation of qualifications and experience in sufficient detail to demonstrate to Engineer's satisfaction compliance with requirements of this Section's qualifications requirements.
3. Joint Sealant System Installer:
  - a. This provision is in addition to qualifications requirements applicable to all installers of the Work of this Section. This provision applies to entities performing concrete joint sealant system repair or rehabilitation Work.
  - b. Entity performing joint sealant system Work shall possess not less than 10 years' relevant experience in waterproofing concrete joints, crack and leak repair, and concrete coating application on projects of similar size, complexity, and environment as the concrete joint sealing Work on this Project.
  - c. Entity performing concrete joint sealant system Work shall have completed not less than five projects of size, type, and complexity similar to the Work under this Section within the most-recent period indicated in the paragraph immediately above, on structures that have been in service for not less than three years each. Projects shall have utilized the required type of joint sealant system materials indicated for the Work.

- d. Entity performing concrete joint sealant system Work shall be certified or approved, in writing, by joint sealant system manufacturer (whose product is used in the Work) to furnish and install the required concrete joint sealant system materials.
- e. Submit documentation of qualifications and experience in sufficient detail to demonstrate to Engineer's satisfaction compliance with requirements of this Section's qualifications requirements

**B. Mock-Ups:**

1. Mock-ups are Samples that, when approved by Engineer, indicate minimum standard of quality for the associated Work. Standard of quality of mock-ups shall be not less than that required by the Contract Documents.
2. If so approved by Engineer, mock-ups may become part of completed Work.
3. Maintain, segregate, identify, and protect mock-ups during performance of the Work to allow Engineer to readily compare the Work with approved mock-up.
4. When mock-up is not part of the completed Work, remove mock-ups when directed by Engineer. If mock-up is part of the completed Work, remove protection and indication of mock-up when so directed by Engineer.
5. Provide mock-up for each type of concrete rehabilitation required by this Section for which the Contract has an associated bid/pay item, including finish.
6. Size of each mock-up shall be acceptable to Engineer. Concrete surface repair mock-ups shall be not less than 2 FT by 2 FT each. Expansion joint repair mock-ups shall be not less than 3 FT long, each.
7. Where mock-ups will be part of the completed Work, Contractor and Engineer will jointly select the location of each mock-up.
8. Concrete surface repair mock-ups shall include:
  - a. Sample of patched tie or bughole.
  - b. Sample of all jointing specified.
  - c. Sample of mortar repair.
9. Expansion joint repair mock-ups shall include:
  - a. Repaired expansion joint.
  - b. Expansion joint seal.
  - c. Rehabilitation of adjacent concrete surfaces.
10. Also provide concrete surface repair mock-up of wall having polymer-modified cementitious coating.
  - a. Mock-up shall be stepped to show surface preparation, repairs and coating in all stages of application.
11. Mock-up areas shall be readily identifiable during construction. Provide appropriate temporary signage indicating status as mock-up and protect the mock-up.

**1.5 SUBMITTALS**

**A. Action Submittals: Submit the following:**

1. Shop Drawings:
  - a. Schedule (table) indicating, for each type of concrete rehabilitation Work required by this Section, the material type and product manufacturer proposed for each application.
2. Product Data:
  - b. Manufacturer's published, technical data for each manufactured material proposed for use in the Work of this Section.
  - c. Manufacturer's written certification that proposed materials comply with associated reference standards cited in this Section.
3. Samples:
  - a. Advise Engineer in writing when required mock-ups will be provided and the location proposed for each.
4. Test Procedures:
  - e. Procedure for pre-repair condition survey required in this Section's Article 3.1, including method for recording results of survey.

- f. Written method of performing pull-off testing of repair material and testing equipment information and accessory materials proposed for use in testing.
- B. Informational Submittals: Submit the following:
- 1. Certifications:
    - a. Laboratory test reports (for previously tested materials identical to those to be furnished) and material manufacturer’s certificates verifying that ingredients comply with the Contract Documents and have a minimum of six months’ residual shelf life at the time of shipment to the Site.
    - b. Certification from Supplier stating that material is suitable for the intended use on this Project.
    - c. Certification that materials proposed for use are compatible with each other, when such materials will contact each other, and will not interfere with bonding of future floor or wall finishes.
  - 2. Test and Evaluation Reports:
    - a. Results of pre-rehabilitation condition survey required in this Section’s Article 3.1.
  - 3. Manufacturer’s Instructions:
    - a. Manufacturer’s instructions for all concrete rehabilitation materials, for handling, storing, and installing materials.
  - 4. Field Quality Control Submittals:
    - a. In-situ pull-off test results for joint sealant system.
  - 5. Qualifications Statements:
    - a. Installer: Documentation of qualifications in accordance with this Section’s “Quality Assurance” Article.
    - b. Manufacturer’s written approval of installer or certification of training performed at the Site in accordance with Paragraph 3.4.D of this Section.
      - 1) Affidavit, signed by either materials manufacturer or by installer’s business entity, indicating that manufacturer of rehabilitation materials has instructed installer in proper handling and installation of each rehabilitation material to be used in the Work.
    - c. Entity performing structural concrete repair Work.
    - d. Entity performing joint sealant system Work.
- C. Closeout Submittals: Submit the following:
- 1. Affidavit of compliance from joint sealant system manufacturer, certifying that sealants were installed at the Site in accordance with manufacturer’s written instructions and recommendations.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with material manufacturer’s written instructions and recommendations regarding delivery, handling, and storage of materials to be incorporated into the Work.
- B. Storage:
  - 1. Store materials in tightly sealed, original containers, off the ground and in dry location with humidity controls.
  - 2. Do not store in direct sunlight.
  - 3. Protect materials from temperature extremes and avoid freezing temperatures.

**PART 2 - PRODUCTS**

- A. Subject to compliance with Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Anti-Corrosion Bonding Agent:
    - a. Sika Corporation.
    - b. Euclid Chemical Company.
    - c. Master Builders Solutions.

- d. Or equal..
- 2. Epoxy Bonding Adhesive:
  - a. Sika Corporation.
  - b. Euclid Chemical Company.
  - c. Or equal.
- 3. Repair Mortar:
  - a. Master Builders Solutions.
  - b. Euclid Chemical Company.
  - c. Five Star Products, Inc.
  - d. Sika Corporation.
  - e. Or equal.

## 2.2 MATERIALS

- A. Materials that will be in direct contact with potable water or water that will be treated to become potable shall be certified in accordance with ANSI/NSF 61 and suitable for prolonged immersive exposure to chlorinated water with a total residual of up to 5 mg/l.
- B. Bonding Agents:
  - 1. Bonding agents and adhesives shall have pot life that allows proper placement of new material against existing material in accordance with manufacturer's written instructions.
  - 2. For repair of existing concrete damage, when no reinforcing steel is exposed, and where specifically shown or indicated on the Drawings, use epoxy bonding adhesive.
  - 3. For repair of existing concrete damage, when reinforcing steel is exposed, and where specifically shown or indicated on the Drawings, use anti-corrosion bonding agent.
- C. Water:
  - 1. Potable.
  - 2. Clean and free from deleterious substances.
  - 3. Free of oils, acids and organic matter.
- D. Epoxy Patch Seal:
  - 1. For use as seal on patches at repair of existing concrete damage and as otherwise shown or specified in the Contract Documents.
    - a. Sikadur 32 Hi-Mod LPL by Sika Corporation.
    - b. Or equal.
- E. Anti-Corrosion Bonding Agent:
  - 1. Three-component, moisture tolerant, cementitious bonding agent manufactured for purpose of bonding fresh concrete to hardened concrete and providing anti-corrosion coating to embedded reinforcing materials.
    - a. Sika Armatec 110 EpoCem by Sika Corporation.
    - b. Duralprep A.C. by Euclid Chemical Company.
    - c. Or equal.
- F. Epoxy Bonding Adhesive:
  - 1. For use where bonding new concrete or patch material to existing concrete.
  - 2. Two-component, moisture insensitive adhesive manufactured for purpose of bonding fresh concrete to hardened concrete.
    - a. Sikadur 32 Hi-Mod LPL by Sika Corporation.
    - b. Euco No. 452 MV by Euclid Chemical Company.
    - c. Or equal.
- G. Repair Mortar:
  - 1. Pre-packaged cement-based, modified (polymer or latex) product specifically formulated for repair of concrete surface defects, with the following properties:

Physical Property	Value	ASTM Standard
Compressive strength (minimum)		C109
at one day	2000 PSI	
at 28 days	6000 PSI	
Bond strength (minimum)		C882 (*)
at 28 days	1800 PSI	

(\*) Modified for use with repair mortars.

2. Trowelable, selection based on horizontal, vertical, or overhead application.
  3. Where the least dimension of the placement, in width or thickness, exceeds 1.5 IN, repair mortar shall be extended by addition of aggregate per MPII.
  4. Acceptable Products:
    - a. Five Star Structural Concrete by Five Star Products, Inc.
    - b. SikaRepair SHA, SikaTop 123 Plus, SikaTop 111 Plus by Sika Corporation.
    - c. Verticoat by Euclid Chemical Company.
    - d. Emaco S88-CI, Emaco S66-CI by BASF Corporation.
    - e. Or equal.
- H. Epoxy Coating:
1. Use as a coating over concrete repairs and at repaired embedded items in concrete where shown or indicated on the Drawings.
  2. Pigmented, two-component, 100% solids, moisture-tolerant epoxy resin specifically formulated to serve as a protective, corrosion-resistant coating to all common structural substrates.
  3. Acceptable Products:
    - a. Sikagard 62 by Sika Corporation.
    - b. Or equal.
- I. Epoxy Resin Adhesive Sealing System:
1. Provide sealing system consisting of the following components:
    - a. Epoxy Resin Adhesive:
      - 1) Two-component, 100% solids, high-strength, non-sag structural epoxy paste adhesive.
      - 2) Color: Gray.
      - 3) Minimum Pot Life: 30 minutes.
      - 4) Acceptable Products:
        - a) Sikadur 31 Hi-Mod Gel .
        - b) Or equal.
    - b. Hypalon Sheeting:
      - 1) Composed of Hypalon rubber with perforations along bonding edges of sheeting to provide mechanical key.
        - a) Shall have the ability to be vulcanized with aromatic hydrocarbon solvent to allow its adhesion to an epoxy resin adhesive.
        - b) Sheet Dimensions: 8 IN wide and 40 MILS thick.
        - c) Provided with a removable center expansion strip.
    - c. Activating Solvent:
      - 1) Aromatic hydrocarbon with a specific gravity of 0.86.
      - 2) All sealing system components shall be fully compatible with each other.
      - 3) Acceptable Products:
        - a) Sikadur Combiflex System by Sika Corporation.
        - b) Or equal.
- J. Polyurethane Joint Sealing System:

1. Provide high-solids, two-component liquid, cold-applied, asphalt extended urethane elastomer that cures to durable abrasion-resistant film, forming flexible, water-impermeable barrier.
2. Provide all components from a single manufacturer to ensure compatibility of components with each other, except for hydrophobic polyurethane grout material.
3. Concrete Surface Primer: Acceptable products:
  - a. CIM 61BG Epoxy Primer, by CIM Industries.
  - b. Or equal.
4. Tack Coat and Top Coat: Acceptable products:
  - a. CIM 1061, by CIM Industries.
  - b. Or equal.
5. Joint/Crack Filler: Acceptable products:
  - a. CIM 1000TG, by CIM Industries.
  - b. CIM 1000TG Cartridges, by CIM Industries.
  - c. Or equal.
6. Cant Strip Material: Acceptable products:
  - a. CIM 1000 TG Cartridges, by CIM Industries
  - b. Or equal..
7. Reinforcing Fabric (Scrim): Acceptable Products:
  - a. CIM Scrim, by CIM Industries.
  - b. Or equal.
8. Bonding Agent (for re-application of CIM 1061 if recoat window exceeded):
  - a. Acceptable products:
    - 1) CIM Bonding Agent, by CIM Industries.
    - 2) Or equal.
  - b. Material:
    - 1) Organo-silane compound dispersed in isopropyl alcohol.
9. Hydrophobic Polyurethane Grout: Acceptable products:
  - a. SikaFix HH LV, by Sika Corporation.
  - b. De Neef Hydro Active Flex LV, by GCP Applied Technologies.
  - c. Or equal.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION AND ASSESSMENT**

- A. As indicated in Article 1.1 of this Section, repair of cracks in concrete are addressed in other Specification Sections.
- B. Condition Survey:
  1. Contractor and Owner's Site Representative shall jointly perform condition survey of each existing concrete structure included in the scope of the concrete repair Work before scheduling and performing the associated repair Work.
  2. Contracting and payment for specialty inspections and tests by third-parties will be by Owner, if required.
  3. Prior to Condition Survey:
    - a. Submit to Engineer, and obtain Engineer's acceptance, of procedure for performing condition survey. Indicate proposed date(s) of the condition survey and other procedures for inspecting and documenting extent of concrete repair Work to be performed.
    - b. Prior to the condition survey, power-wash all concrete surfaces within the scope of the concrete repair Work. Power-wash at not less than 4,000 PSI using orbital nozzle.
  4. Condition survey shall include, but is not necessarily limited to:
    - a. Visual inspection for:
      - 1) Deficiencies in joints.
      - 2) Cracks.

- 3) Leakage and efflorescence.
  - 4) Scaling.
  - 5) Spalling
  - 6) Exposed reinforcing.
  - 7) Previous repairs.
  - b. Extent of chemical attack using phenolphthalein.
  - c. Delamination survey.
  - d. Half-cell measurements for corrosion potential of reinforcing.
  5. Results of Condition Survey:
    - a. Submit written results of condition survey to Engineer promptly following the condition survey at the Site.
    - b. Condition survey results shall clearly indicate the location, nature, size, length, width, and depth of all deficiencies in existing concrete in the area(s) surveyed.
    - c. Engineer will use results of condition survey to determine extent of repair Work required.
  6. Engineer's Direction to Contractor:
    - a. After consulting with Owner as necessary, Engineer will transmit to Contractor written direction on extent of concrete repairs required.
    - b. Engineer will issue such direction promptly after Engineer's receipt of acceptable results of condition survey. Allow in the Progress Schedule 14 days for issuance of Engineer's written direction.
    - c. Where such Work would either exceed Contract quantities of associated Unit Price Work or requires Work not in the Contract's bid/pay items, an appropriate Contract modification will be issued.
- C. Concrete Removal:
1. Remove all loose and unsound concrete from areas to be repaired, in accordance with ICRI Guideline 310.1R, as modified by the Contract Documents.
  2. Removals:
    - a. At areas of damage or deterioration of existing concrete, saw-cut the perimeter of unsound concrete surface areas, to depth of not less than 1/2 IN.
    - b. Saw-cuts to be perpendicular to or slightly undercutting existing concrete surface. Concrete removal boundaries shall be straight and aligned parallel to opposite boundary edges resulting in repair areas that are approximately rectangular.
    - c. Remove all existing concrete from within the saw-cut repair boundary to of not less than 1/2 IN.
    - d. Feathered edges are unacceptable.
  3. Clean surfaces of repair areas in accordance with ASTM D4258 to remove dust, dirt, grease, and other contaminants prior to abrasive blasting, chipping, grinding or wire brushing.
  4. Abrasive-blast surfaces in accordance with ASTM D4259 and SSPC SP 13/NACE No. 6 to completely open defects down to sound concrete and remove laitance.
  5. Chip concrete substrate to obtain a surface profile of 1/16 IN to 1/8 IN deep with new fractured aggregate surface. The area to be repaired shall not be less than 1/2 IN in depth.
  6. Concrete removal shall extend along any exposed existing reinforcing to locations along the bar that are free of bond inhibiting corrosion and where the bar is well-bonded to surrounding concrete.
  7. Rinse surface with clean water and allow surface water to evaporate prior to repairing the surface.
- D. Preparing Exposed Steel Reinforcing:
1. Clean and prepare exposed embedded steel reinforcing in accordance with ICRI Guideline 310.1R and the Contract Documents.
  2. Where one-half or more of the steel reinforcing diameter is exposed, either by existing conditions or concrete removal, bond between concrete and steel reinforcing is inhibited or lost completely, or corrosion is present, remove concrete to provide not less than 1 IN

- clearance around the entire perimeter and along the entire exposed length of the steel reinforcing.
3. If existing, exposed steel reinforcing is cut through, cracked, or cross-sectional area is reduced by more than 20%, provide new steel reinforcing bar the same size as existing steel reinforcing. Lap the new bar with existing in accordance with ACI requirements. Coat all new and existing steel reinforcing with anti-corrosion bonding agent, as specified in this Section. Abrasive-blast exposed reinforcing to remove contaminants and corrosion to provide white-metal, bright steel finish.
- E. Preparation for Joint Sealant System Installation:
1. Provide adequate surface preparation in area of each joint sealant repair, to not less than 6 IN from face of joint, on each side of joint.
  2. Surface preparation shall remove existing concrete laitance, loose material, oil, grease, and shall expose tops of underlying aggregate to an ICRI concrete surface profile of 4-6. The following methods may be used:
    - a. Abrasive-blasting in accordance with ASTM D4259.
    - b. High-pressure water blasting at not less than 5,000 PSI, in accordance with ASTM D4259.
    - c. Shot-blasting in accordance with ASTM D4259, at horizontal surfaces only.
  3. Concrete joint areas to receive joint sealant system shall be fully dried prior to application of joint sealant system. Test substrate moisture at not less than three locations per structure to confirm moisture. The following methods may be used to determine moisture:
    - a. Plastic Sheet Method (ASTM D4263): Pass/fail.
    - b. Relative Humidity Test (ASTM F2170): Less than 85%.
    - c. Calcium Chloride Test: Less than 5 LBS per 1000 SQFT per 24 HRS.
    - d. Radio Frequency Test: Less than 5% moisture.
  4. Perform adhesion tests at not less than three locations per structure in mock-up (non-joint) areas to verify adequacy of the joint surface preparation. Perform modified T-Peel (ASTM D1876) field test:
    - a. Apply duct tape on substrate.
    - b. Apply the coating top coat material to the substrate, fully lapping onto the duct tape.
    - c. After coating material has fully cured, cut 1 IN wide strips through coating material, perpendicular to duct tape strip: a minimum of three pull tests per testing location.
    - d. Peel up the outside edge of duct tape and provide tarp clip.
    - e. Hook a fish weighing or similar scale through the tarp clip and pull perpendicular to the substrate to point of coating adhesion failure and record the load at failure. Scale used for this field measurement shall be calibrated immediately prior to testing.
    - f. Minimum acceptable coating adhesion force at failure shall be 15 LBS; no test performed shall demonstrate adhesion below this threshold for surface preparation to be acceptable.
  5. Inspect concrete surfaces in area of surface preparation and repair as follows:
    - a. Blast/expose all bug-holes to eliminate blind side surfaces.
    - b. Cracks less than 1/16 IN wide that extend through the joint coating areas do not require special treatment.
    - c. Cracks 1/16 IN to 1/8 IN wide that extend through the joint coating areas shall be stripe-coated for not less than 2 IN on each side and filled with CIM (trowel grade) prior to application of the joint sealant system (after moisture content and surface preparation are acceptable in accordance with the Contract Documents)
    - d. Cracks greater than 1/8 IN wide and cracks that experience movement (that extend through the joint coating areas) shall be reinforced with scrim material, similar to the joint coating, prior to sealing the joints.
    - e. Cracks greater than 1/4 IN -wide: Provide backer rod, in addition to complying with the paragraph immediately above.
    - f. In areas of joint coatings, patch surface spalls and other concrete defects in accordance with requirements for concrete repairs indicated in this Section.



6. Inspect existing joint filler material. If defects in existing joint filler material extend greater than 1/2 IN deep, or if determined by sealant installer to be unsatisfactory, remove not less than 1 IN of existing filler material and pack joint with appropriately sized backer rod soaked in polyurethane grout. Trim grout foam/backer rod flush with surface of concrete once cured. Joints to be coated shall be filled according to this provision and trimmed flush prior to application of coating system.
7. Provide and tool 1 IN minimum cant strips at wall-slab and slab-column joints to be coated. Allow cant strips to cure prior to applying coating system.
8. Perform surface preparation, substrate moisture field tests, adhesion test results, treatment of defects in joint coating areas, and filling (as required) of existing joints for approved by coating manufacturer's technical representative prior to installing joint coating system.

### **3.2 INSTALLATION AND APPLICATION**

#### **A. Environmental Conditions for Installation:**

1. Comply with material manufacturer's written instructions for substrate temperature and moisture content, ambient temperature, and ambient humidity, ventilation, and other conditions affecting performance of concrete repair materials.
2. Do not repair existing concrete damage when ambient temperature is or is expected to be below 50 DEGF. If necessary to maintain the progress Schedule, enclose and heat area to between 50 and 70 DEGF during repair of surface defects and curing of patching material. Use only indirect fired heating using clean-burning fuel.
3. If proper environmental conditions do not comply with the Contract Documents and manufacturer's instructions, do not perform the Work until such conditions are acceptable. Provide means to bring conditions into compliance by providing temporary environmental controls, enclosures, and other temporary construction and temporary facilities.
4. Contractor is not eligible for changes in Contract Times or Contract Price for delays or costs incurred to bring environmental conditions for installation into compliance.

#### **B. Existing Concrete Damage Repair:**

1. Type I Repair:
  - a. Provide epoxy bonding adhesive and repair mortar.
2. Type II Repair:
  - a. Provide epoxy bonding adhesive, if no reinforcing steel is exposed. Use anti-corrosion bonding agent, if reinforcing steel is exposed.
  - b. Prepare exposed reinforcing steel in accordance with Paragraph 3.1.D of this Section.
  - c. Provide repair mortar:
    - 1) Provide 3/8 IN aggregate in accordance with MPII.
3. Type III Repair:
  - a. Provide anti-corrosion bonding agent.
  - b. Prepare exposed steel reinforcement per the requirements of Paragraph 3.1.B.
  - c. Provide repair mortar:
    - 1) Provide 3/8 IN aggregate in accordance with MPII.

#### **C. Repair Mortar Application:**

1. Comply with MPII for mixing and placement of repair mortar.
2. After initial mixing of repair mortar, do not introduce additional water to change consistency. Discard repair mortar if consistency becomes too stiff to place.
3. Place repair mortar to not less than recommended minimum thickness indicated in the MPII and in no event less than 3/8 IN.
  - a. Apply repair mortar in accordance with the following minimum requirements:
    - 1) Not less than 3/8 IN over existing sound, exposed coarse aggregate.
    - 2) Not less than 2 IN of cover (unless otherwise required) over exposed reinforcing steel.
4. At horizontal applications, repair mortar shall be screeded and bullfloated to the proper elevation, to ensure all surface moisture will drain freely and properly without puddle areas.

5. Provide repair mortar in even, uniform plane to restore the concrete member to its original surface finish and plane.
    - a. Tolerance for being out-of-plane shall be such that gap between a 1 FT straight edge and repair mortar surface shall not exceed 1/4 IN, and gap between a 4 FT straight edge and repair mortar surface shall not exceed 3/8 IN. This shall apply to straight edges placed in any orientation at any and all location on the repair mortar surface.
  6. Prevention of Drying:
    - a. Prevent exposed plastic mortar surfaces from drying. Provide windbreaks, foggers, and evaporation retarders, as necessary, during finishing.
    - b. Foggers shall maintain humidity at height of 2 FT to 3 FT above surface of concrete.
    - c. If necessary, apply evaporation retarder between finishing operations.
  7. Repair mortar shall receive smooth, steel troweled finish.
- D. Repair of Exposed Embedded Items in Concrete:
1. This provision addresses repair and rehabilitation of corroded metal items embedded in existing concrete and to other locations as expressly shown or indicated on the Drawings. Existing concrete damage by corrosion of embedded metal shall be repaired in accordance with this Section's Paragraph 3.2.B.
  2. Preparation:
    - a. Fully expose extent of metal corrosion within each embedded item by chipping to sound material. Where specifically shown or indicated on the Drawings, completely remove exposed metal item to extent shown or indicated.
    - b. Prepare exposed reinforcing steel attached to or adjacent to embedded, corroded metal items in accordance with this Section's Paragraph 3.1.D.
    - c. If existing concrete has been removed during chipping and repair of metal item, prepare repair area in accordance with this Section's Paragraph 3.1.C.
    - d. Remove corrosion on embedded metal item and corrosion on exposed reinforcing steel by abrasive blasting to a white-metal finish.
  3. Repair:
    - a. Where no existing concrete has been removed or damaged adjacent to embedded metal item:
      - 1) On surface of embedded metal item, provide two coats of epoxy coating in accordance with coating manufacturer's recommendations.
        - a) Color of First Coating: Red.
        - b) Color of Second Coating: Gray.
      - 2) Before applying second coat, allow first coat of epoxy coating to fully cure in accordance with coating manufacturer's recommendations.
    - b. Where areas of existing concrete have been removed or damaged adjacent to embedded metal item:
      - 1) Patch area of removed or damaged concrete in accordance with this Section's Paragraph 3.2.B.
      - 2) Provide on surface of embedded metal item two coats of epoxy coating in accordance with coating manufacturer's recommendations.
        - a) Color of First Coat: Red.
        - b) Color of second Coat: Gray.
      - 3) Before applying second coating, allow first coat of epoxy coating to fully cure in accordance with coating manufacturer's recommendations.
- E. Extend existing control, construction, and expansion joints through concrete repairs.
- F. For repairs of existing concrete damage, finish of repaired areas shall match the finish of existing adjacent concrete surface.
- G. Expansion Joint Repair – Type A:
1. Provide materials and installation methods in accordance with sealant manufacturer recommendations and the Contract Documents.

2. Provide sealant and backer rod at moderate, reasonably stable, concrete temperature to optimize repair performance.
- H. Expansion Joint Repair – Type B:
1. Provide epoxy resin adhesive sealing system, in accordance with joint sealant system manufacturer’s instructions and the Contract Documents, at locations shown or indicated on the Drawings:
    - a. Existing sealant, backer rod, and joint filler material in acceptable condition are to remain in-place at existing joint locations to receive sealing system.
    - b. Concrete substrate on both sides of existing joint must be clean, dry, sound, and free of surface contaminants to not less than 10 IN wide strip centered on existing joint or greater when recommended by sealant manufacturer.
      - 1) Remove dust, laitance, grease, oils, curing compounds, form release agents, and foreign matter by sandblasting or other mechanical means acceptable to Engineer.
    - c. Mix epoxy resin adhesive and install hypalon sheeting in accordance with adhesive manufacturer’s printed installation instructions and the Contract Documents.
    - d. Cleanup:
      - 1) Leave finished Work and work area in a neat, clean condition without evidence of spillovers on adjacent surfaces.
      - 2) Clean uncured epoxy resin adhesive with approved solvent appropriate for the application and area.
      - 3) Remove cured epoxy resin adhesive only by mechanical means.
- I. Expansion Joint Repair – Type C (Joint Sealant System):
1. Installation of joint coating system shall comply with applicable material manufacturer’s published recommendations and the Contract Documents.
  2. Do not install concrete joint coating when substrate is in a rising-temperature mode.
  3. Substrate, air, and coating material temperatures shall comply with applicable material manufacturer’s recommendations and the Contract Documents.
  4. Primer:
    - a. Provide epoxy primer to concrete prior to installing final coating materials.
    - b. Applied Thickness: 5 to 10 wet mils.
    - c. Reapply coating as necessary to achieve pinhole/holiday-free surface
  5. Comply with material manufacturer’s recoat time. If recoat time(s) are exceeded, comply with material manufacturer’s recommended procedures for surface abrasion, cleaning, and application of bonding agent.
  6. Application of Coatings:
    - a. Provide primer, base coat, scrim, and top coat in accordance with material manufacturer’s requirements, as shown in the Drawings, and in accordance with other Contract Documents.
    - b. Install primer (see item 4 above)
    - c. Provide initial tack coat at thickness of 10 to 20 wet mils, to 6 IN on each side of joints to be coated.
    - d. Push scrim material evenly into wet tack coat and allow to cure one to four hours, as recommended by coating manufacturer.
    - e. Provide not less than thickness of 60 wet mils of top coat over scrim material.
    - f. Protect and cure in accordance with material manufacturer’s recommendations and the Contract Documents.
  7. Should substrate temperatures be less than sealant system manufacturer’s written recommended minimum temperature, comply with material manufacturer’s modified procedures provide materials approved by Engineer and suitable for installation in cold conditions.

### 3.3 CURING

- A. Curing of Repair Mortar:
1. Perform curing of repair mortar immediately after final finishing.

2. Perform curing by combination of covering repair Work with wet burlap and applying liquid membrane-forming curing compound.
3. Employ methods and sequence to maintain moisture for not less than seven days.

### 3.4 FIELD QUALITY CONTROL

#### A. Field Tests:

##### 1. In-Situ Pull-Off Tests:

- a. Perform in-situ pull-off tests on repaired areas at locations indicated by Engineer.
  - 1) Perform not less than one pull-off test, in accordance with ASTM C1583, for each surface (wall, roof, floor, and other). In event of unacceptable pull-off test, repair the defective Work in accordance with the Contract Documents and perform additional test(s) at location(s) indicated by Engineer.
- b. Submit written results of testing, indicating: date of test, entity performing testing, personnel present during testing, time of test, location of test, pertinent results recorded, and other relevant observations.
- c. Criteria for Acceptance: Pull-off test will be deemed as passing (acceptable results) when failure occurs within the existing concrete substrate (cohesive concrete failure). If failure occurs at the joint surface with existing concrete (bond failure), within the repair material, or at connection to testing device, pull-out test will be deemed as passing (acceptable results) when the unit tensile stress acting on the core cross section at failure exceeds 300 PSI. If failure occurs within the repair material, additional test samples of the repair material in the area of the test shall be taken for compressive testing to verify strength of repair material.
- d. Remedy all damage resulting from in-situ testing, in accordance with the Contract Documents.

#### B. Observations and Inspections:

1. Owner will witness surface preparation, substrate moisture conditions, and installation of materials indicated in this Section. Such observations do not relieve Contractor from obligation to comply with the Contract Documents.
2. Owner-retained special inspector shall be present while material manufacturer's technical representatives are at the Site instructing Contractor's structural concrete repair personnel, Contractor's joint sealant system personnel, and installers in the use of the associated material(s), if required.

#### C. Defective Work:

##### 1. Defective Repair:

- a. Any and all repairs are defective Work when one or more of the following occurs:
  - 1) Pull-off test fails.
  - 2) When grout cube tests yield results less than 3500 PSI for repair mortars in seven days.
  - 3) Repair is not properly finished and in accordance with specified tolerances.
- b. Promptly remove and remedy defective concrete repair Work in accordance with the Contract Documents.

##### 2. Damaged Work:

- a. Before acceptance of the Work (following final inspection in accordance with the General Conditions and other Contract Documents), neatly repair damaged surfaces, corners of concrete, and finish.
- b. When performing surface remedial repairs, finish areas to smooth, dense watertight condition.
- c. Replace unsatisfactory concrete patching Work.

##### 3. Corrective Work:

- a. If correction of defective Work (under this Section) is necessary, remove defective Work. Key area to be remedied, clean, and soak surface with water and patch with approved materials. Patch concrete to match existing adjacent concrete surfaces.

- b. Clean surface cavities resulting from form ties, other holes, honeycomb spots, broken corners and edges, and other effects. Saturate with water and point with a mortar of patching material paste. Comply with patching material manufacturer's recommendations concerning placement, pot life, and curing.
  - c. Prepare pointing material not more than 30 minutes prior to use. Cure mortar patches properly. Carefully tool contraction and articulated joints in completed Work and keep them free of concrete. Where necessary, leave joint filler exposed for its full length with clean and true edges.
  - d. Tolerance deviations and other surface defects may also be corrected, when approved by Engineer, by grinding high areas of swales.
  - e. Where remedial work is unsatisfactory, completely remove such Work and replace with new Work in accordance with the Contract Documents.
4. Defective Joint Sealant System Work:
- a. Any and all locations where joint sealant system has separated from concrete or exhibits cracking or tearing is defective Work.
  - b. Remove defective joint sealant system Work, clean the surface, and re-provide new joint sealant system materials.
  - c. Unless directed otherwise by Engineer, when area of defective joint sealant Work exceeds 25% of total area of joint sealant system Work provided, replace all joint sealant system Work in accordance with the Contract Documents.
- D. Suppliers' Services:
- 1. Manufacturers' factory-trained technical representatives of concrete repair materials and joint sealant system shall be at the Site prior to and during first installation of the materials furnished under this Section to review surface preparation, surface moisture conditions and adhesion testing, and proposed installation methods. Joint sealant system manufacturer's representative shall also inspect the entire completed installation and submit, through Contractor, an affidavit of compliance certifying that installed materials comply with manufacturer written instructions and recommendations. Compensation for which is part of the associated unit price for such Work.

### 3.5 POST-CONSTRUCTION OBLIGATIONS

- A. Warranty Inspection:
- 1. Perform warranty inspections during eleventh month after Substantial Completion of the Work of this Section.
  - 2. For the inspections, Owner will dewater and reasonably clean water-bearing structures.
  - 3. Operational constraints preclude removing all water-bearing structures from service simultaneously for warranty inspection. It is anticipated that 3 separate warranty inspections will be necessary due to operational constraints, each on different, non-consecutive days.
  - 4. One warranty inspection of each joint sealed is required unless defective Work is evident. When defective joint sealant Work is apparent, an additional warranty inspection of the repaired joint is required in the eleventh month after the defective joint sealant is remedied.
  - 5. Contractor, joint sealant Subcontractor (if any), joint sealant system manufacturer's technical representative, and Owner, shall be present at each warranty inspection.
  - 6. Contractor shall promptly remedy and replace defective Work, whether evident during the warranty inspection or otherwise, in accordance with the Contract Documents.
  - 7. If contractor is unable or unavailable to remedy defective Work promptly when water-bearing structures are dewatered and cleaned for the warranty inspection, Owner may place such structures back into service and Contractor will be responsible for appropriately dewatering and cleaning the structure to perform the necessary remedial Work.
  - 8. Regarding remedy of defective joint sealant system Work, refer to this Section's Paragraph 3.4.C.

### END OF SECTION



**SECTION 26 05 00**  
**ELECTRICAL - BASIC REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Basic requirements for electrical systems.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
  - 2. Section 26 05 33 - Raceways and Boxes.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Aluminum Association (AA):
    - a. ADM, Aluminum Design Manual.
  - 2. American Institute of Steel Construction (AISC):
    - a. Steel Construction Manual.
  - 3. American National Standards Institute (ANSI).
  - 4. ASTM International (ASTM):
    - a. A36/A36M, Standard Specification for Carbon Structural Steel.
    - b. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    - c. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 5. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    - a. C2, National Electrical Safety Code (NESC).
  - 6. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 7. National Electrical Manufacturers Association (NEMA):
  - 8. Underwriters Laboratories, Inc. (UL).
- B. Products to be listed by a Nationally Recognized Testing Laboratory (NRTL) in accordance with applicable product standards.
  - 1. Applicable product standards including, but not limited to, ANSI, FM, IEEE, NEMA and UL.
  - 2. NRTL includes, but is not limited to, CSA Group Testing and Certification (CS), FM Approvals LLC (FM), Intertek Testing Services NA, Inc. (ETL), and Underwriters Laboratories, Inc. (UL).

**1.3 DEFINITIONS**

- A. For the purposes of providing materials and installing electrical work the following definitions shall be used.
  - 1. Outdoor area: Exterior locations where the equipment is normally exposed to the weather and including below grade structures, such as vaults, manholes, handholes and in-ground pump stations.
  - 2. Architecturally finished interior area: Offices, laboratories, conference rooms, restrooms, corridors and other similar occupied spaces.
  - 3. Non-architecturally finished interior area: Pump, chemical, mechanical, electrical rooms and other similar process type rooms.
  - 4. Shop fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.

## **1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. General requirements:
    - a. Provide manufacturer's technical information on products to be used, including product descriptive bulletin.
    - b. See individual specification sections for any additional requirements.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect nameplates on electrical equipment to prevent defacing.

## **1.6 AREA DESIGNATIONS**

- A. Designation of an area will determine the NEMA rating of the electrical equipment enclosures, types of conduits and installation methods to be used in that area.
  - 1. Outdoor areas:
    - a. Wet.
  - 2. Indoor areas:
    - a. Dry.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, refer to specific Electrical Specification Sections and specific material paragraphs below for acceptable manufacturers.
- B. Provide all components of a similar type by one (1) manufacturer.

### **2.2 MATERIALS**

- A. Electrical Equipment Support Pedestals and/or Racks:
  - 1. Manufacturers:
    - a. Modular strut:
      - 1) Unistrut Building Systems.
      - 2) B-Line by Eaton.
      - 3) Globe Strut.
      - 4) Superstrut by Thomas & Betts.
  - 2. Material requirements:
    - a. Modular strut:
      - 1) Galvanized steel: ASTM A123/123M or ASTM A153/A153M.
      - 2) Aluminum: AA Type 6063-T6.
    - b. Mounting plates:
      - 1) Galvanized steel: ASTM A36/A36M steel with galvanizing per ASTM A123/A123M.
      - 2) Aluminum: AA Type 6063-T6.
    - c. Mounting hardware:
      - 1) Galvanized steel.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install and wire all equipment, including prepurchased equipment, and perform all tests necessary to assure conformance to the Drawings and Specification Sections and ensure that equipment is ready and safe for energization.
- B. Install equipment in accordance with the requirements of:
  - 1. NFPA 70.



2. IEEE C2.
  3. The manufacturer's instructions.
- C. In general, conduit routing is not shown on the Drawings.
1. The Contractor is responsible for routing all conduits including those shown on one-line and control block diagrams and home runs shown on plans.
  2. Conduit routings and stub-up locations that are shown are approximate; exact routing to be as required for equipment furnished and field conditions.
- D. When complete branch circuiting is not shown on the Drawings:
1. The Contractor is to furnish and install all conduit and conductors required for proper operation of the circuit.
  2. The indicated home run conduit and conductor size shall be used for the entire branch circuit.
  3. See Specification Section 26 05 19 for combining multiple branch circuits in a common conduit.
- E. Do not use equipment that exceed dimensions or reduce clearances indicated on the Drawings or as required by the NFPA 70.
- F. Install equipment plumb, square and true with construction features and securely fastened.
- G. Install electrical equipment, including pull and junction boxes, minimum of 6 IN from process, gas, air and water piping and equipment.
- H. Install equipment so it is readily accessible for operation and maintenance, is not blocked or concealed and does not interfere with normal operation and maintenance requirements of other equipment.
- I. Avoid interference of electrical equipment operation and maintenance with structural members, building features and equipment of other trades.
1. When it is necessary to adjust the intended location of electrical equipment, unless specifically dimensioned or detailed, the Contractor may make adjustments of up to 24 IN in equipment location with the Engineer's approval.
- J. Provide electrical equipment support system per the following area designations:
1. Dry areas:
    - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
    - b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
  2. Wet areas:
    - a. Galvanized system consisting of galvanized steel channels and fittings, nuts and hardware.
    - b. Field touch-up cut ends and scratches of galvanized components with the specified primer during the installation, before rust appears.
- K. Provide all necessary anchoring devices and supports rated for the equipment load based on dimensions and weights verified from approved submittals, or as recommended by the manufacturer.
1. Do not cut, or weld to, building structural members.
  2. Do not mount safety switches or other equipment to equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.
- L. Do not place equipment fabricated from aluminum in direct contact with earth or concrete.
- M. Screen or seal all openings into equipment mounted outdoors to prevent the entrance of rodents and insects.
- N. Do not use materials that may cause the walls or roof of a building to discolor or rust.

- O. Provide field markings and/or documentation of available short-circuit current (available fault current) and related information for equipment as required by the NFPA 70 and other applicable codes.

### **3.2 FIELD QUALITY CONTROL**

- A. Verify exact rough-in location and dimensions for connection to electrified equipment, provided by others.
- B. Replace equipment and systems found inoperative or defective and re-test.
- C. The protective coating integrity of support structures and equipment enclosures shall be maintained.
  - 1. Repair galvanized components utilizing a zinc rich paint.
  - 2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
  - 3. Repair surfaces which will be inaccessible after installation prior to installation.
  - 4. See Specification Section 26 05 33 for requirements for conduits and associated accessories.
- D. Replace nameplates damaged during installation.

**END OF SECTION**

**SECTION 26 05 19**  
**WIRE AND CABLE - 600 VOLT AND BELOW**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Building wire.
    - b. Wire connectors.
    - c. Insulating tape.
    - d. Pulling lubricant.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 26 05 00 - Electrical - Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. National Electrical Manufacturers Association (NEMA):
    - a. ICS 4, Industrial Control and Systems: Terminal Blocks.
  - 2. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
    - a. WC 70/S-95-658, Non-Shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
  - 3. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
    - b. 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
  - 4. Underwriters Laboratories, Inc. (UL):
    - a. 44, Standard for Safety Thermoset-Insulated Wires and Cables.
    - b. 83, Standard for Safety Thermoplastic-Insulated Wires and Cables.
    - c. 467, Standard for Safety Grounding and Bonding Equipment.
    - d. 486A, Standard for Safety Wire Connectors and Soldering Lugs for use with Copper Conductors.
    - e. 486C, Standard for Safety Splicing Wire Connections.
    - f. 510, Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
    - g. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
    - h. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.

**1.3 DEFINITIONS**

- A. Cable: Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.
- B. Building Wire: Single conductor, insulated, with or without outer jacket depending upon type.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      - 1) Wire connectors.
      - 2) Insulating tape.

- 3) Cable lubricant.
- b. See Specification Section 26 05 00 for additional requirements.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. See Specification Section 26 05 00.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Building wire:
    - a. Aetna Insulated Wire.
    - b. Alphawire.
    - c. Cerrowire.
    - d. Encore Wire Corporation.
    - e. General Cable.
    - f. Okonite Company.
    - g. Southwire Company.
  - 2. Wire connectors:
    - a. Burndy Corporation.
    - b. Buchanan.
    - c. Ideal.
    - d. Ilsco.
    - e. 3M Co.
    - f. Teledyne Penn Union.
    - g. Thomas and Betts.
    - h. Phoenix Contact.
  - 3. Insulating and color coding tape:
    - a. 3M Co.
    - b. Plymouth Bishop Tapes.
    - c. Red Seal Electric Co.

### **2.2 MANUFACTURED UNITS**

- A. Building Wire:
  - 1. Conductor shall be copper with 600 V rated insulation.
  - 2. Conductors shall be stranded, except for conductors used in lighting and receptacle circuits which may be stranded or solid.
  - 3. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
  - 4. Conform to NEMA/ICEA WC 70/S-95-658 and UL 83 for type THHN/THWN and THHN/THWN-2 insulation.
  - 5. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 for type XHHW-2 insulation.
    - a. Conform to IEEE 1202 or CSA FT-4 or NFPA 262 and NFPA 70 Type ITC.
- B. Wire Connectors:
  - 1. Twist/screw on type:
    - a. Insulated pressure or spring type solderless connector.
    - b. 600 V rated.
    - c. Ground conductors: Conform to UL 486C and/or UL 467 when required by local codes.
    - d. Phase and neutral conductors: Conform to UL 486C.
  - 2. Compression and mechanical screw type:
    - a. 600 V rated.
    - b. Ground conductors: Conform to UL 467.

- c. Phase and neutral conductors: Conform to UL 486A.
- 3. Terminal block type:
  - a. High density, screw-post barrier-type with white center marker strip.
  - b. 600 V and ampere rating as required, for power circuits.
  - c. 600 V, 20 ampere rated for control circuits.
  - d. 300 V, 15 ampere rated for instrumentation circuits.
  - e. Conform to NEMA ICS 4 and UL 486A.
- C. Insulating and Color Coding Tape:
  - 1. Pressure sensitive vinyl.
  - 2. Premium grade.
  - 3. Heat, cold, moisture, and sunlight resistant.
  - 4. Thickness, depending on use conditions: 7, 8.5, or 10 MIL.
  - 5. For cold weather or outdoor location, tape must also be all-weather.
  - 6. Color:
    - a. Insulating tape: Black.
    - b. Color coding tape: Fade-resistant color as specified herein.
  - 7. Comply with UL 510.
- D. Pulling Lubricant: Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Permitted Usage of Insulation Types:
  - 1. Type XHHW-2:
    - a. Building wire in architectural and non-architectural finished areas.
    - b. Building wire in conduit in outdoor areas and below grade.
- B. Conductor Size Limitations:
  - 1. Feeder and branch power conductors shall not be smaller than No. 12 AWG unless otherwise indicated on the Drawings.
- C. Color Code All Wiring as Follows:
  - 1. Building wire:

	240 V, 208 V, 240/120 V, 208/120 V	480 V, 480/277 V
Phase 1	Black	Brown
Phase 2	Red *	Orange
Phase 3	Blue	Yellow
Neutral	White	White or Gray
Ground	Green	Green

\* Orange when it is a high leg of a 120/240 V Delta system.

- a. Conductors No. 6 AWG and smaller: Insulated phase, neutral and ground conductors shall be identified by a continuous colored outer finish along its entire length.
- b. Conductors larger than No. 6 AWG:
  - 1) Insulated phase and neutral conductors shall be identified by one of the following methods:
    - a) Continuous colored outer finish along its entire length.
    - b) 3 IN of colored tape applied at the termination.
  - 2) Insulated grounding conductor shall be identified by one of the following methods:
    - a) Continuous green outer finish along its entire length.

- b) Stripping the insulation from the entire exposed length.
    - c) Using green tape to cover the entire exposed length.
  - 3) The color coding shall be applied at all accessible locations, including but not limited to: Junction and pull boxes, wireways, manholes and handholes.
- D. Install all wiring in raceway unless otherwise indicated on the Drawings.
  - 1. Multiple branch circuits for similar loads may be combined in a common raceway, such as multiple lighting circuits or multiple receptacle circuits or other 120Vac circuits. Do not combine lighting and receptacle circuits.
    - a. Do not combine control device circuits with lighting or receptacle circuits.
    - b. Contractor is responsible for making the required adjustments in conductor and raceway size, in accordance with all requirements of the NFPA 70, including but not limited to:
      - 1) Up sizing conductor size for required ampacity de-ratings for the number of current carrying conductors in the raceway.
      - 2) The neutral conductors may not be shared.
      - 3) Up sizing raceway size for the size and quantity of conductors.
- E. Splices and terminations for the following circuit types shall be made in the indicated enclosure type using the indicated method.
  - 1. Feeder and branch power circuits:
    - a. Device outlet boxes:
      - 1) Twist/screw on type connectors.
    - b. Junction and pull boxes and wireways:
      - 1) Twist/screw on type connectors for use on No. 8 and smaller wire.
      - 2) Compression, mechanical screw or terminal block or terminal strip type connectors for use on No. 6 AWG and larger wire.
    - c. Motor terminal boxes:
      - 1) Twist/screw on type connectors for use on No. 10 AWG and smaller wire.
      - 2) Insulated mechanical screw type connectors for use on No. 8 AWG and larger wire.
    - d. Manholes or handholes:
      - 1) Twist/screw on type connectors pre-filled with epoxy for use on No. 8 AWG and smaller wire.
      - 2) Watertight compression or mechanical screw type connectors for use on No. 6 AWG and larger wire.
  - 2. Non-insulated compression and mechanical screw type connectors shall be insulated with tape or hot or cold shrink type insulation to the insulation level of the conductors.
- F. Insulating Tape Usage:
  - 1. For insulating connections of No. 8 AWG wire and smaller: 7 MIL vinyl tape.
  - 2. For insulating splices and taps of No. 6 AWG wire or larger: 10 MIL vinyl tape.
  - 3. For insulating connections made in cold weather or in outdoor locations: 8.5 MIL, all weather vinyl tape.
- G. Color Coding Tape Usage: For color coding of conductors.

**END OF SECTION**

**SECTION 26 05 26**  
**GROUNDING AND BONDING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for grounding and bonding system(s).
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 26 05 00 - Electrical - Basic Requirements.
  - 2. Section 26 05 19 - Wire and Cable - 600 Volt and Below.
  - 3. Section 26 05 33 - Raceways and Boxes.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. B8, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
  - 2. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
    - a. 837, Standard for Qualifying Permanent Connections Used in Substation Grounding.
  - 3. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 4. Underwriters Laboratories, Inc. (UL):
    - a. 467, Grounding and Bonding Equipment.
- B. Assure ground continuity is continuous throughout the entire Project.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Grounding clamps, connectors and terminals:
    - a. ERICO by Pentair.
    - b. Harger Lightning & Grounding.
    - c. Heary Bros. Lightning Protection Co. Inc..
    - d. Burndy by Hubbell.
    - e. Robbins Lightning, Inc.
    - f. Blackburn by Thomas & Betts.
    - g. Thompson Lightning Protection, Inc.

**2.2 COMPONENTS**

- A. Wire and Cable:
  - 1. Bare conductors: Soft drawn stranded copper meeting ASTM B8.
  - 2. Insulated conductors: Color coded green, per Specification Section 26 05 19.
- B. Conduit: As specified in Specification Section 26 05 33.
- C. Grounding Clamps, Connectors and Terminals:
  - 1. Mechanical type:
    - a. Standards: UL 467.
    - b. High copper alloy content.
  - 2. Compression type for interior locations:

- a. Standards: UL 467.
  - b. High copper alloy content.
  - c. Non-reversible.
  - d. Terminals for connection to bus bars shall have two bolt holes.
3. Compression type suitable for direct burial in earth or concrete:
    - a. Standards: UL 467, IEEE 837.
    - b. High copper alloy content.
    - c. Non-reversible.
    - d. Factory filled with oxide inhibiting compound.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General:
  1. Install products in accordance with manufacturer's instructions.
- B. Raceway Bonding/Grounding:
  1. Install all metallic raceway so that it is electrically continuous.
  2. Provide an equipment grounding conductor in all raceways with insulation identical to the phase conductors, unless otherwise indicated on the Drawings.
  3. NFPA 70 required grounding bushings shall be of the insulating type.
  4. Provide double locknuts at all panels.
  5. Bond all conduits, at entrance and exit of equipment, to the equipment ground bus or lug.
  6. Provide bonding jumpers if conduits are installed in concentric knockouts.
  7. Make all metallic raceway fittings and grounding clamps tight to ensure equipment grounding system will operate continuously at ground potential to provide low impedance current path for proper operation of overcurrent devices during possible ground fault conditions.
- C. Equipment Grounding:
  1. Ground all utilization equipment with an equipment grounding conductor.

**END OF SECTION**



**SECTION 26 05 33**  
**RACEWAYS AND BOXES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Conduits.
    - b. Conduit fittings.
    - c. Conduit supports.
    - d. Pull and junction boxes.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 26 05 00 - Electrical - Basic Requirements.
  - 2. Section 26 05 43 - Electrical - Exterior Underground.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. Aluminum Association (AA).
  - 2. American Iron and Steel Institute (AISI).
  - 3. ASTM International (ASTM):
    - a. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    - b. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    - c. D2564, Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
  - 4. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    - b. TC 2, Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
  - 5. National Electrical Manufacturers Association/American National Standards Institute (NEMA/ANSI):
    - a. C80.1, Electric Rigid Steel Conduit (ERSC).
    - b. C80.5, Electrical Aluminum Rigid Conduit (ERAC).
  - 6. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).
  - 7. Underwriters Laboratories, Inc. (UL):
    - a. 6, Electrical Rigid Metal Conduit - Steel.
    - b. 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
    - c. 360, Standard for Liquid-Tight Flexible Metal Conduit.
    - d. 467, Grounding and Bonding Equipment.
    - e. 514B, Conduit, Tubing, and Cable Fittings.
    - f. 651, Standard for Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
      - 1) Conduit fittings.
      - 2) Support systems.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Rigid metal conduits:
    - a. Allied Tube and Conduit.
    - b. Western Tube and Conduit Corporation.
    - c. Wheatland Tube.
    - d. Patriot Aluminum Products, LLC.
  2. Rigid nonmetallic conduit:
    - a. Prime Conduit.
    - b. Cantex, Inc.
    - c. Osburn Associates, Inc.
    - d. Champion Fiberglass, Inc.
    - e. United Fiberglass of America, Inc.
  3. Flexible conduit:
    - a. AFC Cable Systems.
    - b. Anamet, Inc.
    - c. Electri-Flex Company.
    - d. International Metal Hose Company.
    - e. Southwire Company, LLC.
  4. Conduit fittings and accessories:
    - a. Appleton by Emerson Electric Co.
    - b. Carlon by Thomas & Betts.
    - c. Cantex, Inc.
    - d. Crouse-Hinds by Eaton.
    - e. Killark by Hubbell.
    - f. Osburn Associates, Inc.
    - g. O-Z/Gedney by Emerson Electric Co.
    - h. Raco by Hubbell.
    - i. Steel City by Thomas & Betts.
    - j. Thomas & Betts.
  5. Support systems:
    - a. Unistrut by Atkore International, Inc.
    - b. B-Line by Eaton.
    - c. Kindorf by Thomas & Betts.
    - d. Minerallac Company.
    - e. CADDY by Pentair.
    - f. Superstrut by Thomas & Betts.
  6. Pull and junction boxes:
    - a. Appleton by Emerson Electric Co.
    - b. Crouse-Hinds by Eaton
    - c. Killark by Hubbell.
    - d. O-Z/Gedney by Emerson Electric Co.
    - e. Steel City by Thomas & Betts.
    - f. Raco by Hubbell
    - g. Bell by Hubbell.
    - h. Hoffman Engineering.
    - i. Wiegmann by Hubbell.
    - j. B-Line by Eaton.
    - k. Adalet.
    - l. RITTAL North America LLC.
    - m. Stahlin by Robroy Enclosures.

## 2.2 RIGID METAL CONDUITS

- A. Rigid Aluminum Conduit (RAC):
  - 1. AA Type 6063 aluminum alloy, T-1 temper.
  - 2. Maximum copper content of 0.10%.
  - 3. Extruded, seamless.
  - 4. Standards: NFPA 70 Type RMC, NEMA/ANSI C80.5, UL 6.

## 2.3 RIGID NONMETALLIC CONDUIT

- A. Schedules 40 (PVC-40) and 80 (PVC-80):
  - 1. Polyvinyl-chloride (PVC) plastic compound which includes inert modifiers to improve weatherability and heat distribution.
  - 2. Rated for direct sunlight exposure.
  - 3. Fire retardant and low smoke emission.
  - 4. Shall be suitable for use with 90 DEGC wire and shall be marked "maximum 90 DEGC".
  - 5. Standards: NFPA 70 Type PVC, NEMA TC 2, UL 651.

## 2.4 FLEXIBLE CONDUIT

- A. PVC-Coated Flexible Galvanized Steel (liquid-tight) Conduit (FLEX-LT):
  - 1. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.
  - 2. Extruded PVC outer jacket positively locked to the steel core.
  - 3. Liquid and vaportight.
  - 4. Standard: NFPA 70 Type LFMC, UL 360.

## 2.5 CONDUIT FITTINGS AND ACCESSORIES

- A. Fittings for Use with RAC:
  - 1. Locknuts:
    - a. Threaded steel or malleable iron.
    - b. Gasketed or non-gasketed.
    - c. Grounding or non-grounding type.
  - 2. Bushings:
    - a. Threaded, insulated metallic.
    - b. Grounding or non-grounding type.
  - 3. Hubs: Threaded, insulated and gasketed metallic for raintight connection.
  - 4. Couplings:
    - a. Threaded straight type: Same material and finish as the conduit with which they are used on.
    - b. Threadless type: Gland compression or self-threading type, concrete tight.
  - 5. Unions: Threaded galvanized steel or zinc plated malleable iron.
  - 6. Conduit bodies (ells and tees):
    - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    - b. Standard and mogul size.
    - c. Cover:
      - 1) Clip-on type with stainless steel screws.
      - 2) Gasketed or non-gasketed galvanized steel, zinc plated cast iron or cast copper free aluminum.
  - 7. Conduit bodies (round):
    - a. Body: Zinc plated cast iron or cast copper free aluminum with threaded hubs.
    - b. Cover: Threaded screw on type, gasketed, galvanized steel, zinc plated cast iron or cast copper free aluminum.
  - 8. Standards: UL 467, UL 514B, UL 1203.
- B. Fittings for Use with FLEX-LT:
  - 1. Connector:
    - a. Straight or angle type.

- b. Metal construction, insulated and gasketed.
    - c. Composed of locknut, grounding ferrule and gland compression nut.
    - d. Liquid tight.
  - 2. Standards: UL 467, UL 514B.
- C. Fittings for Use with Rigid Nonmetallic PVC Conduit:
- 1. Coupling, adapters and conduit bodies:
    - a. Same material, thickness, and construction as the conduits with which they are used.
    - b. Homogeneous plastic free from visible cracks, holes or foreign inclusions.
    - c. Bore smooth and free of blisters, nicks or other imperfections which could damage the conductor.
  - 2. Solvent cement for welding fittings shall be supplied by the same manufacturer as the conduit and fittings.
  - 3. Standards: ASTM D2564, NEMA TC 3, UL 651, UL 514B.
- D. Weather and Corrosion Protection Tape:
- 1. PVC based tape, 10 mils thick.
  - 2. Protection against moisture, acids, alkalis, salts and sewage and suitable for direct bury.
  - 3. Used with appropriate pipe primer.

## **2.6 ALL RACEWAY AND FITTINGS**

- A. Mark Products:
- 1. Identify the nominal trade size on the product.
  - 2. Stamp with the name or trademark of the manufacturer.

## **2.7 PULL AND JUNCTION BOXES**

- A. NEMA 1 Rated:
- 1. Body and cover: 14 GA minimum, galvanized steel or 14 GA minimum, steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
  - 2. With or without concentric knockouts on four sides.
  - 3. Flat cover fastened with screws.
- B. NEMA 4 Rated:
- 1. Body and cover: 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
  - 2. Seams continuously welded and ground smooth.
  - 3. No knockouts.
  - 4. External mounting flanges.
  - 5. Hinged or non-hinged cover held closed with stainless steel screws and clamps.
  - 6. Cover with oil resistant gasket.
- C. NEMA 4X Rated (Nonmetallic):
- 1. Body and cover: Ultraviolet light protected fiberglass-reinforced polyester boxes.
  - 2. No knockouts.
  - 3. External mounting flanges.
  - 4. Hinged door with quick release latches and padlocking hasp.
  - 5. Door with oil resistant gasket.
- D. NEMA 12 Rated:
- 1. Body and cover:
    - a. 14 GA steel finished with rust inhibiting primer and manufacturers standard paint inside and out.
    - b. Type 5052 H-32 aluminum, unpainted.
  - 2. Seams continuously welded and ground smooth.
  - 3. No knockouts.
  - 4. External mounting flanges.

5. Non-hinged cover held closed with captivated cover screws threaded into sealed wells or hinged cover held closed with stainless steel screws and clamps.
  6. Flat door with oil resistant gasket.
- E. Miscellaneous Accessories:
1. Rigid handles for covers larger than 9 SQFT or heavier than 25 LBS.
  2. Split covers when heavier than 25 LBS.
  3. Weldnuts for mounting optional panels and terminal kits.
  4. Terminal blocks: Screw-post barrier-type, rated 600 volt and 20 ampere minimum.
- F. Standards: NEMA 250, UL 50.

## **2.8 SUPPORT SYSTEMS**

- A. Single Conduit Support Fasteners:
1. Material requirements:
    - a. Zinc plated steel.
    - b. Malleable iron.
    - c. PVC coat malleable iron or steel: 20 MIL PVC coating.
    - d. Steel protected with zinc phosphate and oil finish.

## **PART 3 - EXECUTION**

### **3.1 RACEWAY INSTALLATION - GENERAL**

- A. Shall be in accordance with the requirements of:
1. NFPA 70.
  2. Manufacturer instructions.
- B. Size of Raceways:
1. Raceway sizes are shown on the Drawings, if not shown on the Drawings, then size in accordance with NFPA 70.
  2. Unless specifically indicated otherwise, the minimum raceway size shall be:
    - a. Conduit: 3/4 IN.
- C. Field Bending and Cutting of Conduits:
1. Utilize tools and equipment recommended by the manufacturer of the conduit, designed for the purpose and the conduit material to make all field bends and cuts.
  2. Do not reduce the internal diameter of the conduit when making conduit bends.
  3. Prepare tools and equipment to prevent damage to the PVC coating.
  4. Degrease threads after threading and apply a zinc rich paint.
  5. Debur interior and exterior after cutting.
- D. Male threads of conduit systems shall be coated with an electrically conductive anti-seize compound.
- E. The protective coating integrity of conduits, fittings, outlet, pull and junction boxes and accessories shall be maintained.
1. Repair galvanized components utilizing a zinc rich paint.
  2. Repair painted components utilizing touch up paint provided by or approved by the manufacturer.
  3. Repair surfaces which will be inaccessible after installation prior to installation.
- F. Remove moisture and debris from conduit before wire is pulled into place.
1. Pull mandrel with diameter nominally 1/4 IN smaller than the interior of the conduit, to remove obstructions.
  2. Swab conduit by pulling a clean, tight-fitting rag through the conduit.
  3. Tightly plug ends of conduit with tapered wood plugs or plastic inserts until wire is pulled.

- G. Only nylon or polyethylene rope shall be used to pull wire and cable in conduit systems.
- H. Where portions of a raceway are subject to different temperatures and where condensation is known to be a problem, as in cold storage areas of buildings or where passing from the interior to the exterior of a building, the raceway shall be sealed to prevent circulation of warm air to colder section of the raceway.
- I. Fill openings in walls, floors, and ceilings and finish flush with surface.

### **3.2 RACEWAY ROUTING**

- A. Raceways shall be routed in the field unless otherwise indicated.
  - 1. Conduit and fittings shall be installed, as required, for a complete system that has a neat appearance and is in compliance with all applicable codes.
  - 2. Run in straight lines parallel to or at right angles to building lines.
  - 3. Conduit shall not interfere with, or prevent access to, piping, valves, ductwork, or other equipment for operation, maintenance and repair.
  - 4. Provide pull boxes or conduit bodies as needed so that there is a maximum of 360 DEG of bends in the conduit run or in long straight runs to limit pulling tensions.
- B. All conduits within a structure shall be installed exposed.
- C. Conduits shall be installed to eliminate moisture pockets.
  - 1. Where water cannot drain to openings, provide drain fittings in the low spots of the conduit run.
- D. Conduit shall not be routed on the exterior of structures except as specifically indicated on the Drawings.
- E. Provide all required openings in walls, floors, and ceilings for conduit penetration.

### **3.3 RACEWAY APPLICATIONS**

- A. Permitted Raceway Types Per Area Designations:
  - 1. Dry areas:
    - a. RAC.
  - 2. Wet areas:
    - a. RAC.
  - 3. Direct buried conduits:
    - a. PVC-80.
- B. FLEX-LT conduits shall be installed as the final conduit connection to light fixtures, dry type transformers, motors, electrically operated valves, instrumentation primary elements, and other electrical equipment that is liable to vibrate.
  - 1. The maximum length shall not exceed:
    - a. 2 FT to all other equipment.
- C. Underground Conduit: See Specification Section 26 05 43.

### **3.4 CONDUIT FITTINGS AND ACCESSORIES**

- A. Rigid nonmetallic conduit and fittings shall be joined utilizing solvent cement.
  - 1. Immediately after installation of conduit and fitting, the fitting or conduit shall be rotated 1/4 turn to provide uniform contact.
- B. Threaded connections shall be made wrench-tight.
- C. Conduit joints shall be watertight:
  - 1. Where subjected to possible submersion.
  - 2. In areas classified as wet.
  - 3. Underground.

- D. Terminate Conduits:
  - 1. In metallic outlet boxes:
    - a. RAC:
      - 1) Conduit hub and locknut.
      - 2) Insulated bushing and two locknuts.
      - 3) Use grounding type locknut or bushing when required by NFPA 70.
  - 2. In NEMA 1 rated enclosures:
    - a. RAC:
      - 1) Conduit hub and locknut.
      - 2) Insulated bushing and two locknuts.
      - 3) Use grounding type locknut or bushing when required by NFPA 70.
  - 3. In NEMA 12 rated enclosures:
    - a. Watertight, insulated and gasketed hub and locknut.
    - b. Use grounding type locknut or bushing when required by NFPA 70.
  - 4. In NEMA 4 and NEMA 4X rated enclosures:
    - a. Watertight, insulated and gasketed hub and locknut.
  - 5. When stubbed up through the floor into floor mount equipment:
    - a. With an insulated grounding bushing on metallic conduits.
    - b. With end bells on nonmetallic conduits.
- E. Threadless couplings shall only be used to join new conduit to existing conduit when the existing conduit end is not threaded and it is not practical or possible to cut threads on the existing conduit with a pipe threader.

### 3.5 CONDUIT SUPPORT

- A. Permitted single conduit support fasteners per area designations and conduit types:
  - 1. Dry or wet areas:
    - a. Aluminum system consisting of: Aluminum channels, fittings and conduit clamps with stainless steel nuts and hardware.
  - 2. Conduit type shall be compatible with the support system material.
    - a. Aluminum system may be used with RAC.
    - b. Nonmetallic fasteners may be used with PVC-40, PVC-80 and fiberglass.
- B. Conduit Support General Requirements:
  - 1. Maximum spacing between conduit supports per NFPA 70.
  - 2. Support conduit from the building structure.
  - 3. Do not support conduit from process, gas, air or water piping; or from other conduits.
  - 4. Provide hangers and brackets to limit the maximum uniform load on a single support to 25 LBS or to the maximum uniform load recommended by the manufacturer if the support is rated less than 25 LBS.
    - a. Do not exceed maximum concentrated load recommended by the manufacturer on any support.
    - b. Conduit hangers:
      - 1) Continuous threaded rods combined with struts or conduit clamps: Do not use perforated strap hangers and iron bailing wire.
    - c. Do not use suspended ceiling support systems to support raceways.

### 3.6 PULL AND JUNCTION BOX INSTALLATION

- A. General:
  - 1. Install products in accordance with manufacturer's instructions.
  - 2. Fill unused punched-out, tapped, or threaded hub openings with insert plugs.
  - 3. Size boxes to accommodate quantity of conductors enclosed and quantity of conduits connected to the box.
- B. Pull and Junction Boxes:

1. Install pull or junction boxes in conduit runs where indicated or required to facilitate pulling of wires or making connections.
  - a. Make covers of boxes accessible.
2. Permitted uses of NEMA 1 enclosure:
  - a. Pull or junction box surface mounted above removable ceiling tiles of an architecturally finished area.
3. Permitted uses of NEMA 4 enclosure:
  - a. Pull or junction box surface mounted in areas designated as wet.
  - b.
4. Permitted uses of NEMA 12 enclosure:
  - a. Pull or junction box surface mounted in areas designated as dry.

**END OF SECTION**



**SECTION 26 05 43**  
**ELECTRICAL - EXTERIOR UNDERGROUND**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Material and installation requirements for:
    - a. Handhole.
    - b. Underground conduits.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1.
  - 2. Section 26 05 26 - Grounding.
  - 3. Section 26 05 33 - Raceways and Boxes.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Association of State Highway and Transportation Officials (AASHTO):
    - a. HB-17, Standard Specifications for Highway Bridges.
  - 2. ASTM International (ASTM):
    - a. A536, Standard Specification for Ductile Iron Castings.
  - 3. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).

**1.3 DEFINITIONS**

- A. Direct-Buried Conduit(s):
  - 1. Individual (single) underground conduit.
  - 2. Multiple underground conduits, arranged in one or more planes, in a common trench.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data:
    - a. Provide submittal data for all products specified in PART 2 of this Specification Section.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Prefabricated composite handholes:
    - a. Armorcast Products Company.
    - b. Quazite by Hubbell.
    - c. Synertech by Oldcastle Enclosure Solutions.

**2.2 HANDHOLES**

- A. Prefabricated Composite Material Handholes:
  - 1. Handhole body and cover: Fiberglass reinforced polymer concrete conforming to all test provisions of SCTE 77.
  - 2. Minimum load ratings: SCTE 77 Tier 15.
  - 3. Open bottom.

4. Stackable design as required for specified depth.
5. Cover:
  - a. Engraved legend of "ELECTRIC".
  - b. Non-gasketed bolt down with stainless steel penta head bolts.
  - c. Lay-in non-bolt down, when cover is over 100 LBS.
  - d. One or multiple sections so the maximum weight of a section is 125 LBS.
6. Cover lifting hook: 24 IN minimum in length.

### **2.3 UNDERGROUND CONDUIT AND ACCESSORIES**

- A. Conduit: See Specification Section 26 05 33.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Handhole Locations:
  1. As required for pulling distances.
  2. As required to keep pulling tensions under allowable cable tensions.
  3. As required for number of bends in ductbank routing.
  4. Shall not be installed in a swale or ditch.
  5. Determine the exact locations after careful consideration has been given to the location of other utilities, grading, and paving.
- B. Install products in accordance with manufacturer's instructions.
- C. Install handholes in conduit runs as required to facilitate pulling of wires or making connections.

### **3.2 HANDHOLES**

- A. Prefabricated Composite Material Handholes:
  1. For use in areas subjected to occasional non-deliberate vehicular traffic.
  2. Place handhole on a foundation of compacted 1/4 to 1/2 IN crushed rock or gravel a minimum of 8 IN thick and 6 IN larger than handholes footprint on all sides.
  3. Provide concrete encasement ring around handhole per manufacturers installation instructions (minimum of 10 IN wide x 12 IN deep).
  4. Install so that the surrounding grade is 1 IN lower than the top of the handhole.
  5. Size: As indicated on the Drawings or as required for the number and size of conduits.
  6. Provide cable rails and pulling eyes as needed.

### **3.3 UNDERGROUND CONDUITS**

- A. Direct-Buried Conduit(s):
  1. Install so that the top of the uppermost conduit, at any point:
    - a. Is not less than 30 IN below grade.
    - b. Is below pavement sub-grading.
  2. Provide a uniform minimum clearance of 3 IN between conduits or as required in Specification Section 26 05 33 for different cabling types.
    - a. Maintain the separation of multiple planes of conduits by one of the following methods:
      - 1) Install multilevel conduits with the use of conduit supports and separators to maintain the required separations and backfill with flowable fill (100 PSI).
      - 2) Install the multilevel conduits one level at a time.
        - a) Each level is backfilled with the appropriate amount of soil and compaction to maintain the required separations.

**END OF SECTION**

**SECTION 31 05 19**  
**WASTEWATER LAGOON LINER**

**PART 1 - GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. Work consists of all labor, materials, equipment, and incidentals to completely furnish, install and test the liner system for the wastewater lagoons.

**1.2 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Furnish the following product data, in writing, to the Engineer prior to installation of the geomembrane material.
  - 1. Certify that geomembrane manufacturer is listed by NSF International.
  - 2. Geomembrane Rolls: Copy of quality assurance certificates issued by geomembrane Manufacturer shall be furnished.
  - 3. Certification that all seams have been tested in accordance with Subsection 3.05
  - 4. Installer's geosynthetic Field Installation Quality Assurance Plan C. Submittals on a daily basis during installation:
    - a. Subgrade acceptance forms.
    - b. All quality control documentation and field testing results (Destructive and Non-Destructive Test Results).
- C. Submit the following to the Engineer upon completion of installation.

**1.3 QUALIFICATIONS**

- A. The manufacturer of the geomembrane material shall have a minimum of five years of experience totaling more than 100,000,000 square feet and shall meet all requirements of NSF Standards.
- B. Installer
  - 1. Installation shall be performed by a certified geomembrane installation company.
  - 2. The Installer shall have installed a minimum of 1,000,000 square feet of HDPE membrane during the last five (5) years.
  - 3. The Installer shall have worked in a similar capacity on at least five (5) projects similar in complexity to the project described in the contract documents.
  - 4. The Installation supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.
  - 5. The Master Welder shall have completed a minimum of 1,000,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for use on this Project.
- C. All requirements for geomembrane installation apply and the requirements addressed to the manufacturer, fabricator or installer does not relieve the Contractor of the Contractor's liability or responsibility for compliance.

**1.4 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING**

- A. Labeling - Each roll of geomembrane delivered to the site shall be labeled by the manufacturer. The label shall clearly state the manufacturer's name, product identification, thickness, length, width and roll number. The label shall be found on either of the end caps, and inside edge of the core, and outside the core.
- B. Delivery - The rolls of liner shall be packaged and shipped by appropriate means to prevent damage to the material and to facilitate off-loading.

- C. Storage - The on-site storage location for geomembrane material should be level, smooth, elevated and dry (not wooden pallets). The storage place should be protected from theft and vandalism, and should be adjacent to the area to be lined. The Contractor shall provide a suitable storage site which will protect the geomembrane from punctures, abrasions, ultraviolet light degradation, and excessive moisture and dirt.
- D. Handling - The materials are to be handled so as to prevent damage. Instructions for moving geomembrane rolls shall be provided by the Manufacturer upon request.

**1.5 WARRANTY**

- A. The material shall be warranted, on a pro-rate basis against manufacturer's defects for a period of 20 years from the date of geomembrane installation. This warranty shall include ultraviolet radiation, weather, and chemical incompatibility with municipal wastewater.
- B. The installation shall be warranted against defects in workmanship for a period of 2 years from the date of Certificate of Substantial Completion as described in Section 01700.

**PART 2 - PRODUCTS**

**2.1 GEOTEXTILE FABRIC**

- A. The geotextile fabric shall be a non-woven polypropylene basic fabric. the fabric shall be inert to biological degradation and shall be resistant to alkalines and acids found in soils. The base plastic shall contain stabilizers and inhibitors to make the fabric resistant to ultraviolet radiation. The fabric shall also meet the following physical properties:

<u>Fabric Property</u>	<u>Test Method</u>	<u>Unit</u>	<u>Value*</u>
Grab Tensile Strength	ASTM D 4632	lb	205
Grab Tensile Elongation	ASTM D 4632	%	50
Trapezoidal Tear Strength	ASTM D 4533	lb	80
Mullen Burst Strength	ASTM D 3786	psi	400
Puncture Strength	ASTM D 4833	lb	525
Coefficient of Permeability, k	ASTM D 4491	cm/sec	0.38
Water Flow Rate	ASTM D 4491	gal/min/sf	90
AOS	COE-CW-02215	US Std Sieve	80
Minimum Weight	ASTM D 3776	oz/sy	8
* Using constant rate equipment.			

- B. The geotextile fabric shall be Perma Tex 4080 non-woven geotextile by Northwest Linings and Geotextile Products Inc. or approved equal.
- C. Where subbase is unsuitable and geotextile fabric is to be used, it shall have the following properties:
  - 1. *Material Specifications:*

- a. Thickness of subbase shall be sufficient to achieve an evenly grades surface and shall be at least 12 inches thick;
  - b. Be free of debris, foreign material, and deleterious material, not comprised of sludge or other wastes;
  - c. Not have any abrupt changes on grade that could damage the FML or liner system; and
  - d. Not have any sharp-edged protrusions or any particles protruding more than ¼ inch.
2. ***Preconstruction Testing:*** Any soils used for reconstruction of the subbase shall have preconstruction testing in representative sampling to determine the maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of no less than 1 sample per 10,000 CY.
3. ***Construction Specifications:***
- a. Be constructed in loose lifts of 12 inches or less and constructed with a maximum clod size that does not exceed the lift thickness;
  - b. Be compacted to at least 95% of maximum dry density by ASTM D698 (standard proctor) or at least 90% of maximum dry density as determined by ASTM D1557 (modified proctor); and
  - c. Care must be taken as to not damage surrounding subbase. If working over subbase that will not be reconstructed, only low-pressure construction equipment must be used. If the area is small enough that requires reconstruction, small portable “jumping jack” compactors may be used. No rutting of subbase should occur.

***Quality Control Testing:*** Have quality control testing of the constructed lifts performed to determine the density and moisture content according to ASTM D2922 and ASTM D3017 (nuclear soil density methods), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon) or other methods acceptable to the Director at a frequency of no less than 5 tests per acre per lift. Locations of tests shall be adequately spaced to represent the constructed area. Penetrations must be repaired using bentonite.

**2.2 SYNTHETIC LINER FOR WASTEWATER LAGOONS**

- A. Lagoon liner shall be 80 mil high density polyethylene textured geomembrane by NW Linings GRI-GM13 or approved equal that meets the following requirement

Property	ASTM Method	Value
Thickness - Minimum Average Value Thickness - Lowest individual	D5199	80 mils 72 mils
Sheet Density (Minimum)	D792	0.94 g/cc
Tensile Strength	D638 Stress at Yield	168 ppi
	Stress @ Break	120 ppi
	Strain @ Yield 1.3" Gage Length	12%
	Strain @ Break 2.0" Gage Length	150%
Tear Resistance	D1204	56 lbs

Dimensional Stability	D1204 Max Change	± 2%
Notched Constant Load ESCR	D5397	200 Hours
Puncture Resistance	D4833	120 lbs
Carbon Black Content	D1603	2.0-3.0%
Carbon Black Dispersion	D5596	CAT 1 or 2

## **PART 3 - EXECUTION**

### **3.1 SUBGRADE PREPARATION**

- A. The geomembrane installation shall not begin until after a proper subgrade has been prepared to accept the geomembrane. This shall consist of the existing layer of sand which shall be brought to a depth of 6-inches.
- B. The subgrade shall be smooth and free from sharp objects. All vegetation, roots, and grass shall be removed. Any cracks or voids shall be filled. The subgrade shall have no sudden, sharp, or abrupt changes in grade.
- C. The Contractor shall protect the subgrade from drying out, flooding, and freezing. Protection, if required, may consist of a thin plastic protective cover (or other material as approved by the Engineer) installed over the completed subgrade until such time as the placement of the geomembrane begins. Subgrade found to have cracks greater than 1/2 inches in width or depth, or which exhibit swelling, heaving, or other similar conditions shall be replaced or reworked by the Contractor to remove these defects.
- D. The subgrade shall be compacted to provide a firm unyielding foundation sufficient to permit the movement of vehicles and welding equipment over the subgrade without causing rutting or other deleterious effects.
- E. No standing or running water shall be present on the subgrade.
- F. Where, in the opinion of the Engineer, the undisturbed condition of the natural soils below the excavation grades indicated or specified is inadequate, geotextile fabric may be required.

### **3.2 NONWOVEN GEOTEXTILE**

- A. Nonwoven geotextile shall be placed in a manner to protect the geomembrane liner from risk of punctures. Seam and prepare according to the manufacturer's recommendations.

### **3.3 DEPLOYMENT**

- A. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.
- B. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect area.
- C. Deployment of the geomembrane panels shall conform to the following requirements.
  - 1. Unroll geomembrane panels using methods that will not damage geomembrane and will protect underlying surface from damage (i.e., spreader bar - protected equipment bucket).
  - 2. Geotextile panels shall be deployed so that the long side of each panel is orientated vertically, and properly secured per manufacturer recommendations.
  - 3. A panel layout diagram shall be provided to the Owner and the design engineer with a completed table documenting that all panels have been sewn.
  - 4. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.

5. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage the geomembrane. Smoking will not be permitted on the geomembrane.
  6. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 6 psi.
- D. The geomembrane shall be installed in a relaxed condition, free of stress or tension upon completion of the installation. Stretching the geomembrane to fit is not allowed. Sufficient material (slack) shall be provided to allow for geomembrane expansion and contractions.

### **3.4 FIELD SEAMING**

- A. Seams shall meet the following requirements.
1. To the maximum extend possible, orient seams vertically, and not across all slopes.
  2. Place above and in direct and uniform contact with the geotextile cushion layer.
  3. Minimize the number of field seams in corners, odd-shaped geometric locations and outside corners.
  4. Slope seams (panels) shall extend a minimum of five-feet beyond the grade break into the flat area.
  5. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the Engineer and Installer prior to commencing.
  6. Seaming shall not be performed when seams are exposed to precipitation, and when the air or the FML temperatures are less than 32 degrees Fahrenheit.
  7. Sealing around structures and pipes should be done in accordance with Manufacturer's recommendations and as indicated on the Drawings.
  8. Peel tests shall be performed on scrap pieces of FML when any apparatus (seaming machine) is started, and change in operators, whenever an apparatus is restarted after cool-down, or at the beginning of any seaming period. Logs shall be kept documenting seaming apparatus and operator, and ensuring that each seam passes peel tests.
- B. During welding operations provide at least one master welder who shall provide direct supervision over other welders if necessary.
- C. Extrusion Welding
1. Hot-air bond adjacent pieces together using procedures that do not damage geomembrane.
  2. Purge welding apparatus of heat-degraded extrudate before welding.
  3. Clear geomembrane surfaces by disc grinder or equivalent.
- D. Hot Wedge Welding
1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.
  2. Protect against moisture build-up between sheets.
  3. Clean seam areas of dust, mud, moisture and debris immediately ahead of the hot wedge welder.
- E. Trial Welds
1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.
  2. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld. Peel tests shall be performed on scrap pieces of FML when any apparatus is started, and change in operators, whenever an apparatus is restarted after cool-down, or at the beginning of any seaming period. Logs shall be kept documenting seaming apparatus and operator ensuring that each seam passes peel tests.
  3. Minimum of two trial welds per day, per welding apparatus, on made prior to the start of work and one completed at mid shift.
  4. Make trial welds under the same surface and environmental conditions as the production welds.

5. Cut four, one-inch wide by six-inch long test strips from the trial weld. Quantitatively test specimens for peel adhesion, and then for bonded seam strength (shear). Test strips for bonded seam strength (ASTM D3083 as modified for NSF Standard 54) and peel adhesion (with ASTM D413 as modified for NSF Standard 54).
  6. A trial weld specimen shall pass when the results shown below are achieved in both peel and shear test. Property Test Method HDPE Liner Peel Strength (fusion & ext.), ppi ASTM D 4437 98 Shear Strength (fusion & ext.), ppi ASTM D 4437 121
    - a. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).
    - b. The break is ductile.
  7. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.
- F. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. Installer shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.
- G. Defects and Repairs
1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blister, undispersed raw materials, and any sign of contamination by foreign matter.
  2. Repair and non-destructively test each suspect location in both seam and nonseam areas. Do not cover geomembrane at locations which have been repaired until test results with passing values are available.

### **3.5 FIELD QUALITY ASSURANCE**

- A. General - The Manufacturer, Fabricator, and Installer shall participate in and conform with all terms and requirements of the Owner's quality assurance program. The Contractor shall be responsible for assuring this participation. Quality assurance requirements are specified in this section and in the Field Quality Assurance Manual if it is included in the contract.
- B. Visual Inspection: The material and seams shall be visually inspected for compliance with project specifications.
- C. Field Testing: The Contractor shall be responsible for all field testing and shall provide an independent and qualified testing firm to perform the test. This could be the liner manufacturer, supplier or other qualified firm. The proposed testing firm shall be submitted to the Owner for review and approval.
1. Non-destructively test all field seams over their full length using a vacuum test unit, air pressure (for double fusion seams only), or other approved methods. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming. All seams shall be non-destructively tested. Failed seams shall be capped with extrusion patches and re-tested using vacuum box testing.
  2. Vacuum Testing
    - a. consisting of a rigid housing, a transparent viewing window, a soft gasket attached to the bottom, or valve assembly, and a vacuum gage, 2) A vacuum pump assembly, and 3) A soapy solution.
    - b. Test procedure is performed as follows: 1) Apply soapy solution to the seam, 2) Place vacuum box over the entire wetted seam area, 3) Ensure that a leak-tight seal is created, 4) Apply a vacuum of at least 5 psig, 5) Examine the geomembrane through the viewing window for the presence of soap bubbles for not fewer than five seconds and less than 10 seconds, and 6) All areas where soap bubbles appear shall be marked and repaired.
  3. Air Pressure Testing (for double seam air channel)
    - a. The equipment shall consist of the following: 1) An air pump or tank equipped with pressure gauge capable of generating and sustaining pressure over 30 psi, 2) A sharp hollow needle, or other approved pressure feed device equipped with a pressure gauge, and 3) A hot air gun or other device to seal the ends of the air channel.



- b. Test procedure is performed as follows: 1) Seal both ends of seam to be tested, insert air needle into the air channel, and pressurize to at least 25 psi, 2) If pressure loss exceeds 4 psi and does not stabilize after 5 minutes, locate faulty area and repair, 3) Puncture opposite end of seam and release air. If blockage is present, locate and test seam on both sides of blockage. A pressure gauge at both ends of the seam will also be acceptable, and 4) Remove needle or other approved pressure feed device and seal penetration holes by extrusion welding.
- D. Non-destructively test all field seams over their full length using an air lance test, a mechanical point stressing test, or other approved method. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.
  - 1. Air Lance Test (ASTM D4437): All field seams shall be tested using a minimum 50 psi air supply directed through a 3/32-inch nozzle held not more than two inches from the seam edge and directed at the seam edge. Defective seams are located when the air jet causes the liner to inflate, flutter, or show a disturbance not seen with properly seamed areas.
  - 2. Mechanical Point Stressing Test (ASTM D4437): This test method is used as a qualitative measure of edge bonding. A blunt instrument is run along the edge of the field seam to find obvious unbonded areas.
- E. Destructive Testing.
  - 1. A start-up seam shall be provided at the beginning of each day or shift of seaming operation. The sample shall be made from the same sheet material and using the same seaming method as will be used to fabricate the field seams. After the sample is allowed to cure, it shall be tested for bonded seam strength and peel adhesion.
  - 2. One sample per 500 feet of field seam or one sample per seaming crew shall be tested for bonded seam strength and peel adhesion. The sample can either be made from excess material or cut out from the installed lining. If the sample is cut out, the resulting hole shall be repaired as specified herein.
  - 3. The bonded seam strength test shall comply with ASTM D3083 as modified for NSF Standard 54. The peel adhesion test shall comply with ASTM D413 as modified for NSF Standard 54. The test results shall be compared to the minimum requirements shown in Paragraph 2.01.

### 3.6 REPAIR PROCEDURES

- A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.
- B. Repair any portion of unsatisfactory geomembrane or seam area failing a non-destructive test or damaged during the course of the work. Installer shall be responsible for repair of damaged or defective areas. Agreement upon the appropriate repair method shall be decided between the Engineer and the Installer. Procedures available include the following.
  - 1. Patching - Used to repair large holes, tears, undispersed raw materials, and contamination by foreign matter. Patches shall be made with a piece of the same material as the geomembrane. Patches should be cut with rounded corners and should overlap a minimum of 6 inches. Patches shall be applied to the membrane by HDPE adhesive or a hot air gun. All wrinkles shall be smoothed out.
  - 2. Abrading and Re-welding - Used to repair small seam sections.
  - 3. Spot Welding - Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.
  - 4. Capping - Used to repair large lengths of failed seams.
  - 5. Flap Welding - Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.
  - 6. Removing the unacceptable seam and replace the new material.
- C. In addition, the following procedures shall be observed
  - 1. Surface of the polyethylene which is to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.

2. All geomembrane surfaces shall be clean and dry at the time of repair.
3. Extend patches or caps at least 6 inches for extrusion weld and 4 inches for wedge weld beyond the edge of the defect, and round all corners of patch material.

D. Repair Verification

1. Number and log each patch repair (performed by Installer).
2. Non-destructively test each repair using methods specified in this Specification.

**3.7 LEAK TEST**

- A. Prior to acceptance of the liner construction, the Contractor will perform a leak test on each lagoon cell. The leak test will need to account for rain, evaporation, inflow and outflow. Should the results of the leak test show that the rate of leakage from either lagoon cell 1 or 2 is greater than or equal to 1/4-inch per day, the lagoon liner construction shall be considered unacceptable. In this event, the contractor shall submit a plan to the Owner to reduce the leakage rate to less than 1/4-inch per day. All costs associated with the repair/improvement of the liner system to an acceptable condition are the responsibility of the contractor.
- B. The timing of the leak test may be delayed to the most appropriate time, however the project will not be considered substantially complete until the test has been performed and the results are acceptable.

**3.8 WATER MANAGEMENT**

- A. Once the leak test has been completed, the Contractor shall maintain a minimum water depth in the lagoons to prevent any movement of the lagoon liner due to hydrostatic forces.
- B. For plant startup, the Contractor shall adjust the water level as directed by the Owner

**END OF SECTION**

**SECTION 31 09 19**  
**BIOSOLIDS DREDGING AND DISPOSAL**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. The work includes dredging, dewatering, hauling and disposal of biosolids from both lagoons. Work for each lagoon will be sequenced such that it meets the general requirements of Division 01 and the construction plans.
- B. Biosolids disposal must conform with NPDES Permit 3PG00100\*HD Station 581 as modified for land application and include approvals of scientific fields where land application will occur. Biosolids not meeting these requirements shall be treated on site with lime to meet the pathogen reduction requirements for land application.
- C. The Contractor shall bid for the project on a unit price per gallons of sludge dredged and disposed from the lagoons. Unit price shall include testing of the sludge for meeting pathogen reduction under Pathogen Reduction Method #1 of Rule 3745-40-04(B) of the Ohio Administrative Code.
- D. An estimate of the volume of sludge contained in the lagoons was done in 2019 and the volumes are: 317,152 gallons in lagoon A and 574,913 gallons in lagoon B.
- E. Contractor shall comply with Rule 3745-40-05 of the Ohio Administrative Code for land application restrictions based on cumulative pollutant loading rates. Contractor shall sample the sludge and complete a metal analysis for the parameters listed in NPDES Permit 3PG001001\*HD Station 581 to determine if which sections of the Rule are applicable.
- F. The Contractor shall be responsible for providing water for their sludge pressing operations; the Contractor will be able to arrange for bulk purchase of water from Geauga County for this purpose. Cost for the water required for pressing the sludge shall be included in the unit price bid for sludge dredged and disposed.
- G. An allowance is included in the Bid Form for lime stabilization and to compensate for the time required to achieve the pathogen reduction through Pathogen Reduction Method #6 of Rule 3745-40-04(B) of the Ohio Administrative Code.

**1.02 SUBMITTALS**

- A. The Contractor shall submit a dredging and dewatering plan, including data on all equipment to be used, location of sludge loading area and tire washing station, any subcontractors and laboratories to be used and a detailed schedule of work. Submittal to be in conformance with Section 01300.
- B. Submit a spill containment and remediation plan in accordance with the current Biosolids Management Plan.

**1.03 REGULATORY COMPLIANCE AND PENALTIES**

- A. The Contractor shall be responsible for complying with all applicable local, state and federal regulations.
- B. The Contractor shall pay all penalties assessed to the GCDWR as a result of the Contractor's negligence and/or violation of local, state and/or federal regulations.

**PART 2 - PRODUCTS**

**2.01 SLUDGE LOADING AREA AND SLUDGE TRUCK TIRE WASHING STATIONS**

- A. The sludge loading area and sludge truck tire washing stations shall be constructed of 3"-0 aggregate base with minimal fines to promote surface drainage.

**2.02 SLUDGE TRUCKS**

- A. Sludge trucks shall have a sight tube to allow visual indication of the level of sludge within the tank. The trucks shall also have an access hatch in the top or back of the tank to allow for the inspection for accumulated solids in the bottom of the tank.

### **2.03 SAMPLING POINTS**

- A. A sampling port shall be provided to allow for collection of sludge samples for testing.

## **PART 3 - EXECUTION**

### **3.01 SLUDGE LOADING AREA**

- A. The Contractor shall construct a sludge loading area, including improvements to the lagoon access as necessary for the dredging, dewatering, screening and truck loading operations.
- B. The sludge loading area shall be graded to drain into the lagoons.
- C. The loading area shall contain provisions to wash the tires of the sludge truck before it exits the loading area so that sludge is not tracked outside the fenced area.
- D. The screening equipment shall be located on the sludge loading area.

### **3.02 DREDGE ANCHORING SYSTEM**

- A. There are no existing dredge anchors. The Contractor shall construct a dredge anchoring system as necessary for the Work.
- B. The Contractor shall notify the Owner's Representative regarding the proposed locations of the dredge anchors a minimum of 7 days prior to beginning work. The Owner's Representative will determine if the proposed locations conflict with any existing utilities.

### **3.03 SLUDGE TRUCK TIRE WASHING STATIONS**

- A. Sludge truck tire washing stations shall be constructed at the Sludge Loading Area. The tires of the sludge truck shall be thoroughly washed each time before leaving the sludge loading area.
- B. The tire washing station at the Sludge Loading Area shall drain into the lagoons.
- C. If in the opinion of the Owner's Representative inadequate tire washing is occurring, the Contractor will be directed to wash the entire haul route within 4 hours of notification by the Engineer or the Owner's Representative, at no additional cost to the GCDWR. If this Work is not performed within 4 hours of notification, the GCDWR will have this Work done and will deduct the cost, including administrative costs, from the Final Payment to the Contractor.

### **3.04 DREDGING, SCREENING AND DEWATERING**

- A. Sludge shall be dredged from the lagoons to create a uniform bottom elevation, and work sequenced to maintain full operation of the plant. In place solids concentrations are anticipated to be between 2 and 3 percent.
- B. Dredged sludge shall be screened to remove plastics and other solids greater than 3/4 inch in the smallest dimension. The cost for screening and screenings disposal shall be included in the unit price for dredging and no additional payment will be made.
- C. The dredged sludge that is unsuitable for land application shall be dewatered onsite prior to hauling to the landfill. Suitable materials shall be stored for land application. The contractor shall furnish equipment capable of dewatering the sludge to a point where a representative sample will pass a paint filter test. The actual quantity of sludge removed will be determined based on periodic sampling and testing of the dewatered material. Liquid from the dewatering operation shall be contained and directed back to the lagoons. The cost for dewatering shall be included in the unit price for dredging and no additional payment will be made.
- D. The Contractor is responsible for providing the sludge to the disposal site with the quality required for disposal at the site. Should the quality be unacceptable to the disposal site, it is the Contractors responsibility to provide additional treatment/dewatering as needed to meet the requirements at no extra cost to the Owner.

### **3.05 TESTING AND CALCULATION OF QUANTITY**

- A. The Contractor shall keep a log in each sludge truck of the time when the truck enters the loading area, exits the loading area, enters the disposal site and exits the disposal site. This shall constitute one load. The volume of the truck shall be included on each log form. The logs for each truck shall be delivered to the Owner's Representative at the completion of each work day. No payment will be made unless the logs are completed and turned in in accordance with the above requirements.
- B. The Engineer and/or the Owner's Representative will inspect the sludge trucks at random, unannounced times to verify that they are being loaded to their capacity.
- C. The Engineer and/or the Owner's Representative will sample the dewatered sludge at random, unannounced times to determine the solids concentration of the material. A minimum of three samples will be taken per eight-hour work day. The date and time that the sample was taken will be recorded on the sample bottle along with the initials of the Contractor and Owner's Representative or Engineer and the bottle will be sealed. The samples will be taken by the Owner's Representative or to GCDWR laboratory for analysis. Samples will be taken to the testing laboratory Section 31 09 19 no less frequently than weekly. The testing laboratory will record the condition of the bottle seal at the time of delivery on the sample result form. The results of the testing will be provided to the Contractor by the testing laboratory. At the Contractor's request, split samples will be taken to verify the results from the GCDWR's testing laboratory. Additional costs associated with split sampling shall be borne by the Contractor.
- D. The dry tons of material dredged per day will be calculated by the Engineer utilizing the volume hauled per day and the average solids concentration of the sludge samples taken that day. The calculations for the dry tons of material dredged will be provided to the Contractor weekly.

### **3.06 REMEDIAL PROCEDURES**

- A. The Contractor is responsible for cleanup of any biosolids spills that occur during transport. If a spill occurs during the transport of biosolids between the wastewater treatment facility and the disposal site, the Contractor will take the following steps:
  - 1. Contain the spill.
  - 2. Flag the area to prevent exposure to the public.
  - 3. Remove spilled biosolids with a front end loader or shovel.
  - 4. Cover the area with dry lime if needed.
  - 5. Apply absorbent (e.g., sand) if needed.
  - 6. Transport spilled product to a DEQ-authorized biosolids land application or disposal site.
- B. All spills into waters of the state or spills on the ground surface that are likely to enter waters of the state will be reported immediately to the Ohio Environmental Protection Agency and to GCDWR.

### **3.07 FINAL CLEAN-UP**

- A. Upon completion of sludge dredging and hauling, the haul route within the site shall be washed and swept.
- A. Restore tire wash station and sludge loading area to its original condition.

**END OF SECTION 31 09 19**

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## **SECTION 31 23 00**

### **EARTHWORK**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

A. Section Includes:

1. Earthwork - excavation, backfilling, grading, compaction, disposal of waste and surplus materials, placing crushed stone, construction of berms, sheeting, bracing, dewatering and other Earthwork related work.

##### **1.2 QUALITY ASSURANCE**

A. Referenced Standards:

1. ASTM International (ASTM):
  - a. C33/C33M, Standard Specification for Concrete Aggregates.
  - b. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 FT-LBF/FT<sup>3</sup>).
  - c. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 FT-LBF/FT<sup>3</sup>(2,700 kN-M/M<sup>3</sup>)).
  - d. D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
  - e. D3786, Standard Test Method for Bursting Strength of Textile Fabrics--Diaphragm Bursting Strength Tester Method.
  - f. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
  - g. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
  - h. D4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
2. Occupational Safety and Health Administration (OSHA):
  - a. 29 CFR Part 1926.650, Safety and Health Regulations for Construction - Excavations, referred to herein as OSHA Standards.

##### **1.3 DEFINITIONS**

A. Excavation:

1. Consists of removal of material encountered to subgrade elevations required or indicated.
2. Includes excavation of soils; pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; boulders; and rock.

B. Foundations: Footings, base slabs, foundation walls, mat foundations, grade beams, piers and any other support placed directly on soil or rock.

C. Geotechnical Engineer: Independent geotechnical specialist providing field quality control for the project.

D. Non-Structural Fill/Backfill: Soil materials placed and compacted to achieve finish grade elevations that do NOT support foundations, slabs, paving, or other flatwork.

E. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.

F. Subgrade: The earth or soil layer immediately below foundation bearing elevation, subbase material, fill material, backfill material, or topsoil materials.

G. Unauthorized Excavation:

1. Consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer.
  - a. Unauthorized excavation, as well as associated remedial work as directed by Engineer or Geotechnical Engineer, shall be at Contractor's expense.
2. Unsuitable Soil Materials: Soil materials encountered at or below subgrade elevation of insufficient strength and stiffness to support construction as determined by the Geotechnical Engineer.

#### **1.4 SUBMITTALS**

- A. Shop Drawings:
  1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.

#### **1.5 PROJECT CONDITIONS**

- A. Salvageable Items: Carefully remove items to be salvaged, and store on Owner's premises unless otherwise directed.
- B. Dispose of waste materials, legally, off site.
  1. Burning, as a means of waste disposal, is not permitted.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Fill and Backfill:
  1. Selected material approved by Geotechnical Engineer from site excavation or from off site borrow.
  2. Structural Fill:
    - a. May be low volume change cohesive or granular soil at Contractor's option.
    - b. Free of organic matter, frozen material and debris.
    - c. Low volume change cohesive soil:
      - 1) ASTM D2487 classification: (CL-ML or CL).
      - 2) Liquid limit: Less than (45).
      - 3) Maximum plasticity index: (20).
    - d. Granular soil:
      - 1) ASTM D2487 classification: (GW, GP, GM, GC, SW, SP, SM or SC).
  3. Non-Structural Fill:
    - a. ASTM D2487 classification: (GW, GP, GM, GC, SC, SW, SP, SM, CL-ML or CL).
    - b. Liquid limit: Less than (45).
    - c. Maximum plasticity index: (20).
- B. Granular Fill Under Electrical Equipment Pads, Manholes and Handholes: Clean, crushed, nonporous rock, crushed or uncrushed gravel complying with ASTM C33/C33M gradation size No. 67, 3/4 IN to No. 4.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Erosion Control:
  1. Clean paved roadways daily of any spillage of dirt, rocks or debris from vehicles and equipment entering or leaving site.
  2. Conduct work to minimize erosion of site. Remove eroded material washed off site.
    - a. If necessary or requested by Engineer, construct stilling areas to settle and detain eroded material.



- B. Protect existing surface and subsurface features on-site and adjacent to site as follows:
  - 1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing items indicated to remain in place.
  - 2. Protect and maintain benchmarks, monuments or other established reference points and property corners.
    - a. If disturbed or destroyed, replace at own expense to full satisfaction of Owner and controlling agency.
  - 3. Verify location of utilities.
    - a. Omission or inclusion of utility items does not constitute nonexistence or definite location.
    - b. Secure and examine local utility records for location data.
    - c. Take necessary precautions to protect existing utilities from damage due to any construction activity.
      - 1) If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.
      - 2) Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.
      - 3) Obtain Owner's approval prior to disconnecting any utility service.
    - d. Repair damages to utility items at own expense.
    - e. In case of damage, notify Engineer at once so required protective measures may be taken.
  - 4. Maintain free of damage, existing sidewalks, structures, and pavement, not indicated to be removed.
    - a. Protect new and existing structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
    - b. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired to original condition.
    - c. All repairs to be made and paid for by Contractor.
  - 5. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel.
  - 6. Maintain stockpiles and excavations in such a manner to prevent inconvenience or damage to structures on-site or on adjoining property.
  - 7. Avoid surcharge or excavation procedures which can result in heaving, caving, or slides.

### **3.2 USE OF EXPLOSIVES**

- A. Blasting with any type of explosive is prohibited.

### **3.3 COMPACTION DENSITY REQUIREMENTS**

- A. Obtain approval from Geotechnical Engineer with regard to suitability of soils and acceptable subgrade prior to subsequent operations.
- B. Provide dewatering system necessary to successfully complete compaction and construction requirements.
- C. Remove frozen, loose, wet, or soft material and replace with approved material as directed by Geotechnical Engineer.
- D. Stabilize subgrade with well graded granular materials as directed by Geotechnical Engineer.
- E. Assure by results of testing that compaction densities comply with the following requirements:
  - 1. Sitework:

LOCATION	COMPACTION DENSITY	MOISTURE CONTENT
Under Paved Areas, Sidewalks and Piping:		
Cohesive soils	95% per ASTM D698	-2 to +3% of optimum
Cohesionless soils	75% relative density per ASTM D4253 and ASTM D4254	
Unpaved Areas:		
Cohesive soils	90% of ASTM D698	-2 to +3% of optimum
Cohesionless soils	65% relative density per ASTM D4253 and ASTM D4254	

2. Structures:

LOCATION	COMPACTION DENSITY	MOISTURE CONTENT
Inside of structures under foundations, under equipment support pads, under slabs-on-grade and scarified existing subgrade under fill material	98% per ASTM D698	-2 to +3% of optimum
Outside structures next to walls, piers, columns and any other structure exterior member	92% per ASTM D698	-2 to +3% of optimum

3. Specific areas:

LOCATION	COMPACTION DENSITY	MOISTURE CONTENT
Outside structures under equipment support foundations	98% per ASTM D698	-2 to +3% of optimum
Under void	85% per ASTM D1557	-2 to +3% of optimum
Granular fill under base slabs with pressure relief valves	75% relative density per ASTM D4253 and ASTM D4254 or 98% of ASTM D698	
Granular fill under building floor slabs-on-grade	60% relative density per ASTM D4253 and ASTM D4254	

### 3.4 FIELD QUALITY CONTROL

- A. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA Standards, and state requirements. Where conflict between OSHA and state regulations exists, the more stringent requirements shall apply.

**SECTION 32 91 13**  
**TOPSOILING AND FINISHED GRADING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Topsoiling and finished grading.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 32 92 00 - Seeding, Sodding and Landscaping.
- C. Location of Work: All areas within limits of grading and all areas outside limits of grading which are disturbed in the course of the work.

**1.2 SUBMITTALS**

- A. Shop Drawings:
  - 1. Project Data: Test reports for furnished topsoil.

**1.3 SITE CONDITIONS**

- A. Verify amount of topsoil stockpiled and determine amount of additional topsoil, if necessary to complete work.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Topsoil:
  - 1. Original surface soil typical of the area.
  - 2. Existing topsoil stockpiled.
  - 3. Friable, loamy soil capable of supporting native plant growth.

**2.2 TOLERANCES**

- A. Finish Grading Tolerance:  $\pm 0.1$  FT from required elevations.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Correct, adjust and/or repair rough graded areas.
  - 1. Cut off mounds and ridges.
  - 2. Fill gullies and depressions.
  - 3. Perform other necessary repairs.
  - 4. Bring all sub-grades to specified contours, even and properly compacted.
- B. Loosen surface to depth of 2 IN, minimum.
- C. Remove all stones and debris over 2 IN in any dimension.

**3.2 PLACING TOPSOIL**

- A. Do not place when subgrade is wet or frozen enough to cause clodding.
- B. Spread and lightly compact to a depth of 4 IN for all disturbed earth areas.
- C. If topsoil stockpiled is less than amount required for work, furnish additional topsoil at no cost to Owner.

- D. Provide finished surface free of stones, sticks, or other material 3/8 IN or more in any dimension.
- E. Provide finished surface smooth and true to required grades.
- F. Restore stockpile area to condition of rest of finished work.

**3.3 ACCEPTANCE**

- A. Upon completion of topsoiling, obtain Engineer's acceptance of grade and surface.
- B. Make test holes where directed to verify proper placement and thickness of topsoil.

**END OF SECTION**

**SECTION 32 92 00**  
**SEEDING, SODDING AND LANDSCAPING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Seeding, sodding and landscape planting:
    - a. Soil preparation.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 32 91 13 - Topsoiling and Finished Grading.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Nursery and Landscape Association/American National Standards Institute (ANLA/ANSI):
    - a. Z60.1, American Standard for Nursery Stock.
  - 2. AOAC International (AOAC).
  - 3. ASTM International (ASTM):
    - a. D2028, Standard Specification for Cutback Asphalt (Rapid-Curing Type).
    - b. D5276, Standard Test Method for Drop Test of Loaded Containers by Free Fall.
- B. Quality Control:
  - 1. Fertilizer:
    - a. If Engineer determines fertilizer requires sampling and testing to verify quality, testing will be done at Contractor's expense, in accordance with current methods of the AOAC.
    - b. Upon completion of Project, a final check of total quantities of fertilizer used will be made against total area seeded.
    - c. If minimum rates of application have not been met, Contractor will be required to distribute additional quantities to make up minimum application specified.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.
    - c. Signed copies of vendor's statement for seed mixture required, stating botanical and common name, place of origin, strain, percentage of purity, percentage of germination, and amount of Pure Live Seed (PLS) per bag.
    - d. Type of herbicide to be used during first growing season to contain annual weeds and application rate.
    - e. Source and location of sod, plants, and plant material, as per Paragraph 3.2C.1. and Paragraph 3.3A.
  - 2. Certification that each container of seed delivered will be labeled in accordance with Federal and State Seed Laws and equals or exceeds Specification requirements.
- B. Informational Submittals:
  - 1. Copies of invoices for fertilizer used on Project showing grade furnished, along with certification of quality and warranty.

**1.4 SEQUENCING AND SCHEDULING**

- A. Installation Schedule:

1. Provide schedule showing when trees, shrubs, groundcovers and other plant materials are anticipated to be planted.
2. Show schedule of when lawn type and other grass areas are anticipated to be planted.
3. Indicate anticipated dates Engineer will be required to review installation for initial acceptance and final acceptance.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS AND SUPPLIERS**

- A. Subject to compliance with the Contract Documents, the manufacturers and suppliers listed in the applicable Articles below are acceptable.

### **2.2 MATERIALS**

- A. Native Grass Seeding: Certified seed of locally adapted strains.
- B. Soil Amendments:
- C. Water:
  1. Water free from substances harmful to grass or sod growth.
  2. Provide water from source approved prior to use.

## **PART 3 - EXECUTION**

### **3.1 SOIL PREPARATION**

- A. General:
  1. Limit preparation to areas which will be planted soon after.
  2. Provide facilities to protect and safeguard all persons on or about premises.
  3. Protect existing trees designated to remain.
  4. Verify location and existence of all underground utilities.
    - a. Take necessary precaution to protect existing utilities from damage due to construction activity.
    - b. Repair all damages to utility items at sole expense.
  5. Provide facilities such as protective fences and/or watchmen to protect work from vandalism.
    - a. Contractor to be responsible for vandalism until acceptance of work in whole or in part.
- B. Preparation for Lawn-Type Seeding, Sprigging, Plugging or Sodding:
  1. Loosen surface to minimum depth of 4 IN.
  2. Remove stones over 1 IN in any dimension and sticks, roots, rubbish, and other extraneous matter.
  3. Prior to applying fertilizer, loosen areas to be seeded with a double disc or other suitable device if the soil has become hard or compacted.
  4. Correct any surface irregularities in order to prevent pocket or low areas which will allow water to stand.
  5. Distribute fertilizer uniformly over areas to be seeded:
    - a. For lawn-type seeding: 30 LBS per 1000 SQFT.
    - b. For pasture seeding: 200 LBS per acre.
  6. Incorporate fertilizer into soil to a depth of at least 2 IN by disking, harrowing, or other approved methods.
  7. Remove stones or other substances from surface which will interfere with turf development or subsequent mowing operations.
  8. Grade lawn areas to a smooth, even surface with a loose, uniformly fine texture.
    - a. Roll and rake, remove ridges and fill depressions, as required to meet finish grades.
    - b. Limit fine grading to areas which can be planted soon after preparation.

9. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and before planting.

### **3.2 INSTALLATION**

#### **A. Lawn-Type and Pasture Seeding:**

1. Do not use seed which is wet, moldy, or otherwise damaged.
2. Perform seeding work from April 20 to May 15 for spring planting, and August 1 to September 15 for fall planting, unless otherwise approved by Engineer.
3. Employ satisfactory methods of sowing using mechanical power-driven drills or seeders, or mechanical hand seeders, or other approved equipment.
4. Distribute seed evenly over entire area at rate of application not less than 4 LBS (PLS) of seed per 1000 SQFT, 50% sown in one direction, remainder at right angles to first sowing.
5. Stop work when work extends beyond most favorable planting season for species designated, or when satisfactory results cannot be obtained because of drought, high winds excessive moisture, or other factors.
  - a. Resume work only when favorable conditions develop.
6. Lightly rake seed into soil followed by light rolling or cultipacking.
7. Immediately protect seeded areas against erosion by mulching.
  - a. Spread mulch in continuous blanket using 1-1/2 tons per acre to a depth of 4 or 5 straws.
8. Protect seeded slopes against erosion with erosion netting or other methods approved by Engineer.
  - a. Protect seeded areas against traffic or other use by erecting barricades and placing warning signs.
9. Immediately following spreading mulch, anchor mulch using a rolling coulter or a wheatland land packer having wheels with V-shaped edges to force mulch into soil surface, or apply evenly distributed emulsified asphalt at rate of 10-13 GAL/1000 SQFT.
  - a. SS-1 emulsion in accordance with ASTM D5276 or RC-1 cutback asphalt in accordance with ASTM D2028 are acceptable.
  - b. If mulch and asphalt are applied in one treatment, use SS-1 emulsion with penetration test range between 150-200.
  - c. Use appropriate shields to protect adjacent site improvements.

### **3.3 MAINTENANCE AND REPLACEMENT**

#### **A. General:**

1. Begin maintenance of planted areas immediately after each portion is planted and continue until final acceptance or for a specific time period as stated below, whichever is the longer.
2. Provide and maintain temporary piping, hoses, and watering equipment as required to convey water from water sources and to keep planted areas uniformly moist as required for proper growth.
3. Protection of new materials:
  - a. Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain.
  - b. Repair and pay for all damaged items.
4. Replace unacceptable materials with materials and methods identical to the original specifications unless otherwise approved by the Engineer.

#### **B. Seeded or Sodded Lawns:**

1. Maintain seeded lawns: 90 days, minimum, after installation and review of entire project area to be planted.
2. Maintenance period begins at completion of planting or installation of entire area to be seeded or sodded.
3. Engineer will review seeded or sodded lawn area after installation for initial acceptance.

4. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and replanting as required to establish a smooth, uniform lawn, free of weeds and eroded or bare areas.
5. Lay out temporary lawn watering system and arrange watering schedule to avoid walking over muddy and newly seeded areas.
  - a. Use equipment and water to prevent puddling and water erosion and displacement of seed or mulch.
6. Mow lawns as soon as there is enough top growth to cut with mower set at recommended height for principal species planted.
  - a. Repeat mowing as required to maintain height.
  - b. Do not delay mowing until grass blades bend over and become matted.
  - c. Do not mow when grass is wet.
  - d. Time initial and subsequent mowings as required to maintain a height of 1-1/2 to 2 IN.
  - e. Do not mow lower than 1-1/2 IN.
7. Remulch with new mulch in areas where mulch has been disturbed by wind or maintenance operations sufficiently to nullify its purpose.
  - a. Anchor as required to prevent displacement.
8. Unacceptable plantings are those areas that do not meet the quality of the specified material, produce the specified results, or were not installed to the specified methods.
9. Replant bare areas using same materials specified.
10. Engineer will review final acceptability of installed areas at end of maintenance period.
11. Maintain repaired areas until remainder of maintenance period or approved by Engineer, whichever is the longer period.

## **END OF SECTION**



**SECTION 33 05 15**  
**PRECAST CONCRETE UTILITY STRUCTURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Precast concrete utility structures, non-circular in plan, and appurtenant items.
    - a. Valve and meter vaults.
    - b. Disinfection System Vault
  2. Design and fabrication of precast concrete utility structures.
- B. Related Specification Sections include but are not necessarily limited to:
1. Section 31 23 00 - Earthwork.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
1. ASTM International (ASTM):
    - a. A536, Standard Specification for Ductile Iron Castings.
    - b. C857, Standard Practice for Minimum Design Loading for Underground Precast Concrete Utility Structures.
    - c. C858, Standard Specification for Underground Precast Concrete Utility Structures.
    - d. C890, Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
    - e. C923, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
    - f. C990, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
    - g. C1619, Standard Specification for Elastomeric Seals for Joining Concrete Structures.
    - h. D1227, Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
  2. Occupational Safety and Health Administration (OSHA).

**1.3 SUBMITTALS**

- A. Shop Drawings:
1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.
  2. Concrete mix design(s):
    - a. Certification in accordance with ASTM C858, Section 12.
  3. Fabrication and/or layout drawings:
    - a. Include detailed diagrams of utility structures showing typical components and dimensions, reinforcement, and other details.
    - b. Itemize, on separate schedule, elevations or sectional breakdown of each utility structure with all components and refer to drawing identification number or notation.
    - c. Indicate required penetration details for all piping entering each structure.
  4. Drawings and calculations: All Drawings, including layout drawings, certifications and calculations shall be sealed by a Professional Engineer registered in the state where the project is located.
    - a. Provide certification stating that calculations provided have been prepared specifically for this Project and that they match and pertain to the Shop Drawings provided.
    - b. Provide a summary document as part of the above certification listing the design criteria used for precast design including:
      - 1) Codes and standards.

- 2) Soil load.
- 3) Exterior groundwater load.
- 4) Live loads.
- 5) Other loads.
- 5. Test Reports:
  - a. Copies of source quality control tests, including compressive strength and air content, for units provided.

#### **1.4 SITE CONDITIONS**

- A. Design groundwater elevation for precast structure design shall be the 100-year flood elevation shown on the Contract Documents.
  - 1. If the 100-year flood elevation is not shown on the Contract Documents, the design groundwater elevation shall be equal to the ground surface elevation at the structure.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Manhole rings, covers and frames:
    - a. Neenah Foundry.
    - b. Deeter Foundry.
    - c. Clay and Bailey.
  - 2. Manhole steps:
    - a. M. A. Industries.
    - b. Neenah Foundry.
    - c. Deeter Foundry.
  - 3. Black mastic joint compound:
    - a. Kalktite 340.
    - b. Tufflex.
    - c. Plastico.
  - 4. Premolded joint sealant:
    - a. NPC Bidco, Inc., C-56.
    - b. Ram-Nek, Henry Co.
    - c. EZ-Stik, Press-Seal Gasket Corp.
    - d. CS-102, Conseal.
  - 5. Elastomeric joint seals:
    - a. Kent Seal.
  - 6. External joint wrap.
    - a. NPC, Bidco, Inc.
    - b. EZ-Wrap, Press-Seal Gasket Corp.
    - c. RUBR-Nek, Henry Co.
  - 7. Emulsified fibrated asphalt compound:
    - a. Sonneborn Hydrocide 700B Semi-Mastic.

#### **2.2 PRECAST UTILITY STRUCTURE COMPONENTS**

- A. Provide utility structures with interior dimensions as shown on the Drawings.
- B. Provide the following components for each utility structure:
  - 1. Precast base section with integral or cast in place base slab.
  - 2. Precast wall section(s).
  - 3. Precast flat top.
    - a. Where reinforcement is shown for top slab, furnish slab with reinforcing as designed, but not less than reinforcing shown on Drawings.
- C. Provide openings and appurtenances as shown on Drawings.

1. Access doors:
    - a. Cast access doors into top slab.
    - b. Where access door frames have drainage channels, cast PVC drain lines in top slab to drain location shown on Drawings. If no drain location is shown, drain frames to outer edge of top slab.
    - c. Protect doors and frames from damage during concrete placement and shipping.
    - d. See Specification Section 08 31 00.
  2. Manhole frames and covers:
    - a. Cast frames into top slab.
- D. Nonpressure Type Frames and Cover:
1. Cast iron frame and covers: ASTM A48, Class 35 (minimum).
  2. Ductile iron frame and covers: ASTM A536.
  3. Use only cast ductile iron of best quality, free from imperfections and blow holes.
  4. Furnish frame and cover of heavy-duty construction a minimum total weight of 450 LBS.
  5. Machine all horizontal surfaces.
  6. Furnish unit with solid nonventilated lid with concealed pickholes.
    - a. Letter covers "SEWER" for all collection system manholes, "DRAIN" for all gravity unit drains returning flow to the headworks, and "STORM" for storm sewer systems.
  7. Ensure minimum clear opening of 24 IN DIA.
- E. Manhole Steps:
1. General:
    - a. Provide maximum distance from surface to first rung is not greater than 16 IN and that maximum spacing on remaining steps is 16 IN OC.
    - b. Safety tread.
  2. Copolymer polypropylene encapsulated 1/2 IN Grade 60 steel rod as manufactured by MA Industries, Inc., Peachtree City, GA.
    - a. Minimum step width: 12 IN.
    - b. Distance from face of wall to back of tread: 5-3/4 IN.
    - c. Embedment: 3-3/8 IN.
    - d. Encapsulating material thickness: MA Industries, Inc.
- F. Concrete:
1. Conform to requirements of ASTM C858
    - a. Minimum 28-day compressive strength 4500 PSI.
    - b. All portions of precast utility structure are considered to be exposed to freeze-thaw cycles.
- G. Joints:
1. Joints of precast riser and top sections:
    - a. Preformed flexible joint sealants: ASTM C990.
    - b. Exterior joint wrap.
  2. Pipe and conduit entry for utility structures.
    - a. Resilient O-ring gaskets manufactured from natural or synthetic materials complying with ASTM C923, of suitable cross section and size to meet specified infiltration or exfiltration requirements.
- H. Coatings:
1. Vertical wall surfaces:
    - a. Emulsified fibrated asphalt compound meeting ASTM D1227 Type I for all vertical wall exterior surfaces.

## 2.3 DESIGN

- A. General Design Requirements:
1. Design precast units and appurtenances in accordance with ASTM C858.
    - a. Notify Engineer and furnish cast-in-place structures if sizes of precast utility structures shown on Drawings can not be designed or fabricated.

- B. Design loads:
  - 1. Design precast units for all loads and load cases described in ASTM C857, with the following values and selections:
    - a. Minimum uniform live load for exposed roof slabs shall be 150 PSF.
    - b. Wheel loads shall be considered.
      - 1) Use wheel load designation A-16 (HS20-44) as shown in ASTM C857, Table 1.
      - 2) Wheel loads and uniform live load do not act concurrently.
    - c. Unit weight of soil W shall be taken as no less than 100 LB/CUFT.
    - d. Minimum lateral soil pressure coefficient ( $K_0$ ): 0.50.
- C. Specific Design Requirements:
  - 1. Out-of-plane shear:
    - a. Out-of-plane shear shall be shown in the calculations.
    - b. Wall thickness shall be determined based on meeting design requirements for out-of-plane shear resulting from soil and groundwater loads.
    - c. Wall sections shall be designed as one-way spans between corners for calculation of out-of-plane shear. Transfer of shear or bending load shall not be considered to be transferred across joints between precast units or between walls and slabs, unless unit is integrally cast together.
    - d. Use of shear steel reinforcement to increase out-of-plane shear capacity shall be prohibited.
  - 2. The distribution of moments in adjacent walls of different lengths in rectangular structures shall be considered.
  - 3. Design precast units taking into account reduced cross section at openings and penetrations.
  - 4. Structure shall be checked for buoyancy.
    - a. The minimum factor of safety for uplift with the design groundwater elevation shall be 1.25, unless a larger factor of safety is required by the local governing body or building code.
    - b. The minimum factor of safety for uplift at the fully submerged condition shall be no less than 1.0.
    - c. If the buoyant weight of soil above base slab extensions beyond the external dimensions of the structure is used to resist uplift, the volume of soil considered to resist uplift shall be limited to soil within the vertical projection of the edge of the base slab extensions.

## **PART 3 - EXECUTION**

### **3.1 PRECAST UTILITY STRUCTURE CONSTRUCTION**

- A. General:
  - 1. Prepare subgrade for base as required by Specification Section 31 23 00 and 31 23 10.
    - a. For precast base slabs, place and compact 6 IN of Granular Fill or Bedding Material as shown on Drawings.
    - b. Confirm that base is level and fully supported by stable material.
  - 2. Ensure accurate vertical placement and leveling prior to placement of interior grout.
    - a. Provide vertical alignment tolerance of maximum 1 IN horizontal to 10 FT vertical.
- B. Build each structure to dimensions shown on plans and at such elevation that pipe sections built into wall of structure will be true line of pipe extensions.
- C. For all horizontal mating surfaces between precast concrete units, apply premolded flexible joint sealant to clean mating surfaces in accordance with sealant manufacturer's written instructions. Apply sufficient pressure to each concrete unit to seat unit in sealant.
- D. Seal all pipe penetrations in manhole.
  - 1. Where post-installed seals are permitted, form pipe openings smooth and well shaped.
  - 2. After installation, seal exterior of penetration with non-shrink grout.

3. After grout cures, wire brush smooth and apply two coats emulsified fibrated asphalt compound to minimum wet thickness of 1/8 IN to ensure complete seal.
- E. Set top slab level to elevation shown on Drawings.

### **3.2 FIELD QUALITY CONTROL**

- A. Any proposed repairs of precast components or structures shall be submitted to Engineer for approval.
- B. Structures shall be observed for signs of leakage during periods of high groundwater.
- C. No leakage that includes visible flow through joints between precast concrete sections or through pipe penetrations shall be permitted.
- D. Damp spots on interior wall surfaces shall be considered leakage and shall not be permitted.
  1. Damp spots shall be defined as spots where moisture from a source outside the structure can be picked up on a dry hand.
  2. Locate the source of water movement through the wall and permanently seal.
- E. Dampness on the top of the base slab will not be construed as leakage.

**END OF SECTION**

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**SECTION 40 05 00**  
**PIPE AND PIPE FITTINGS - BASIC REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Utility piping systems.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 40 05 51 - Valves - Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. A536, Standard Specification for Ductile Iron Castings.
    - b. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
    - c. D2466, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
    - d. D2467, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
  - 2. American Water Works Association/American National Standards Institute (AWWA/ANSI):
    - a. C110/A21.10, Standard for Ductile-Iron and Gray-Iron Fittings.
    - b. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
    - c. C115/A21.15, Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
    - d. C151/A21.51, Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
    - e. C153/A21.53, Standard for Ductile-Iron Compact Fittings for Water Service.
  - 3. Underwriters Laboratories, Inc. (UL).
- B. Coordinate flange dimensions and drillings between piping, valves, and equipment.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
    - c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
      - 1) Attach technical product data on gaskets, pipe, fittings, and other components.
  - 2. Fabrication and/or Layout Drawings:
    - a. Exterior yard piping drawings (minimum scale 1 IN equals 10 FT) with information including:
      - 1) Dimensions of piping lengths.
      - 2) Invert or centerline elevations of piping crossings.
      - 3) Acknowledgement of bury depth requirements.
      - 4) Details of fittings, tapping locations, thrust blocks, restrained joint segments, harnessed joint segments, hydrants, and related appurtenances.
      - 5) Acknowledge designated valve or gate tag numbers, manhole numbers, instrument tag numbers, pipe and line numbers.

- 6) Line slopes and vents.
- b. Schedule of interconnections to existing piping and method of connection.
- B. Contract Closeout Information:
  - 1. Operation and Maintenance Data:
    - a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
- C. Informational Submittals:
  - 1. Qualifications of lab performing disinfection analysis on water systems.
  - 2. Test reports:
    - a. Copies of pressure test results on all piping systems.
    - b. Reports defining results of dielectric testing and corrective action taken.
    - c. Disinfection test report.
    - d. Notification of time and date of piping pressure tests.

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Protect pipe coating during handling using methods recommended by manufacturer.
  - 1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.
- B. Prevent damage to pipe during transit.
  - 1. Repair abrasions, scars, and blemishes.
  - 2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  - 1. Dry disconnect couplings:
    - a. Kamlock.
  - 2. Pipe saddles (for gage installation):
    - a. Dresser Style 91 (steel and ductile iron systems).
    - b. Dresser Style 194 (nonmetallic systems).
  - 3. Elastomeric bellows type expansion joints:
    - a. Garlock, Guardian 200/204.
    - b. PROCO, equivalent model.
    - c. Red Valve, equivalent model.
    - d. Or equal.
  - 4. Dismantling Joint
    - a. Romac DJ400.
    - b. Smith Blair 972.

### **PART 3 - EXECUTION**

#### **3.1 CONNECTIONS WITH EXISTING PIPING**

- A. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered.
- B. Perform connections with existing piping at time and under conditions which will least interfere with service to customers affected by such operation.
- C. Undertake connections in fashion which will disturb system as little as possible.



- D. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.
- E. Where connections to existing systems necessitate employment of past installation methods not currently part of trade practice, utilize necessary special piping components.
- F. Where connection involves potable water systems, provide disinfection methods as prescribed in this Specification Section.
- G. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

### **3.2 FIELD QUALITY CONTROL**

- A. Pipe Testing - General:
  - 1. Test piping systems as follows:
    - a. Test exposed, non-insulated piping systems upon completion of system.
    - b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
    - c. Test concealed interior piping systems prior to concealment and, if system is insulated, prior to application of insulation.
    - d. Test buried piping (insulated and non-insulated) prior to backfilling and, if insulated, prior to application of insulation.
  - 2. Isolate equipment which may be damaged by the specified pressure test conditions.
  - 3. Perform pressure test using calibrated pressure gages and calibrated volumetric measuring equipment to determine leakage rates.
    - a. Select each gage so that the specified test pressure falls within the upper half of the gage's range.
    - b. Notify the Engineer 24 HRS prior to each test.
  - 4. Completely assemble and test new piping systems prior to connection to existing pipe systems.
  - 5. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
  - 6. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

### **3.3 LOCATION OF BURIED OBSTACLES**

- A. Furnish exact location and description of buried utilities encountered and thrust block placement.
- B. Reference items to definitive reference point locations such as found property corners, entrances to buildings, existing structure lines, fire hydrants and related fixed structures.
- C. Include such information as location, elevation, coverage, supports and additional pertinent information.
- D. Incorporate information on "As-Recorded" Drawings.

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**SECTION 40 05 31**  
**PIPE - PLASTIC**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Plastic pipe.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 40 05 00 - Pipe and Pipe Fittings - Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. See Specification Section 40 05 00.
- B. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. PVC (polyvinyl chloride) materials:
      - 1) D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
      - 2) D1785, Standard Specification for Poly(Vinyl Chloride) PVC Plastic Pipe, Schedules 40, 80 and 120.
      - 3) D2467, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
      - 4) D3034, Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
      - 5) D3139, Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
      - 6) D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
      - 7) F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
      - 8) F679, Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
      - 9) F794, Standard Specification for Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.
      - 10) F949, Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings.
    - b. Installation:
      - 1) D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
  - 2. American Water Works Association (AWWA):
    - a. PVC (polyvinyl chloride) materials:
      - 1) C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 IN Through 12 IN, for Water Distribution.
      - 2) C905, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 IN through 48 IN, for Water Transmission and Distribution.
    - b. Polyethylene (PE) materials:
      - 1) C901, Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 IN through 3 IN, for Water Service.
  - 3. NSF International (NSF).

**1.3 SUBMITTALS**

- A. See Specification Section 40 05 00.

## **PART 2 - PRODUCTS**

### **2.1 PVC DRAINAGE, SEWER PIPING AND UNDERGROUND AIR DUCTS**

- A. Materials:
1. Furnish materials in full compliance to the following material specification.
  2. PVC pipe shall be rigid, unplasticized polyvinyl chloride (PVC) made of PVC plastic having a cell classification of 12454-B or 12454-C as described in specification ASTM D1784.
  3. The requirements of this Specification are intended to provide for pipe and fittings suitable for non-pressure drainage of wastewater and surface water.
  4. Joining systems shall consist of an elastomeric gasket joint meeting requirements of ASTM D3212.
  5. Supply to the Engineer all information and sample of joining method for his evaluation.
    - a. Only jointing methods acceptable to the Engineer will be permitted.
  6. Provide pipe and fittings meeting or exceeding the following requirements:
    - a. 4-27 IN DIA: ASTM D3034 and ASTM F679, SDR 35.
    - b. 8-30 IN DIA: ASTM F794.
    - c. 4-18 IN DIA: ASTM F949.
  7. Ensure impact strengths and pipe stiffnesses in full compliance to these Specifications.
- B. Installation: Install pipe and fittings in accordance with ASTM D2321 and as recommended by the manufacturer.
1. Provide for a maximum deflection of not more than 5%.

## **PART 3 - EXECUTION**

### **3.1 IDENTIFICATION**

- A. Identify each length of pipe clearly at intervals of 5 FT or less.
1. Include manufacturer's name and trademark.
  2. Nominal size of pipe, appurtenant information regarding polymer cell classification and critical identifications regarding performance specifications and NSF approvals when applicable.

### **3.2 PVC DRAINAGE, SEWER PIPING AND UNDERGROUND AIR DUCTS**

- A. Installation: Install pipe and fittings in accordance with ASTM D2321 and as recommended by the manufacturer.
1. Provide for a maximum deflection of not more than 5%.
- B. Infiltration and Exfiltration:
1. The maximum allowable infiltration measured by test shall not exceed 100 GAL per inch of pipe diameter per mile per 24 HRS.
  2. For exfiltration, all the pipe and fittings shall exceed performance requirements by the test procedure as specified in Section 40 05 00.
  3. Observe full instructions of the Engineer for carrying of testing procedures.
    - a. Perform tests only during presence of the Engineer or his authorized representative.
  4. Should any test on any section of pipe line disclose either infiltration rates greater than allowed or disclose air loss rate greater than that permitted, locate and repair the defective joints or pipes at no cost to Owner and retest until requirements stated are met.
- C. Deflection:
1. After backfilling, each section of pipe shall be checked for deflection by pulling a mandrel through the pipe.
  2. Pipe with deflection exceeding 5% of the inside diameter shall have backfill removed and replaced to provide a deflection of less than 5%.
  3. Any repaired pipe shall be retested.

**SECTION 40 05 51**  
**VALVES - BASIC REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Valving, actuators, and valving appurtenances.
- B. Related Sections include but are not necessarily limited to:
  - 1. Section 40 05 00 - Pipe and Pipe Fittings - Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Society of Mechanical Engineers (ASME):
    - a. B1.20.1, Pipe Threads, General Purpose.
    - b. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
    - c. B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
  - 2. ASTM International (ASTM):
    - a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
    - b. D256, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
    - c. D638, Standard Test Method for Tensile Properties of Plastics.
    - d. D648, Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
    - e. D695, Standard Test Method for Compressive Properties of Rigid Plastics.
    - f. D2240, Standard Test Method for Rubber Property-Durometer Hardness.
  - 3. American Water Works Association (AWWA):
    - a. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.
    - b. C500, Standard for Metal-Seated Gate Valves for Water Supply Service.
    - c. C504, Standard for Rubber-Seated Butterfly Valves.
    - d. C507, Standard for Ball Valves, 6 IN through 48 IN (150 MM through 1200 MM).
    - e. C509, Standard for Resilient-Seated Gate Valves for Water Supply Service.
    - f. C550, Standard for Protective Coatings for Valves and Hydrants.
    - g. C606, Standard for Grooved and Shouldered Joints.
  - 4. American Water Works Association/American National Standards Institute (AWWA/ANSI):
    - a. C111/A21.11, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
  - 5. National Electrical Manufacturers Association (NEMA):
    - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
    - b. MG 1, Motors and Generators.
  - 6. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code (NEC).

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Manufacturer's installation instructions.
    - c. Valve pressure and temperature rating.

- d. Valve material of construction.
- e. Special linings.
- f. Valve dimensions and weight.
- g. Valve flow coefficient.
- 2. Test reports.
- B. Contract Closeout Information:
  - 1. Operation and Maintenance Data:
    - a. See Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.
- C. Informational Submittals:
  - 1. Verification from valve actuator manufacturer that actuators have been installed properly, that all limit switches and position potentiometers have been properly adjusted, and that the valve actuator responds correctly to the valve position command.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, refer to individual valve Specification Sections for acceptable manufacturers.

### **2.2 MATERIALS**

- A. Refer to individual valve Specification Sections.

### **2.3 VALVE ACTUATORS**

- A. Valve Actuators - General:
  - 1. Provide actuators as shown on Drawings or specified.
  - 2. Counter clockwise opening as viewed from the top.
  - 3. Direction of opening and the word OPEN to be cast in handwheel or valve bonnet.
  - 4. Size actuator to produce required torque with a maximum pull of 80 LB at the maximum pressure rating of the valve provided and withstand without damage a pull of 200 LB on handwheel or chainwheel or 300 FT-pounds torque on the operating nut.
  - 5. Unless otherwise specified, actuators for valves to be buried, submerged or installed in vaults or manholes shall be sealed to withstand at least 20 FT of submergence.
  - 6. Extension stem:
    - a. Install where shown or specified.
    - b. Solid steel with actuator key and nut, diameter not less than stem of valve actuator shaft.
    - c. Pin all stem connections.
    - d. Center in valve box or grating opening band with guide bushing.
- B. Buried Valve Actuators:
  - 1. Provide screw or slide type adjustable cast iron valve box, 5 IN minimum diameter, 3/16 IN minimum thickness, and identifying cast iron cover rated for traffic load.
  - 2. Box base to enclose buried valve gear box or bonnet.
  - 3. Provide 2 IN standard actuator nuts complying with AWWA C500, Section 3.16.
  - 4. Provide at least two tee handle keys for actuator nuts, with 5 FT extension between key and handle.
  - 5. Extension stem:
    - a. Provide for buried valves greater than 4 FT below finish grade.
    - b. Extend to within 6 IN of finish grade.
  - 6. Provide concrete pad encasement of valve box as shown for all buried valves unless shown otherwise.
- C. Plastic Valve Vault:

1. Provide in non-traffic areas only on valve applications 3-1/2 IN and less.
  2. Nominal 7-1/2 IN DIA top section.
  3. Design unit for screw type extension section having nominal 9 IN DIA bell.
  4. Cast iron ring and lid.
  5. Constructed of injection molded polyolefin compound with fibrous inorganic component reinforcing and UV stabilization.
  6. Armor Access Boxes.
- D. Exposed Valve Manual Actuators:
1. Provide for all exposed valves not having electric or cylinder actuators.
  2. Provide handwheels for gate and globe valves.
    - a. Size handwheels for valves in accordance with AWWA C500.
  3. Provide lever actuators for plug valves, butterfly valves and ball valves 3 IN DIA and smaller.
    - a. Lever actuators for butterfly valves shall have a minimum of five intermediate lock positions between full open and full close.
    - b. Provide at least two levers for each type and size of valve furnished.
  4. Gear actuators required for plug valves, butterfly valves, and ball valves 4 IN DIA and larger.
  5. Provide gearing for gate valves 20 IN and larger in accordance with AWWA C500.
  6. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.
  7. Provide chain actuators for valves 6 FT or higher from finish floor to valve centerline.
    - a. Cadmium-plated chain looped to within 3 FT of finish floor.
    - b. Equip chain wheels with chain guides to permit rapid operation with reasonable side pull without "gagging" the wheel.
    - c. For smaller valves with lever or handle operators, provide offset tee handles with attached chain for operation from the operating floor.
  8. Provide cast iron floor stands where shown on Drawings.
    - a. Stands to be furnished by valve manufacturer with actuator.
    - b. Stands or actuator to include thrust bearings for valve operation and weight of accessories.
- E. Submerged Actuators:
1. Mount the valve actuator on top of an extension bonnet 3 FT above any adjacent personnel access.
  2. The valve and bonnet connection shall be flanged and watertight.
  3. Provide a top brace support for the bonnet.
    - a. Mount the brace 6 IN below the top of the wall as shown.
  4. Materials:
    - a. Extension bonnet: Cast iron ASTM A126 or steel.
    - b. Brace and anchor bolts: Type 304 stainless steel.
- F. Valve Lockout Devices:
1. Device manufactured from same material as valve operator, preventing access to valve operator, to accept lock shackle.

## 2.4 FABRICATION

- A. End Connections:
1. Provide the type of end connections for valves as required in the Piping Schedules presented in Section 40 05 00 or as shown on the Drawings.
  2. Comply with the following standards:
    - a. Threaded: ASME B1.20.1.
    - b. Flanged: ASME B16.1, Class 125 unless otherwise noted or AWWA C207.
    - c. Bell and spigot or mechanical (gland) type: AWWA/ANSI C111/A21.11.
    - d. Soldered: ASME B16.18.
    - e. Grooved: Rigid joints per Table 5 of AWWA C606.

- B. Refer to individual valve Specification Sections for specifications of each type of valve used on Project.
- C. Nuts, Bolts, and Washers:
  - 1. Wetted or internal to be bronze or stainless steel.
    - a. Exposed to be zinc or cadmium plated.
- D. Epoxy Interior Coating: Provide epoxy interior coating for all ferrous surfaces in accordance with AWWA C550.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Setting Buried Valves:
  - 1. Locate valves installed in pipe trenches where buried pipe indicated on Drawings.
  - 2. Set valves and valve boxes plumb.
  - 3. Place valve boxes directly over valves with top of box being brought to surface of finished grade.
  - 4. Install in closed position.
  - 5. Place valve on firm footing in trench to prevent settling and excessive strain on connection to pipe.
  - 6. After installation, backfill up to top of box for a minimum distance of 4 FT on each side of box.
- C. Support exposed valves and piping adjacent to valves independently to eliminate pipe loads being transferred to valve and valve loads being transferred to the piping.
- D. For grooved coupling valves, install rigid type couplings or provide separate support to prevent rotation of valve from installed position.
- E. For threaded valves, provide union on one side within 2 FT of valve to allow valve removal.
- F. Install valves accessible for operation, inspection, and maintenance.

### **3.2 ADJUSTMENT**

- A. Adjust valves, actuators and appurtenant equipment to comply with Section 01 75 00.
  - 1. Operate valve, open and close at system pressures.



**END OF SECTION**

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**SECTION 40 05 61**  
**GATE VALVES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Gate valves.
- B. Related Specification Sections include but are not necessarily limited to:
  - 1. Section 40 05 51 - Valves - Basic Requirements.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. ASTM International (ASTM):
    - a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
  - 2. American Water Works Association (AWWA):
    - a. C500, Standard for Metal-Seated Gate Valves for Water Supply Service.
    - b. C504, Standard for Rubber-Seated Butterfly Valves.
    - c. C550, Standard for Protective Epoxy Interior Coatings for Valves and Hydrants.
  - 3. Manufacturers Standardization Society of the Valve and Fittings Industry Inc. (MSS):
    - a. SP-9, Spot Facing for Bronze, Iron and Steel Flanges.
    - b. SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.
    - c. SP-80, Bronze Gate, Globe, Angle and Check Valves.

**1.3 DEFINITIONS**

- A. OS&Y: Outside Screw and Yoke.
- B. NRS: Non-rising Stem.
- C. RS: Rising Stem.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Specification Section 40 05 51.
- B. Contract Closeout Information:
  - 1. Operation and Maintenance Data:
    - a. See Specification Section 01 78 23 for requirements for the mechanics, administration, and the content of Operation and Maintenance Manual submittals.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the manufacturers listed in the applicable Articles below are acceptable.

**2.2 VALVES: WATER (HOT, COLD, HEATING, COOLING, SERVICE, PROCESS, POTABLE, NON-POTABLE, AND WASTEWATER)**

- A. Double Disc Gate Valve, 3 to 12 IN (Water Application):
  - 1. Comply with AWWA C500.
  - 2. Materials:
    - a. Seating surfaces, stems, stem nut: Bronze.

- b. Body, disc: Cast iron.
  - 3. Design requirements:
    - a. 200 PSI working pressure.
    - b. Buried: NRS, O-ring stem seal, 2 IN operation nut.
    - c. Exposed: NRS, O-ring stem seal, handwheel.
  - 4. Manufacturers:
    - a. American Flow Control.
    - b. Clow.
    - c. M&H.
    - d. Mueller.
- B. Resilient Wedge Gate Valves, 2 to 48 IN (Water, Wastewater Application):
  - 1. Comply with AWWA C509.
  - 2. Materials:
    - a. Stem and stem nut: Bronze.
      - 1) Wetted bronze parts in low zinc bronze.
      - 2) Aluminum bronze components: Heat treated per AWWA C504.
    - b. Body, gate: Cast iron.
    - c. Resilient wedge: Fully encapsulated rubber wedge. Ethylene Propylene Diene Monomer (EPDM).
  - 3. Design requirements:
    - a. Minimum 150 PSIG working pressure.
    - b. Buried: NRS, O-ring stem seal, 2 IN square operating nut.
    - c. Exposed: OS&Y, stuffing box stem seal, handwheel.
    - d. Counter clockwise open rotation.
    - e. Fusion bonded epoxy coating interior and exterior except stainless steel and bearing surfaces.
      - 1) Comply with AWWA C550.
      - 2) Wetted bronze parts in low zinc bronze.
      - 3) Aluminum bronze components: Heat treated per AWWA C504.
  - 4. Manufacturers:
    - a. Clow.
    - b. Mueller.
    - c. American Flow Control.
    - d. M & H.

### **2.3 ACCESSORIES**

- A. Refer to Drawings and valve schedule for type of actuators.
  - 1. Furnish actuator integral with valve.
- B. Refer to Specification Section 40 05 51 for actuator requirements.

### **2.4 FABRICATION**

- A. General:
  - 1. Provide valves with clear waterways the full diameter of the valve.
- B. Spot valves in accordance with MSS SP-9.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. See Specification Section 40 05 51.
- B. Where larger buried valves utilize smaller bypass valves, provide a second valve box installed over the bypass valve operating nut.

- C. Do not install gate valves inverted or with the stems sloped more than 45 DEG from the upright unless the valve was ordered and manufactured specifically for this orientation.

**END OF SECTION**

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**SECTION 40 71 00**  
**FLOW INSTRUMENTATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Flow Transmitters:
    - a. Magnetic Flow Meters (Inline).

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Gas Association (AGA):
    - a. Gas Measurement Committee Report #3.
  - 2. American Society of Mechanical Engineers (ASME):
    - a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
    - b. A240, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
    - c. B16.5, Pipe Flanges and Flanged Fittings.
    - d. B626, Standard Specification for Welded Nickel and Nickel-Cobalt Alloy Tube.
    - e. PTC 19.5, Application of Fluid Meters, Part 2.
  - 3. ASTM International (ASTM):
    - a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
  - 4. American Water Works Association (AWWA).
  - 5. National Sanitation Foundation (NSF).
  - 6. US Department of Interior Bureau of Reclamation (USDIBR):
    - a. Water Measurement Manual.

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. See Specification Section 01 33 00.
- B. Operation and Maintenance Manuals:
  - 1. See Specification Section 01 78 23 for requirements for:
    - a. The mechanics and administration of the submittal process.
    - b. The content of Operation and Maintenance Manuals.

**1.4 SYSTEM DESCRIPTION**

- A. The instruments specified in this Specification Section are shown on the Contract Plans.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the manufacturers listed in the Articles describing the elements are acceptable.

**2.2 FLOW TRANSMITTERS**

- A. Magnetic Flow Meters (Inline):
  - 1. Acceptable manufacturers:
    - a. ABB (WaterMaster).

- b. Johnson Yokogawa.
  - c. Endress + Hauser (ProMag).
  - d. Krohne (OPTIFLUX).
  - e. Rosemount (8700 Series).
  - f. Siemens (SITRANS F M).
2. Accessories:
- a. Ultrasonic cleaning devices.
  - b. Electrodes: Field replaceable without affecting calibration.
  - c. Panel-mounted ultrasonic generator(s) with adjustable frequency range from 45 to 65 kHz and available with reaction rate of 6 or 20 times per second.
    - 1) Allow field selectable repetition rate by arrangement of jumpers.
    - 2) Equip unit with 50 FT of cable and 10 FT of 120 V plug in cord to permit location of unit up to 50 FT from magnetic meter.
3. Design and fabrication:
- a. Utilize characterized field principle of electromagnetic induction to produce signal directly proportional to flow rate.
  - b. High input impedance pre-amplifiers.
    - 1) Minimum impedance:  $10^{10}$  ohms.
  - c. Provide flanged end connections per ASME B16.5 up to 24 IN wafer body design rated for piping system operating and test conditions. Meter body shall be rated to same pressure as the flanges.
  - d. Meter shall be rated IP68 and NEMA 6P; capable of temporary submersion for a period of 24 HRS under 15 FT of water.
  - e. Grounding requirements:
    - 1) Nonmetallic or lined pipe:
      - a) Inlet and outlet grounding rings of same material as electrode or as recommended by manufacturer to meet process requirements.
    - 2) Conductive piping:
      - a) Conductive path between the meter and the piping flanges.
  - f. Provide cable between magnetic flow meter and transmitter.
    - 1) Cable shall be potted and fitted by manufacturer at the factory.
  - g. Pulsed DC magnetic field excitation.
  - h. Automatic zero.
  - i. Adjustable low flow cutoff.
  - j. Minimum signal lock (empty tube zero) to prevent false measurement when tube is empty.
  - k. Inaccuracy:  $\pm 0.4\%$  of rate.
  - l. 4-20 mA DC (HART) isolated output into maximum 800 ohms.
  - m. Power supply: 117 V  $\pm 10\%$ , 60 Hz.
  - n. Indication of flow rate and totalized flow at transmitter.
  - o. Meter operable as specified in liquids with 5.0 micro mho/cm or more conductivity.
  - p. Transmitter electronics shall use microprocessor based architecture and be configured using parameters.
  - q. All meters for drinking water service shall be NSF 61 certified.
4. Schedule:

TAG NUMBER	SERVICE	FLOW RANGE (GPM)	METER SIZE (IN)	NEMA (IP) RATING



TAG NUMBER	LINER MATERIAL	ELECTRODE MATERIAL	INTEGRAL, FIELD OR PANEL- MOUNTED TRANSMITTER

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.

**END OF SECTION**

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Aquilla WWTP Improvements

# APPENDIX A

Ohio EPA PTI



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**Mike DeWine**, Governor  
**Jon Husted**, Lt. Governor  
**Anne M. Vogel**, Director

May 30, 2023

Geauga County Dept of Water  
Resources  
Attn: Brien Croff

470 Center St Bldg #3  
Chardon, OH 44024

RE: Geauga County Dept of Water Resources  
Permit-Long Term

Approval  
Surface Water Permit to Install  
Geauga  
DSWPT11346772

Subject: Aquilla Village WWTP Lagoon Liner Replacement - Replacement of the existing lagoon liners in compliance with Part 1, C of permit 3PG00100GD., Claridon Twp  
Plans Received on March 02, 2020  
Plans Revised on May 11, 2023  
From: Geauga County Water Resources Department

Ladies and Gentlemen:

Enclosed is an approved Ohio EPA Permit to Install. This permit contains several conditions and restrictions; I urge you to read it carefully. A general condition of your permit states that issuance of the permit does not relieve you of the duty of complying with all applicable federal, state, and local laws, ordinances, and regulations. You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Treasurer State of Ohio", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: Environmental Review Appeals Commission, 30 East Broad Street, 4<sup>th</sup> Floor, Columbus, OH 43215. If you have any questions, please contact the Ohio EPA District Office.

Ohio EPA has developed a customer service survey to get feedback from regulated entities that have contacted Ohio EPA for regulatory assistance, or worked with the Agency to obtain a permit, license or other authorization. Ohio EPA's goal is to provide our customers with the best possible customer service, and your feedback is important to us in meeting this goal. Please take a few minutes to complete this survey and share your experience with us at <http://www.surveymonkey.com/s/ohioepacustomersurvey>. If you have any questions, please contact the Ohio EPA district office to which you submitted your application.

Sincerely,

Tony Nosko, Supervisor  
Permit to Install Unit, Division of Surface Water

AWN/bd

Enclosure

cc: Northeast District Office

HDR Engineering, Inc.

By:  Date: 05/30/2023

# Ohio Environmental Protection Agency

Permit to Install

Application No: 1346772

Applicant Name: Geauga County Dept of Water Resources  
Address: 470 Center St Bldg #3  
City: Chardon  
State Zip: OH 44024

Person to Contact: Brien Croff  
Telephone: 440-279-1982

Description of Proposed Source: Aquilla Village WWTP Lagoon Liner Replacement - Replacement of the existing lagoon liners in compliance with Part 1, C of permit 3PG00100GD., Claridon Twp, Geauga

Issuance Date: May 30, 2023  
Effective Date: May 30, 2023

The above named entity is hereby granted a permit to install for the above described source pursuant to Chapter 3745-42 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described source of environmental pollutants will operate in compliance with applicable state and federal laws and regulations. Issuance of this permit does not constitute expressed or implied assurance that, if constructed or modified in accordance with those plans and specifications, the above described source of pollutants will be granted the necessary operating permits. This permit is granted subject to the following conditions attached hereto.

Ohio Environmental Protection Agency



---

Anne M. Vogel  
Director  
P.O. Box 1049  
50 West Town Street, Suite 700  
Columbus, OH 43216-1049

This permit shall expire if construction has not been initiated by the applicant within eighteen months of the effective date of this permit. By accepting this permit, the applicant acknowledges that this eighteen month period shall not be considered or construed as extending or having any effect whatsoever on any compliance schedule or deadline set forth in any administrative or court order issued to or binding upon the permit applicant, and the applicant shall abide by such compliance schedules or deadlines to avoid the initiation of additional legal action by the Ohio EPA.

The director of the Ohio Environmental Protection Agency, or his authorized representatives, may enter upon the premises of the above named applicant during construction and operation at any reasonable time for the purpose of making inspections, conducting tests, examining records, or reports pertaining to the construction, modification, or installation of the above described source of environmental pollutants.

Issuance of this permit does not relieve you of the duty of complying with all applicable federal, state, and local laws, ordinances, and regulations.

Any well, well point, pit or other device installed for the purpose of lowering the ground water level to facilitate construction of this project shall be properly abandoned in accordance with the provisions of Section 3745-9-10 of the Ohio Administrative Code or in accordance with the provisions of this plan or as directed by the Director or his representative. For more information please contact: Division of Drinking and Ground Water - Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, Ohio 43215 (614) 644-2752.

Any person installing any well, well point, pit or other device used for the purpose of removing ground water from an aquifer shall complete and file a Well Log and Drilling Report form with the Ohio Department of Natural Resources, Division of Water, within 30 days of the well completion in accordance with the Ohio Revised code Section 1521.01 and 1521.05. In addition, any such facility that has a capacity to withdraw waters of the state in an amount greater than 100,000 gallons per day from all sources shall be registered by the owner with the chief of the Division of Water, Ohio Department of Natural Resources, within three months after the facility is completed in accordance with Section 1521.16 of the Ohio Revised Code. For copies of the necessary well log, drilling report, or registration forms, please contact:

Ohio Department of Natural Resources  
2045 Morse Road Bldg. E  
Columbus, OH 43229-6693  
(614) 265-6717

1. The proposed wastewater disposal system shall be constructed in strict accordance with the plans and application approved by the director of the Ohio Environmental Protection Agency. There shall be no deviation from these plans without the prior express, written approval of the agency. Any deviations from these plans or the above conditions may lead to such sanctions and penalties as provided for under Ohio law. Approval of these plans and issuance of this permit does not constitute an assurance by the Ohio Environmental Protection Agency that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

2. If the construction area for this project is one acre or more, or is part of a larger development that is one acre or more, the applicant must submit a Notice of Intent (NOI) for coverage under the general construction stormwater permit to Ohio EPA at least 21 days prior to the start of construction of this project.

3. Geauga County Commissioners, through the Geauga County Department of Water Resources (Owner) shall be responsible for proper operation and maintenance of the wastewater disposal system.

4. The operation of the disposal system shall be under the responsible charge of a certified operator having the proper certificate issued under Chapter 3745-7-05 of the Ohio Administrative Code.

5. The operation of the sewerage system shall be under the responsible charge of a certified operator having the proper certificate issued under Chapter 3745-7-05 of the Ohio Administrative Code.
6. This permit to install applies only to the wastewater disposal system listed above. The installation of drinking water supplies, air contaminant sources, or solid waste disposal facilities will require the submittal of a separate application to the director.
7. Provisions shall be made for proper operation of the wastewater pumping facilities.
8. This permit applies only to the proposed wastewater disposal system. All other aspects of the proposed projects must be approved by the Ohio Department of Health , the local health department, and/or other state and local agencies.
9. This permit applies to a wastewater disposal system designed to serve an average daily hydraulic flow of no more than 70,000 gallons.
10. Roof drains, foundation drains, and other clean water connections to the disposal system are prohibited.
11. No liquids, sludges, or toxic or hazardous substances other than those set forth in the approved permit shall be accepted for disposal without the prior written approval of the Ohio Environmental Protection Agency.
12. The Northeast District office of the Ohio Environmental Protection Agency shall be notified in writing as to (a) the construction starting date; (b) the construction completion date; and (c) the date the wastewater disposal system was placed into operation.
13. No soil material shall be placed or compacted during weather conditions which would interfere with adequate compaction or moisture content control, such as freezing temperatures or rainy conditions. Soil material shall be placed in twelve inch loose lifts to a minimum compaction rate of 95 percent of standard maximum dry density. Soil material shall be compacted to a minimum compaction rate of 90 percent of modified maximum dry density using standard engineering compaction methods unless otherwise specified in the plans to a minimum compaction rate of 90 percent of modified maximum dry density. Compacted soil material shall be tested for density and moisture content at a rate of one test per acre for each lift, with a minimum of one test for any day that soil material is compacted . When a density of moisture content test is not in compliance with the detailed plans or the terms and conditions of this permit, permittee shall scarify the lift, adjust the moisture content, and re-compact the soils for an area extended from the failed test to one -half the distance to the nearest passed tests, in all directions. The re-compacted area shall then be retested for compliance. Results of density and moisture content testing shall be submitted to the Ohio EPA Northeast District Office. Only soil materials specifically approved for use, in the detailed plans, may be used. Permeability testing on the compacted soil material shall be performed at a rate of one test per acre.
14. The Northeast District Office of the Ohio Environmental Protection Agency shall be notified prior to the start of construction so that construction of this system can be routinely inspected and evaluated by the Ohio EPA. The final request for inspection and evaluation of this installation shall be made at least twenty-four (24) hours in advance of its being covered with earth and/or placed into operation.



**REPORT ON A PERMIT-TO-INSTALL APPLICATION AND DETAILED PLANS FOR A LAGOON LINER REPLACEMENT AND PLANT IMPROVEMENTS FOR THE AQUILLA VILLAGE WASTEWATER TREATMENT PLANT, LOCATED AT 202 CORNELIA DRIVE, CLARIDON TOWNSHIP, GEAUGA COUNTY (PTI #1346772)**

On March 2, 2020, detail plans of the above-referenced project were received by the Northeast District Office of the Ohio Environmental Protection Agency. The plans were initially prepared by the Geauga County Department of Water Resources (GCDWR), and later revisions were prepared by HDR, Inc. on behalf of the applicant, Geauga County Department of Water Resources (GCDWR) and ultimately the Geauga County Board of Commissioners. Additional information was requested and received on January 23, 2023, February 16, 2023, May 11, 2023, and May 12, 2023.

The project includes the relining of two aerated wastewater treatment lagoons treating an average daily design flow of 70,000 gpd. The application also proposes to dewater sludge from the existing lagoons, dewater and stabilize the sludge, and to either land apply the dewatered sludge or haul to another NPDES Permit Holder. Preparation of the sludge for disposal will be performed by the contractor. GCDWR typically hauls excess sludge to its McFarland WWTP for treatment and disposal. The existing synthetic liner system in each lagoon will be replaced with an 80-mil high density polyethylene (HDPE) flexible membrane liner (FML), installed over a graded, proof-rolled, engineered and inspected subbase. The HDPE FML will have a 12-oz. non-woven geotextile installed above the FML to protect it from damage and degradation, and 6 inches of protective soil will be placed above the 12-oz geotextile.

Additional plant improvements include the addition or a replacement disinfection system consisting of a new 1,000-gallon disinfection tank with a tablet chlorination feeder and tablet dechlorination feeder. The disinfection system is designed to provide 15 minutes of detention time at the ADDF of 70,000 GPD. An existing effluent pump station will be relocated approximately 25 feet south of its present location to facilitate construction of the new disinfection system. A new effluent flowmeter is also proposed.

Estimated cost of the project is \$1,519,000. The annual operations and maintenance cost is estimated at \$100,000.

**Summary**

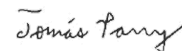
Detail plans of the above-referenced project appear satisfactory, and it is recommended they be approved subject to the usual conditions and two additional special conditions.

Prepared By:



John M. Schmidt, P.E.  
Environmental Specialist 2  
Division of Surface Water

Reviewed By:



Tomás Parry, P.E.  
Environmental Engineer 4  
Division of Surface Water

JMS/TP/  
May 12, 2023

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