CONTRACT DATA SHEET

Monroe County Division of Purchasing
200 County Office Building, Rochester NY 14614

TITLE: HORIZONTAL DIRECTIONAL DRILLING TERM CONSTRUCTION CONTRACT (TCC#6)

CONTRACT #: 0108-21 (7700000054)

CONTRACT DATES: 01/01/2021 – 12/31/2025

BUYER: Sean Wilcox
PHONE: 585/753-1136
EMAIL: swilcox@monroecounty.gov

VENDOR(S): Burrow Brothers Inc.
656 Basket Road
Webster, NY 14580
P: 585-265-0610

Sean Wilcox
Buyer

XC: BP FILE
VENDOR

CONTRACT RENEWAL

THIS CONTRACT RENEWAL (" Renewal #4"), which shall be deemed to be dated as of the date the last party executed this agreement, by and between the COUNTY OF MONROE, a municipal corporation located at 39 West Main Street, Rochester, New York, 14614, hereinafter referred to as the "COUNTY," and **Burrows Brothers, Inc.,** with offices located at 656 Basket Road, Webster, NY, 14580, hereinafter referred to as the "CONSULTANT."

WITNESSETH:

WHEREAS, the parties hereto previously entered into an Agreement dated as of March 29, 2021 (the "Agreement"), whereby the CONSULTANT agreed to provide the following services or project for the as set forth in the Agreement: **Horizontal Directional Drilling Term Construction Contract (TCC#6; BP#0108-21);** and

WHEREAS, the parties previously renewed the Agreement ("Renewal #1"), dated December 14, 2021, ("Renewal #2"), dated December 20, 2022, and ("Renewal #3"), dated January 10, 2024; and

WHEREAS, the parties wish to renew the Agreement for an additional term in accordance with Article 2 of the Agreement.

NOW, THEREFORE, it is mutually agreed by the parties as follows:

1. The contract shall be renewed for the period of **January 1, 2025** through **December 31, 2025**.

2. The contract amount for the renewed term will be of a sum not to exceed ONE HUNDRED AND FIFTY THOUSAND AND 00/100 DOLLARS (**$150,000.00**).

3. All other terms and conditions of the original Agreement shall remain in full force and effect.

IN WITNESS THEREOF, Colleen D. Anderson, Purchasing Manager of the COUNTY OF MONROE, and Kevin Burrows, President of Burrows Brothers, Inc., hereto have executed this Renewal #4 as of the day and year appearing opposite their respective signatures below. By electronically approving this Renewal, both parties agree to all terms and conditions listed in the Renewal document, as well as all attachments included with the document.

FORM OF CONTRACT

TERM CONSTRUCTION CONTRACT

THIS CONTRACT which shall be deemed to be dated as of the date the last party executed this Contract, by and between the County of Monroe, a municipal corporation located at 39 West Main Street, Rochester, New York 14614, hereinafter referred to as the "OWNER," acting and by and through its ROCHESTER PURE WATERS, IRONDEQUOIT BAY - SOUTH CENTRAL PURE WATERS, NORTHWEST QUADRANT PURE WATERS, and GATES-CHILI-OGDEN PURE WATERS DISTRICTS hereinafter referred to as the "DISTRICTS", located at 50 W. Main St., Rochester, NY 14614, and **Burrows Brothers, Inc.** with offices at 656 Basket Road, Webster, New York, 14580, hereinafter referred to as the "CONTRACTOR."

WITNESSETH, that the CONTRACTOR and the OWNER, for the considerations hereinafter named, agree as follows:

ARTICLE 1 - REQUIRED STANDARD CLAUSES FOR COUNTY CONTRACTS

Appendix "A" contains the standard clauses for all Monroe County contracts and is attached hereto and is hereby made a part of this Agreement as if set forth fully herein.

ARTICLE 2 - CONTRACT TERM

The Contract shall extend from **January 1, 2021** through **December 31, 2021** with the option to extend for four (4) additional one (1) year periods at the mutual consent of both parties.

ARTICLE 3 - SCOPE OF WORK

The **Horizontal Directional Drilling Term Construction Contract (TCC#6; BP #0108-21)** consists principally of the furnishing of all equipment, superintendence, labor, skill and material and all other items necessary for the installation of underground conduit and piping by means of horizontal directional drilling, as defined in the CONTRACTOR's Bid Proposal, attached as Appendix B, at locations directed by the OWNER via Purchase Order(s).

All of the following which were supplied as part of the Bidding Documents, and which Documents are hereby made a part of this Contract, if applicable:

(a) Drawings.

(b) Notice to Bidders, Instructions to Bidders, and the Proposal.

(c) Contract forms consisting of the Contract, Appendix A (Standard Clauses for County Contracts), and the bonds.

(d) The General Conditions and Special Conditions.

(e) The Technical Specifications.

(f) Any supplemental information included with the Bidding Documents.

(g) Any and all Addenda.

ARTICLE 4 - THE CONTRACT SUM

A. The OWNER shall pay to the CONTRACTOR for the performance of this term Contract, subject to additions and deductions and the adjustment of final quantities as provided herein, an annual amount not to exceed ONE HUNDRED AND FIFTY THOUSAND AND 00/100 DOLLARS (**$150,000.00**) all in accordance with the CONTRACTOR's Proposal attached hereto and made a part hereof.

B. The OWNER is exempt under Section 1116 of the Tax Law and therefore, no sales tax shall be included in the bids.

ARTICLE 5 - PURCHASE ORDERS

A. A PURCHASE ORDER is defined as the written authorization by the OWNER to the CONTRACTOR to perform a defined quantity of work, as defined in Article 3 of this Agreement.

B. No Work shall be performed until a written Purchase Order has been issued by the OWNER to the CONTRACTOR. Any work performed by the CONTRACTOR prior to the receipt of the Purchase Order shall be at the CONTRACTOR's own risk.

C. Work will be authorized through one or more Purchase Orders. Each individual Purchase Order shall not total more than Seventy-Five Thousand Dollars ($75,000).

D. Each Purchase Order will describe the location, size, and estimated quantity of pipe and appurtenances to be rehabilitated, with a total estimated price for performing the work.

E. The work to be completed under each Purchase Order shall commence within ten (10) days after the written authorization of Purchase Order.

F. The entire Purchase Order shall be completed within the time stipulated in the Purchase Order. If the time stipulated in the Purchase Order extends beyond the time of the Contract, the Contract shall be extended to the completion date of the Purchase Order.

ARTICLE 6 - PAYMENTS

A. Payments for the work performed under each Purchase Order of the Contract will be made by the OWNER to the CONTRACTOR based on the terms and conditions stated in the Agreement.

B. At least five (5) days before the submission of application for payment, the CONTRACTOR shall furnish to the OWNER a complete breakdown of all work performed. This breakdown, when approved, will be used as a basis for preparing an approvable invoice for payment. The CONTRACTOR shall furnish a Monroe County Claim Voucher with each application for payment.

C. Payments shall be calculated based on multiplying the quantity of the work performed, times the unit pricing submitted in the CONTRACTOR's Bid Proposal (Appendix B), or cost plus fifteen percent (15%) for general overhead and profit, or a negotiated price, or any combination thereof.

D. The CONTRACTOR shall provide the closed circuit televising video/digital recording of the improvements completed prior to submission of the Contractor's payment application or invoice for the Purchase Order.

E. Neither the final payment nor any partial payment shall constitute acceptance of any defective workmanship or material, or noncompliance with the Contract Documents.

ARTICLE 7 - ACCEPTANCE AND GUARANTEE OF WORK

A. Upon completion of the work under a Purchase Order, the OWNER shall approve all of the work done and shall, within fifteen (15) days of approval, prepare a final certificate of work done and the value thereof. The OWNER shall upon approval of the final certificate and the application for payment, including a Monroe County Claim voucher submitted by the CONTRACTOR, promptly pay the CONTRACTOR the entire sum due after deduction of all previous payments and amounts to be kept and retained under provisions of this Contract. All prior payments shall be subject to correction in the final estimate and payment.

B. Before issuance of the final certificate, the CONTRACTOR shall submit evidence satisfactory to the OWNER that all payrolls, material bills and other indebtedness connected to the work have been paid.

C. The CONTRACTOR shall guarantee the work accomplished under this Contract for a period of one year from the date of issuance of final certificate for a Purchase Order. The guarantee period shall be considered as work remaining to be completed under this Agreement and shall have a value of one percent (1%) of the final Purchase Order amount during the Guarantee Period. During the Guarantee Period, twice the value of the guarantee (i.e., two percent (2%) of the contract Purchase Order amount) shall be retained by the OWNER.

D. Upon expiration of the guarantee period, the CONTRACTOR shall submit an invoice for approval to the OWNER for final payment, which shall include any and all monies due to the CONTRACTOR, including the

amount withheld during the guarantee period. All prior partial payments shall be subject to correction in the final invoice and payment.

ARTICLE 8 - BRAND REFERENCE

A. Reference to a manufacturer's product by brand name or number with the CONTRACTOR's Bid Proposal, attached as Appendix B, is done solely to establish the minimum quality and performance characteristics required. Alternates that are proposed must have a sufficient operating track record to demonstrate that the equipment will perform as well as the specified brand. The acceptance of a CONTRACTOR'S alternate rests solely with the OWNER.

ARTICLE 9 - MATERIALS

A. The furnishing of all materials shall be the responsibility of, and paid for by the CONTRACTOR.

B. All materials shall be new and unused and shall be essentially the standard product of a manufacturer regularly engaged in the production of such material. The OWNER reserves the right to reject any material or supplier who, although he meets the above requirements, does not provide satisfactory evidence indicating availability and prompt delivery of materials. Items of any one type of material shall be the product of a single manufacturer or supplier. All materials or equipment delivered to the site shall be accompanied by certificates, signed by an authorized officer of the manufacturing company, guaranteeing that the materials conform to Specification requirements. Such certificates shall be immediately turned over to the OWNER. Materials delivered to the site without such certificates will be subject to rejection.

C. Prior to award of the Contract and within forty-eight (48) hours of request by the OWNER, the CONTRACTOR shall furnish for approval the identification of the materials to be used and all samples and testing data as required by the technical specification. The submittal shall include the identification of the availability of all materials. Work shall be in accordance with the approved materials.

D. The CONTRACTOR shall have the full continuing responsibility to install all materials supplied and purchased, to protect the same, to maintain them in proper condition and to forthwith repair, replace and make good any damage thereto without cost to the OWNER until such time as the work covered by the Contract is fully accepted by the OWNER.

ARTICLE 10 - INSURANCE

This article supersedes "Section 2. Insurance" in the Standard Clauses for County Contracts referenced in Article 1.

A. The CONTRACTOR shall secure and maintain for the entire length of the Contract, including the guarantee period, insurance policies, protecting the CONTRACTOR and his Subcontractors, including their officers, officials, employees and agents, from claims for bodily injuries, death or property damage which may arise from operations under this Contract whether such operations be by himself or by any Subcontractor or anyone employed by them directly or indirectly. The following occurrence-based insurance policies with insurance companies authorized to do business in New York State are required:

(1) Statutory New York State Worker's Compensation and Disability insurance.

(2) General Liability Insurance; occurrence form; single limits of liability $1,000,000; aggregate limits of liability in a minimum amount of $3,000,000. This coverage may be in the form of a single policy or a basic policy plus umbrella coverage. This coverage shall include CONTRACTORS's Protective Liability covering operations of Subcontractors and CONTRACTOR whose work encompasses storage of use of explosives shall provide evidence of blasting coverage. If any of the rating classifications embody property damage exclusions X (explosion), C (collapse) or U (underground), coverage eliminating such exclusions must be provided with same limits. Original certificates and endorsements evidencing such coverage shall be delivered to the County before final execution of this Agreement.

(3) Contractual Liability covering Hold Harmless Clause.

(4) Automobile Liability and Property Damage coverage for owned, non-owned, and hired vehicles. (Bodily Injury $1,000,000 each person, $1,000,000 each accident; Property Damage $1,000,000 each accident), or a combined single limit policy of $1,000,000 (bodily injury and property damage).

(5) All Risk Builders Risk or All Risk Installation Floater, as appropriate, in an amount equal to one hundred percent (100%) of the amount of the Contract, specifying the OWNER as Named Insured.

(6) CONTRACTOR whose Contract encompasses hazardous material work in any part shall provide a certificate evidencing insurance coverage of such work on an occurrence basis. Insurance policies excepting coverage for hazardous materials are not acceptable.

B. All insurance carriers for the policies of insurance required herein must carry an "A" or better BEST rating.

C. The County of Monroe and the OWNER if different than the County, its officers, officials, employees, agents and CONSULTANT must be named as an Additional Insured on the CONTRACTOR's General Liability and Automobile Liability policies, and on any Excess/Umbrella policies if required to meet the minimum liability thresholds. The policy(ies) must be endorsed by the insurance carrier to authorize the additional insured designations. The CONTRACTOR's coverage shall be specified as primary.

D. Certification of such insurance shall be filed with the OWNER and CONSULTANT prior to Contract signing and shall be subject to approval for adequacy of protection. Said certificates of insurance shall contain a thirty (30) day written notice of cancellation in favor of the OWNER. The evidence of coverage required therein shall be provided on the County's certificate form or an ACORD form.

E. The above outlined insurance requirements are the minimum during construction.

F. During the guarantee period, CONTRACTOR may furnish completed operations liability insurance in a minimum amount of $1,000,000 each occurrence, $3,000,000 aggregate in lieu of the coverage required by paragraph a. above. Prior to the release of the semi-final payment, the CONTRACTOR shall provide a certificate of insurance for this coverage which may not be canceled prior to the end of the guarantee period.

ARTICLE 11 - RIGHTS OF OWNER

OWNER'S failure to exercise any of its rights under this Contract, including its right to terminate the work or to withhold payment, shall not constitute a waiver by the OWNER of any such rights. No inference of waiver of any option or right of the OWNER shall be drawn from OWNER's failure to enforce such rights or CONTRACTOR's failure to complete any portion of the work in accordance with any interim date, final date or any other deadline agreed upon as part of the project construction schedule. CONTRACTOR shall remain liable for any damages arising from its failure to perform in accordance with the schedule, notwithstanding any action or failure to act by OWNER, including but not limited to any delay in or failure to: terminate the Contract; send any notice to the CONTRACTOR; or to take any action required or permitted by OWNER under this Contract.

ARTICLE 12 - OWNER'S RIGHT TO TERMINATE AND/OR COMPLETE CONTRACT

Should the CONTRACTOR become insolvent, or should he refuse or neglect to perform the work in a proper manner and as directed by the OWNER, or otherwise fail in the performance of any of his obliga¬tions under this Contract, and Surety after proper request fails to complete the Contract, then the OWNER, upon the certificate of the CONSULTANT that sufficient cause exists to justify such action, and after giving the CONTRACTOR and his Surety seven (7) calendar days written notice, may, without prejudice to any other right or remedy, terminate the employment of the CONTRACTOR and take posses¬sion of the premises and of all materials, tools, and applian¬ces thereon and finish the work by whatever method he may deem expedient. In such cases, no further payment shall be made to the CONTRACTOR until the work is completed, at which time, if the unpaid balance of the Contract price shall exceed the expense of finishing the work, such excess shall be paid to the CONTRACTOR. Should such expense exceed the unpaid balance, the CONTRACTOR and his Surety shall pay the difference to the OWNER. The OWNER shall audit and certify the expense incurred by him in finishing the work and the damage incurred through the CONTRACTOR'S fault.

ARTICLE 13 - DISPUTE RESOLUTION

In an effort to resolve any conflicts that arise during the term of this Contract or following the completion of Work, the OWNER and the CONTRACTOR agree that all disputes between them arising out of or relating to this Contract shall first be submitted to non-binding mediation unless the parties mutually agree otherwise. After direction by the CONSULTANT to proceed with the disputed work, and throughout the mediation procedures, the CONTRACTOR shall diligently proceed with the performance of the Contract and in accordance with all instructions of the CONSULTANT.

The OWNER and the CONTRACTOR further agree to include a similar mediation provision in all contracts with independent contractors, subcontractors and subconsultants retained for the project and to require all independent contractors, subcontractors and subconsultants also to include a similar mediation provision in all contracts with subcontractors, subconsultants, suppliers or fabricators so retained, thereby providing for mediation as the primary method for dispute resolution between the parties to those contracts.

ARTICLE 14 - OTHER AGENCIES

The CONTRACTOR(S) must honor the prices, terms and conditions of this contract with political subdivisions, school districts, fire districts or other district or public authority located entirely or partly within Monroe County. Usage of this contract by any of these other political subdivisions or agencies or corporations will have to be coordinated between that subdivision or agency or corporations and the CONTRACTOR. Orders placed against this contract between any subdivision or agency or corporation will be contracts solely between the CONTRACTOR(S) and those entities. Monroe County will not be responsible for, nor will it have any liability or other obligation for, such contract between the CONTRACTOR(S) and any third party.

IN WITNESS WHEREOF, Colleen D. Anderson, Purchasing Manager of the COUNTY OF MONROE, and Kevin Burrows, President of Burrows Brothers, Inc. hereto have executed this Contract as of the day and year appearing opposite their respective signatures below. By electronically approving this Contract, both parties agree to all terms and conditions listed in this Contract, as well as all attachments included with the Contract.

APPENDIX A

STANDARD CLAUSES FOR COUNTY CONTRACTS

See attached document.

ATTACHMENTS

As indicated in Article 3, Scope of Work, of the Form of Contract, the CONTRACTOR hereby agrees to perform the Scope of Work in accordance with the requirements and provisions of the following documents, which were supplied as part of the Bidding Documents. The following documents are hereby made a part of this Contract, if applicable to the services listed in Article 3 of this Contract. By electronically approving this contract, the Contractor agrees to all attachments included in this contract document, if applicable, as related to the terms and conditions listed in the Contract.

(a) Drawings.

(b) Notice to Bidders, Instructions to Bidders, and the Proposal.

(c) Contract forms consisting of the Contract, Appendix A (Standard Clauses for County Contracts), and the bonds.

(d) The General Conditions and Special Conditions.

(e) The Technical Specifications.

(f) Any supplemental information included with the Bidding Documents.

(g) Any and all Addenda.

SECTION 01 01 01

GENERAL PROVISIONS

PART 1 – GENERAL

1.01 GENERAL

A. The provisions of Section 200 through 700 and any subsections in Section 100 which are included as part of the requirements in Sections 200 through 700 of the New York State Department of Transportation Specifications of January 9, 2014 or latest revision and all addenda in effect on the date of advertising for bids shall apply except as amended by the City of Rochester, Department of Environmental Services, Standard Construction Contract Documents, November 1991 or latest revision, and where modified by these Specifications.

1.02 SCOPE OF WORK

A. Horizontal Directional Drilling Term Construction Contract (TCC #6) includes furnishing all equipment, superintendence, labor, skill and material (except as noted herein), and all other items necessary for the installation of underground conduit and piping by means of horizontal directional drilling at multiple locations within the project limits.

B. The Project limits are Monroe County and the Pure Water sewer districts in Monroe County, New York.

C. The principal features of work are horizontal directional drilling; the pulling of pipe; trenched pipe installation; the installation of pull and splice boxes; and the restoration of disturbed surfaces. This description is general only and shall not be construed as a complete listing of every item of work required.

D. The CONTRACTOR shall perform all work required for such construction in accordance with the drawings and specifications and as outlined in each individual Purchase Order, and subject to the terms and conditions of the contract, complete and ready for use.

E. The furnishing of all materials and work shall be the responsibility of, and paid for by the CONTRACTOR, with the exception of pull box and splice box frames and covers and witness posts. The CONTRACTOR will be reimbursed directly by the OWNER for the following materials:
   1. High Density Polyethylene (HDPE) pipe and fittings.
   2. Pre-cast concrete structures.
   3. Stainless steel HDD tracer wire.
   4. Polyester pull tape.

F. The CONTRACTOR shall be reimbursed at COST without CONTRACTOR markup. The CONTRACTOR shall provide written quotes for the above materials to be incorporated into the project for the OWNER's review and approval prior to purchasing materials.

G. The frames and covers will be located at the Monroe County Fleet Center, 145 Paul Road, Rochester, NY and will be the Contractor's responsibility to pick them up at that location.

H. In addition, this Contract may be utilized by other agencies within Monroe County as identified in Article 14, "Other Agencies", of the Form of Contract.

1.03 DEFINITION

A. Within this Section 010101 - General Provisions, where reference is made to the ENGINEER, the OWNER and or the OWNER's designated representative shall be substituted.

B. Where reference is made to "as shown on the plans", or "as shown on the Standard Detail Drawings" the term "as shown on the Purchase Order" may be substituted.

C. Where reference is made in the New York State Department of Transportation Specifications to New York State Department of Transportation, Commissioner, etc., the appropriate Monroe County department, or official shall be substituted.

1.04 CONTRACT DRAWINGS AND SPECIFICATIONS

A. Included by reference as part of the Contract Documents are:
   1. New York State Department of Transportation, "Standard Specifications for Construction and Materials", May 4, 2006 and Addenda (NYSDOT).
   2. City of Rochester, Department of Environmental Services, "Standard Construction Contract Documents", November 1, 1991 or latest revision (CORSCCD).

B. In the event of a conflict between the specification requirements, the order of precedence shall be:
   1. These Specifications.
   2. CORSCCD Specifications.
   3. NYSDOT Specifications.

1.05 PROTECTION OF PROPERTY

A. The CONTRACTOR shall be responsible for the preservation and protection of property adjacent to the work site against damage and or injury as a result of his operations under this Contract. Any damage or injury occurring on account of any act, omission, or neglect on the part of the CONTRACTOR shall be restored in a proper and satisfactory manner or replaced by and at the expense of the CONTRACTOR.

1.06 EXISTING UTILITIES AND STRUCTURES

A. The term "existing utilities" shall be deemed to refer to both publicly and privately owned utilities such as storm drains, sanitary sewers, water lines, gas, electrical telephone cable television services and appurtenances.

B. It shall be the responsibility of the CONTRACTOR to ascertain the actual extent and exact location of existing utilities and structures.

C. The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Any damage resulting from the work of this contract shall be promptly repaired by the CONTRACTOR at his own expense in a manner approved by the ENGINEER and further subject to the requirements of the authority having jurisdiction.

D. Where excavations by the CONTRACTOR require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the CONTRACTOR. All such work shall be performed in a manner satisfactory to the ENGINEER and the respective authority having jurisdiction over such work. In the event the CONTRACTOR fails to provide proper support or protection to any existing utility, the ENGINEER may at his discretion, have the respective authority provide such support or protection as may be necessary to insure the safety of such utility, and the costs of such measures shall be paid by the CONTRACTOR.

1.07 DRAINAGE AND DEWATERING OF EXCAVATIONS

A. Except as noted in paragraph (b) below, the CONTRACTOR shall be responsible at all times for preventing the accumulation of groundwater and the removal of all water in and in the vicinity of excavations.

B. Where the OWNER determines that unstable soil conditions exist because of groundwater, the OWNER will authorize the CONTRACTOR and separately reimburse to stabilize these conditions.

C. The proposed methods of controlling and removing groundwater and water and stabilizing shall be submitted to the OWNER for approval prior to their use.

1.08 WORK ON PROPERTIES AND IN STREETS AND ROADWAYS

A. The CONTRACTOR shall be responsible for securing all permits and licenses required to perform the Work including the Permit for work within the applicable municipal rights-of-way. The CONTRACTOR shall provide the OWNER a copy of the applicable permits prior to the start of construction.

B. The CONTRACTOR shall restrict his operations to the areas within permanent and temporary easements if such easements have been obtained by the OWNER, and to areas within existing municipal street rights-of-way.

C. Temporary easements required by the CONTRACTOR for additional work areas shall be obtained and paid for by the CONTRACTOR. All temporary easements obtained by the CONTRACTOR shall contain a provision holding the District and County of Monroe harmless to any and all claims thereto related. The agreement shall bear the signature of the OWNER of the land. Copies of all temporary easements shall be supplied to the OWNER prior to utilization of the temporary easements.

D. Prior to the start of work, the CONTRACTOR shall have his job surveyor locate the temporary and permanent easement lines and other key features associated with construction of the improvements.

E. A continuous snow type fence shall be installed and maintained in place along these lines during construction operations until this area has been restored to its original condition. The fence shall be in place five (5) days in advance of work in any area. No construction activity, access, storage, or other use shall take place exterior of the fencing.

F. Snow type fencing for individual tree protection during the construction shall be installed and maintained by the CONTRACTOR as required or ordered by the OWNER.

1.09 MAINTENANCE AND PROTECTION OF TRAFFIC

A. Any maintenance and protection of traffic required by the work performed under this contract shall be in accordance with the "Manual of Uniform Traffic Control Devices NYSDOT".

B. For projects within the City of Rochester, the Permit Section in the City of Rochester Department of Environmental Services shall be advised of commencement of the operations at least seven (7) working days prior to construction. The Permit Section will determine if the Monroe County Division of Traffic Engineering must review and approve the temporary traffic disruption.

C. Where a traffic plan is required, the CONTRACTOR shall be responsible for developing, installing, and maintaining the approved plan at no additional cost to the OWNER.

D. The CONTRACTOR shall submit the traffic plan to the Monroe County Division of Traffic Engineering, allowing a minimum of five (5) working days for approval.

E. When traveled way is closed for any reasons, detour routes shall be as designated by the Monroe County Division of Traffic Engineering.

1.10 TESTING AND CHECKING

A. Unless specifically identified as the responsibility of the OWNER, the CONTRACTOR shall be responsible for the performing and paying for all laboratory and field-testing and checking required by the Contract.

B. Work within the City of Rochester: Tests required by the City of Rochester to determine if the work has been performed in accordance with the specifications shall be the responsibility of the OWNER. However, should the tests show the work to be unacceptable to the City of Rochester, the CONTRACTOR shall be responsible for paying the cost of the test and penalties, in addition to correcting the work.

C. The OWNER shall be responsible for field compaction density tests. Where test results indicate insufficient compaction and additional compaction is required, the CONTRACTOR shall be responsible for all field compaction density retesting, until sufficient compaction is achieved.

1.11 DUST CONTROL

A. The CONTRACTOR shall take all necessary measures to control dust resulting from his operations and to prevent spillage and excavated material on public roads. When directed by the OWNER, the CONTRACTOR shall sprinkle water in such quantities and at such frequencies as may be required to control such dust and prevent it from becoming a nuisance to the surrounding area at no additional cost to the OWNER. All roads must be maintained dust free at all times. Daily cleaning will be required.

1.12 DISPOSAL OF MATERIALS

A. It shall be the responsibility of the CONTRACTOR to remove from the site and dispose of, according to applicable regulations, all rubbish, construction debris and waste materials, "unsuitable excavation material", and unused materials.

B. "Unsuitable excavation material" shall include, but not be limited to, excavated earth not suitable for pipe/structure support or backfill, rock, pavement/surface materials, and abandoned sewer facilities.

C. Unless otherwise directed by the OWNER, all "unsuitable excavation material" shall be loaded directly from the excavation and removed from the construction site on the same day.

D. Materials to be disposed of shall be disposed of at a permitted/authorized "construction and demolition" debris disposal facility, and/or facility permitted/authorized for respective materials. Discharge of unused material, including, but not limited to concrete and controlled density fill, to sewer mains, laterals, catch basins, manholes and other sewer system appurtenances is strictly prohibited.

1.13 CONSTRUCTION PHOTOGRAPHS

A. The CONTRACTOR shall provide "before" and "after" construction photographs, as directed by and at no additional cost to the OWNER, at mutually agreed upon locations to avoid disputes concerning the restoration work. Digital photographs shall be provided on a compact disc to the OWNER. CONTRACTOR shall provide a minimum of twelve (12) "before" and twelve (12) "after" photographs, or quantity as directed by the OWNER. Final photographs shall be taken at the same location and in the same direction as preconstruction photograph.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

END OF SECTION

SECTION 01 14 10

CARE AND PROTECTION OF PROPERTY

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Protection of Property

B. Work within Highway Right-of-Way

C. Notice to Property Owner

1.02 PROTECTION OF PROPERTY

A. Entering or occupying with men, tools, materials, or equipment any land other than the right-of-way and easements without written, notarized consent from the property owner is prohibited. Provide a copy of the written, notarized consent to the ENGINEER. Assume full responsibility for use of said private properties and defend OWNER against all claims for damages from use of same.

B. Provide and maintain all necessary watchman, barricades, lights, and warning signs and take all necessary precautions for the protection and safety of the public, OWNER, ENGINEER, and property.

C. Continuously maintain adequate measures to protect all Work from damage and take all reasonable precautions to protect the public's and OWNER's property from injury or loss arising in connection with this Agreement.

D. Make good any damage, injury or loss to the Work, property of the OWNER and the public resulting from lack of reasonable protective precautions.

E. In an emergency affecting the safety of life, the Work, or adjoining property, the CONTRACTOR shall act to prevent such threatened loss or injury without special instructions or authorization from the ENGINEER. Also act, without appeal, if so authorized or instructed by the ENGINEER.

F. Exercise extreme care to prevent damage to trees, flowers, shrubs, etc. Replace or repair any damaged trees, shrubs, flowers, etc.

G. Replace or re-erect fences and guard rails taken down or disturbed, to the satisfaction of the ENGINEER.

H. Conduct work in a manner to properly protect all Underground Facilities. Work near Underground Facilities shall be in accordance with the utility's requirements, rules, and regulations. If any utility is damaged, immediately notify the utility involved so that proper inspection and repair can be made.

I. The OWNER or ENGINEER will attempt to notify the CONTRACTOR of any hazardous condition during non-working hours by telephone. If the OWNER or ENGINEER is unable to reach the CONTRACTOR or the CONTRACTOR fails to correct the hazardous condition utilizing all necessary safety devices within one hour after notification, the OWNER will make all necessary repairs at the expense of the CONTRACTOR. If the hazardous condition is of such a nature, in the opinion of the ENGINEER, that it should be remedied immediately and the CONTRACTOR is unable or refuses to do so, OWNER's personnel will make all necessary repairs at the expense of the CONTRACTOR.

J. Prior to construction, install snow fence to protect trees and plantings as shown on the drawings or directed by the ENGINEER. Secure fence with stakes every five (5) feet.

K. Maintain drainage throughout construction.

1.03 NOTICE TO PROPERTY OWNERS

A. The CONTRACTOR shall provide property owners at least one day advance written notice of pending construction. Keep driveways open and in good condition at all times.

1.04 WORK WITHIN HIGHWAY RIGHTS-OF-WAY

A. Perform and complete all work within the state, county, city, and town rights-of-way to the full satisfaction of the various Departments of Public Works concerned.

B. Conduct operations associated with the Work so as not to interfere with the movement of traffic on highways and with operations of the particular Department of Public Works.

C. If at any time during the work, traffic or facilities of the State of New York, county, City of Rochester, or town are endangered, immediately do such work as the representative of the particular Department of Public Works concerned may direct to restore safety. The expense of restoring safety based on the directions of the particular Department of Public Works representative shall be born solely by the CONTRACTOR.

D. Permit inspection by the State of New York, county, City of Rochester, town, or village at all times as the Work progresses.

E. Provide written notice to the State of New York, county, City of Rochester, town, or village five (5) days before such work is to begin within their right-of-way.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01 22 10

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Measurement and payment criteria applicable to the Work performed under a unit price payment method.

B. Defect assessment and non-payment for rejected work.

C. Procedures for preparation and submittal of applications for payment.

1.02 GENERAL

A. Measurement methods delineated in the individual specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the individual specification section shall govern. Actual quantities provided will determine payment.

B. Within this Section 012210 - Measurement and Payment, where reference is made to the ENGINEER, the OWNER and or the OWNER's designated representative shall be substituted.

C. Take all measurements and compute quantities. The ENGINEER will verify measurements and quantities.

D. Assist ENGINEER by providing necessary equipment, workers, and survey personnel as required.

1.03 UNIT QUANTITIES SPECIFIED

A. Quantities and measurements indicated in the Bid are for bidding and contract purposes only. Quantities and measurements for materials supplied or placed in the Work and verified by the ENGINEER shall determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices stated in the Bid.

C. The quantities included in the Bid Proposal are approximate only and cannot be determined prior to issuance of a Purchase Order. The quantities are utilized solely for the purpose of establishing unit prices for the term of the Contract and for determining

the Low Bidder. The quantities are not guaranteed nor promises given as to the work ordered during the term of the Contract.

1.04 MEASUREMENT OF QUANTITIES

A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

B. Measurement by Area: Measured by square dimension using mean length and width or radius.

C. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

D. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

E. Lump Sum: Items described in Bid.

1.05 APPLICATION FORMAT

A. For each item, provide a column for listing: Item Number; Item Description, Estimated Quantity, Units (LF, EA, CY, etc.), Quantity for this Estimate, Quantity from Previous Estimates, Quantity to Date, Unit Price, Dollar Amount this Estimate, Dollar Amount to Date, Percent Complete, Balance to Finish. Authorized modifications listed as subcategories under their associated Change Orders and retainage must be listed separately.

B. Base estimates of lump-sum items on a schedule dividing each item into its appropriate component parts together with a quantity and a unit price for each part such that the sum of the products of prices and quantities will equal the contract price for the item. Submit schedule for ENGINEER's approval before the first estimate becomes due.

C. Submit invoices for force account work which include, in addition to the above, a complete description of the work performed. Also, include a summary of totals for labor, equipment, materials, labor overhead, construction overhead, and profit as set forth in the Form of Contract.

1.06 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form.

B. Execute certification by signature of authorized officer.

C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for the portion of work performed.

D. List each authorized Change Order as an extension on continuation sheet and include Change Order number and dollar amount as outlined for original items of work.

E. Utilize the Contract Unit Prices for calculation of the Payment Items.

1.07 SUBMITTAL PROCEDURES

A. Submit four copies of all pay requests and change orders, all with original signatures, are to be submitted for review and approval.

B. Submit an updated construction schedule and certified payrolls with each Application for Payment.

C. Submit under transmittal letter.

1.08 SUBSTANTIATING DATA

A. When the ENGINEER requires substantiating information, submit data justifying dollar amounts in question.

B. Provide one copy of data, with cover letter, for each copy of submittal. Show Application number, date and line item by number and description.

1.09 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. When, in the ENGINEER's opinion, it is not practical to remove and replace defective Work, the ENGINEER will direct one of the following remedies:
   1. Defective work may remain, but the unit sum/price will be adjusted to a new sum/price at the discretion of the ENGINEER.
   2. Defective work will be partially repaired according to ENGINEER's instructions, and the unit sum/price will be adjusted to a new sum/price at the discretion of the ENGINEER.

C. Individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.

D. The authority of the ENGINEER to assess defects and identify payment adjustment is final.

1.10 NON-PAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond required lines and levels of the Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected products.

1.11 SHOP DRAWING SUBMITTALS

A. All shop drawings, if necessary and/or as requested by the OWNER or ENGINEER, must comply with the Contract Documents.

B. Submit a minimum of three (3) copies of each shop drawing for ENGINEER's review.
   1. Two (2) copies will be retained for the ENGINEER's use and the remainder will be returned.

C. The ENGINEER will review, and stamp shop drawings as follows:
   1. "APPROVED": shop drawing complies with the Contract Documents and is acceptable as it is. No re-submittal or revision is required.
   2. "MAKE CORRECTIONS NOTED": shop drawing partially complies with the Contract Documents and is acceptable with some minor revisions. ENGINEER will note revisions on shop drawing. No re-submittal is required.
   3. "REVISE AND RESUBMIT": shop drawing partially complies with Contract Documents and is not acceptable as it is. Resubmit shop drawing with additional information.
   4. "REJECTED": shop drawing does not comply with Contract Documents and is not acceptable at all. Resubmit a shop drawing for a different product, method, layout, etc. which complies with Contract Documents.
   5. "SUBMIT SPECIFIED ITEM": shop drawing does not comply with Contract Documents and is not acceptable at all. Resubmit a shop drawing for a product, method, layout, etc. which complies with Contract Documents.

D. Submit and receive back all shop drawings prior to using any associated methods or materials.

E. ENGINEER's acceptance of shop drawings indicates that the submittal has been reviewed to the extent necessary to ensure conceptual compliance with the Contract Documents.

F. Acceptance of shop drawings does not relieve the CONTRACTOR from verifying details including, but not limited to, dimensions, field conditions, spacing, tolerances, materials, etc.

1.12 PAYMENT ITEM DESCRIPTIONS

A. The following includes the description of Payment Items in the Contract, along with a description of the Measurement and Payment for each Payment Item.

PAYMENT ITEM #	DESCRIPTION
120-A	CONNECTING HDPE TO EXISTING STRUCTURE

GENERAL DESCRIPTION:

The work shall consist of connecting HDPE to existing structures, including excavation of all materials, disposal of excavated material, bedding and backfill as shown on the plans and specified, or as directed by the ENGINEER.

ITEM 120-A: CONNECTING HDPE TO EXISTING STRUCTURE

Includes structure coring, pipe connection, mortar grouting, invert repairs as necessary, and coatings.

METHOD OF MEASUREMENT:

ITEM 120-A: CONNECTING HDPE TO EXISTING STRUCTURE

The quantity above shall be the number of connections to structures.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
120-A	CONNECTING HDPE TO EXISTING STRUCTURE	Each

PAYMENT ITEM #	DESCRIPTION
401-A	HEAVY DUTY PAVEMENT RESTORATION
401-E	MEDIUM DUTY PAVEMENT RESTORATION
401-I	LIGHT DUTY PAVEMENT RESTORATION
401-M	CONCRETE BASE PAVEMENT RESTORATION
401-R	TEMPORARY PAVEMENT PATCH (ASPHALT)
401-S	TEMPORARY PAVEMENT PATCH (CONCRETE)

GENERAL DESCRIPTION:

This work shall consist of the furnishing and placing pavement restoration including saw cutting, gravel sub-base, stone base, concrete base, asphalt concrete base course, asphalt concrete binder course, asphalt concrete top course, seam sealer, and tack coat as shown on the plans and specified, or as ordered by the ENGINEER or as specified by the City of Rochester Permit Office or as included in CORSCCD, or as specified by the governing agency.

Asphalt concrete base 8" or > thick.
ITEM 401-A HEAVY DUTY PAVEMENT RESTORATION

Asphalt concrete base 3" to <8" thick.
ITEM 401-E MEDIUM DUTY PAVEMENT RESTORATION

Asphalt concrete base <3" thick.
ITEM 401-I LIGHT DUTY PAVEMENT RESTORATION

Concrete base 8" or > thick.
ITEM 401-M CONCRETE BASE PAVEMENT RESTORATION

As required by CORSCCD or other governing agencies.
ITEM 401-R TEMPORARY PAVEMENT PATCH (ASPHALT)

As required by CORSCCD or other governing agencies.
ITEM 401-S TEMPORARY PAVEMENT PATCH (CONCRETE)

METHOD OF MEASUREMENT:

The quantity shall be the number of square feet, measured to the nearest square foot, of finished pavement surface area installed as measured within the limits of excavation shown on the plans or as approved by the ENGINEER.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
401-A	HEAVY DUTY PAVEMENT RESTORATION	Square Foot
401-E	MEDIUM DUTY PAVEMENT RESTORATION	Square Foot
401-I	LIGHT DUTY PAVEMENT RESTORATION	Square Foot
401-M	CONCRETE BASE PAVEMENT RESTORATION	Square Foot
401-R	TEMPORARY PAVEMENT PATCH (ASPHALT)	Square Foot
401-S	TEMPORARY PAVEMENT PATCH (CONCRETE)	Square Foot

PAYMENT ITEM #	DESCRIPTION
402-A	CONCRETE SIDEWALK RESTORATION
402-B	CONCRETE DRIVEWAY RESTORATION
402-C	ASPHALT DRIVEWAY RESTORATION - LIGHT DUTY
402-D	ASPHALT DRIVEWAY RESTORATION - MEDIUM DUTY

GENERAL DESCRIPTION:

This work shall consist of the furnishing and placing sidewalk and driveway restoration including saw cutting, excavation, disposal of excavated materials, brick/stone salvage, gravel sub-base, stone base, concrete, reinforcement, asphalt concrete, tack coat, seam sealer and joint fill as shown on the plans and specified, or as ordered by the ENGINEER or as specified by the City of Rochester Permit Office or as included in CORSCCD, or as specified by the governing agency.

METHOD OF MEASUREMENT:

The quantity shall be the number of square feet, measured to the nearest square foot, of finished sidewalk and driveway restoration installed.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
402-A	CONCRETE SIDEWALK RESTORATION	Square Foot
402-B	CONCRETE DRIVEWAY RESTORATION	Square Foot
402-C	ASPHALT DRIVEWAY RESTORATION - LIGHT DUTY	Square Foot
402-D	ASPHALT DRIVEWAY RESTORATION - MEDIUM DUTY	Square Foot

PAYMENT ITEM #	DESCRIPTION
402-I	TURF RESTORATION

GENERAL DESCRIPTION:

This work shall consist of furnishing and placing turf restoration including grading, topsoil, grass seed, fertilizer, mulch, mulch anchorage and maintenance as shown on the plans and specified, or as ordered by the ENGINEER.

METHOD OF MEASUREMENT:

The quantity shall be the number of square feet, measured to the nearest square foot, of turf surface area restoration installed.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
402-I	TURF RESTORATION	Square Foot

PAYMENT ITEM #	DESCRIPTION
501-A	DOWNTIME (DIRECTED BY THE OWNER)

GENERAL DESCRIPTION:

This work of this item is defined as the period when the CONTRACTOR is directed by the OWNER to temporarily stop work (downtime) for the OWNER'S conveniences. The period will be as determined by the OWNER. The Downtime shall include all labor and equipment utilized on the Project Site.

METHOD OF MEASUREMENT:

The quantity shall be the number of hours, to the nearest one-half of an hour, for downtime. The OWNER shall determine the number of hours measured.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
501-A	DOWNTIME (DIRECTED BY THE OWNER)	Hour

PAYMENT ITEM #	DESCRIPTION
600-A	UTILITY LOCATING-POT HOLING IN UNPAVED AREAS (RESTORATION PAID SEPARATELY)
600-B	UTILITY LOCATING-POT HOLING IN ASPHALT PAVEMENT (RESTORATION PAID SEPARATELY)
600-C	UTILITY LOCATING-POT HOLING IN CONCRETE PAVEMENT (RESTORATION PAID SEPARATELY)

GENERAL DESCRIPTION:

This work shall consist of the saw cutting of asphalt and concrete pavements, excavation of all materials, disposal of waste materials, protection from the hazards of falling or sliding material, backfill and compaction, for potholes excavated to locate existing underground utilities along the alignment of the proposed bore route.

METHOD OF MEASUREMENT:

ITEM 600-A	UTILITY LOCATING-POT HOLING IN UNPAVED AREAS (RESTORATION PAID SEPARATELY)
ITEM 600-B	UTILITY LOCATING-POT HOLING IN ASPHALT PAVEMENT (RESTORATION PAID SEPARATELY)
ITEM 600-C	UTILITY LOCATING-POT HOLING IN CONCRETE PAVEMENT (RESTORATION PAID SEPARATELY)

The quantity shall be the number of potholes excavated.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
600-A	UTILITY LOCATING-POT HOLING IN UNPAVED AREAS (RESTORATION PAID SEPARATELY)	Each
600-B	UTILITY LOCATING-POT HOLING IN ASPHALT PAVEMENT (RESTORATION PAID SEPARATELY)	Each
600-C	UTILITY LOCATING-POT HOLING IN CONCRETE PAVEMENT (RESTORATION PAID SEPARATELY)	Each

PAYMENT ITEM #	DESCRIPTION
600-D	UNDERGROUND TRUCK TYPE 1 WITH DIRECTIONAL BORE EQUIPMENT
600-E	UNDERGROUND TRUCK TYPE 2 WITH DIRECTIONAL BORE EQUIPMENT

GENERAL DESCRIPTION:

This work shall consist of the furnishing and operating a horizontal directional drilling rig Type 1 or Type 2 including all support equipment, tools, and personnel necessary to perform pilot hole bore, reaming bore, and pull back of product, set up, tear down, equipment and material staging and storing, and restoration of entry, exit and re-circulation pit areas.

METHOD OF MEASUREMENT

The quantity shall be the number of hours that the horizontal directional drilling rig is operated in performing the pilot hole bore, reaming bore, and pull back of product, measured to the nearest one half (1/2) hour.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
600-D	UNDERGROUND TRUCK TYPE 1 WITH DIRECTIONAL BORE EQUIPMENT	Hour
600-E	UNDERGROUND TRUCK TYPE 2 WITH DIRECTIONAL BORE EQUIPMENT	Hour

PAYMENT ITEM #	DESCRIPTION
600-F	VACUUM TRUCK WITH OPERATOR

GENERAL DESCRIPTION:

This work shall consist of the furnishing and operating a vacuum extraction truck for cleaning of frac-out when warranted in environmentally sensitive areas and approved by the Owner.

This payment item does not apply when a vacuum extraction truck is used for Items 600-A through 600-C, or at the discretion of the Contractor for typical mud/spoils removed under Items 601-A through 601-J.

METHOD OF MEASUREMENT

The quantity shall be the number of hours that the vacuum extraction truck or tractor backhoe is operated in performing potholing, measured to the nearest one half (1/2) hour.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
600-F	VACUUM TRUCK WITH OPERATOR	Hour

PAYMENT ITEM #	DESCRIPTION
601-A	BORE AND PULL BACK ONE (1)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-B	BORE AND PULL BACK ONE (1)-6" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-C	BORE AND PULL BACK ONE (1)-8" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-D	BORE AND PULL BACK ONE (1)-10" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-E	BORE AND PULL BACK ONE (1)-12" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-I	BORE AND PULL BACK TWO (2)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
601-J	BORE AND PULL BACK ONE (1) TO THREE (3)-2" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)

GENERAL DESCRIPTION:

This work shall consist of the furnishing and installing, or installing OWNER provided, HDPE pipe along with stainless steel HDD tracer wire using horizontal directional drilling and preparing record documentation of installed materials. This Item shall include removal and disposal of spoils and testing of pipe.

METHOD OF MEASUREMENT

The quantity shall be the number of linear feet of conduit installed as measured from finished terminus to finished terminus, measured to the nearest foot. Multiple conduits shall be considered as one length for purpose of measurement.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
601-A	BORE AND PULL BACK ONE (1)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601-B	BORE AND PULL BACK ONE (1)-6" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601-C	BORE AND PULL BACK ONE (1)-8" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601-D	BORE AND PULL BACK ONE (1)-10" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601-E	BORE AND PULL BACK ONE (1)-12" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot

ITEM NO.	ITEM	PAY UNIT
601-I	BORE AND PULL BACK TWO (2)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601-J	BORE AND PULL BACK ONE (1) TO THREE (3)-2" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot

PAYMENT ITEM #	DESCRIPTION
601-K	FISH PULL TAPE THROUGH HDPE PIPE (PULL TAPE MATERIALS PAID SEPARATELY)

GENERAL DESCRIPTION:

This work shall consist of furnishing and installing the pull tape through the HDPE pipe.

METHOD OF MEASUREMENT

The quantity shall be the number of linear feet of mule tape installed as measured from finished terminus to finished terminus, measured to the nearest foot.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
601-K	FISH PULL TAPE THROUGH HDPE PIPE	Linear Foot

PAYMENT ITEM #	DESCRIPTION
601-L	FUSING 2"-4" DIAMETER HDPE PIPE JOINTS
601-M	FUSING 6"-8" DIAMETER HDPE PIPE JOINTS
601-N	FUSING 10"-12" DIAMETER HDPE PIPE JOINTS

GENERAL DESCRIPTION:

This work shall consist of the providing and operating a joint fusion machine to perform butt fusion of HDPE pipe including support equipment, tools, and personnel necessary to perform butt fusion. This work is intended for locations requiring fusion of pipe, and not as part of a bore and pull back installation of HDPE pipe.

METHOD OF MEASUREMENT

The quantity shall be the length of active time, as determined by the OWNER to successfully butt fuse each HDPE pipe joint, measured to the nearest one half (1/2) hour.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
601-L	FUSING 2"-4" DIAMETER HDPE PIPE JOINTS	Hour
601-M	FUSING 6"-8" DIAMETER HDPE PIPE JOINTS	Hour
601-N	FUSING 10"-12" DIAMETER HDPE PIPE JOINTS	Hour

PAYMENT ITEM #	DESCRIPTION
602-A	PULL BOX INSTALLATION (PRE-CAST STRUCTURE PAID SEPARATELY; FRAME & COVER PROVIDED BY OWNER)
602-B	SPLICE BOX INSTALLATION (PRE-CAST STRUCTURE PAID SEPARATELY; FRAME & COVER PROVIDED BY OWNER)

GENERAL DESCRIPTION:

This work shall consist of furnishing and installing or installing pull boxes and splice boxes; including the saw cutting of asphalt and concrete pavements, excavation of all materials, disposal of waste materials, protection from the hazards of falling or sliding material, backfill and compaction, furnishing and utility marker. The width of excavation around the perimeter of the pre-cast concrete boxes must be of adequate dimension to sufficiently compact backfill surrounding the boxes by mechanical means. In addition, the CONTRACTOR shall install the OWNER provided frames and covers.

METHOD OF MEASUREMENT

The quantity shall be the number of pull boxes/splice boxes installed by the CONTRACTOR.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
602-A	PULL BOX INSTALLATION (PRE-CAST STRUCTURE PAID SEPARATELY; FRAME & COVER PROVIDED BY OWNER)	Each
602-B	SPLICE BOX INSTALLATION (PRE-CAST STRUCTURE PAID SEPARATELY; FRAME & COVER PROVIDED BY OWNER)	Each

PAYMENT ITEM #	DESCRIPTION
603-A	OPEN SHALLOW TRENCH PIPE INSTALLATION (PIPE MATERIALS, TRACER WIRE AND RESTORATION PAID SEPARATELY)

GENERAL DESCRIPTION:

This work shall consist of installing of CONTRACTOR furnished, or installing OWNER furnished duct/pipe; including pipe fusing, installation of warning tape 12-inches below ground directly above the pipe; installation of tracer wire attached to the outside of the pipe, excavation of all materials, disposal of waste materials, protection from the hazards of falling or sliding material, backfill, and compaction as shown on plans and specifications, or as ordered by ENGINEER.

OWNER will direct the proposed horizontal route of pipe to be used. Minimum depth of cover shall be 3 feet over utility conduit, 4 feet for sewer pipe and 5 feet for water pipe.

METHOD OF MEASUREMENT

The quantity shall be the number of linear feet of pipe installation completed by the CONTRACTOR.

BASIS OF PAYMENT:

ITEM NO.	ITEM	PAY UNIT
603-A	OPEN SHALLOW TRENCH PIPE INSTALLATION (PIPE MATERIALS, TRACER WIRE AND RESTORATION PAID SEPARATELY)	Linear Foot

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Coordination

B. Field Engineering

C. Preconstruction Conference

D. Progress Meetings

E. Construction Progress Schedules

F. Final Inspection Conferences

G. Communication

H. Emergency Call Out

1.02 COORDINATION

A. Coordinate scheduling, submittals, and work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion for portions of the Work designated for OWNER's partial use.

1.03 FIELD ENGINEERING

A. Employ a Land Surveyor registered in the State of New York and acceptable to the OWNER.

B. Locate and protect all survey control, survey monuments, property pins and reference points.

C. Control datum for survey is that shown on Drawings.

D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.04 PRECONSTRUCTION CONFERENCE

A. OWNER will schedule a conference at the time of Notice of Award.

B. Attendance required by OWNER and CONTRACTOR.

C. Agenda:
   1. Regulatory Agencies
   2. Utilities
   3. Owner's Representatives
   4. Submission of bonds and insurance certificates.
   5. Distribution of Contract Documents or supplemental information.
   6. Submission of list of subcontractors, list of products, Schedule of Values and Progress Schedule.
   7. Designation of personnel representing the CONTRACTOR, and the OWNER.
   8. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and contract closeout procedures.
   9. Scheduling
   10. Construction facilities and controls provided by OWNER
   11. Temporary utilities provided by OWNER
   12. Survey layout
   13. Housekeeping procedures
   14. Procedures for testing
   15. Procedures for maintaining record documents
   16. Requirements for start-up of equipment
   17. Inspection and acceptance of equipment put into service during construction period

1.05 PROGRESS MEETINGS

A. Attend scheduled meetings throughout progress of the Work at one to four-week intervals, as determined by the OWNER.

B. OWNER will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to participants and those affected by decisions made.

C. Required Attendance: Job superintendent, major Subcontractors and suppliers, OWNER, Funding Agency, and others, as appropriate to agenda topics for each meeting.

D. Agenda:
   1. Review minutes of previous meetings
   2. Review of work progress
   3. Field observations, problems, and decisions
   4. Identification of problems which impede planned progress
   5. Review of submittals schedule and status of submittals
   6. Review of off-site fabrication and delivery schedules
   7. Maintenance of progress schedule
   8. Corrective measures to regain projected schedules
   9. Planned progress during succeeding work period
   10. Coordination of projected progress
   11. Maintenance of quality and work standards
   12. Effect of proposed changes on progress schedule and coordination
   13. Other business relating to Work

1.06 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate as established in Notice of Award.

B. Revise and resubmit as required.

C. Submit schedule with each Application for Payment, identifying changes since previous version.

D. Submit a computer generated or horizontal bar chart with separate line for each major section of Work. Or submit a computer-generated network analysis diagram using the critical path method, generally as outlined in Associated General Contractors of America (AGC) publication, "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

E. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates and duration.

F. Indicate estimated percentage of completion for each item of work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by OWNER and under Allowances

1.07 FINAL INSPECTION CONFERENCES

A. When required in individual Materials and Performance Sections or to meet a project Milestone, a work site Final Inspection Conference will be convened prior to commencing other work.

B. Attendance of parties directly affecting, or affected by, work of the specific Section is required.

C. OWNER will prepare agenda, preside at conference, record minutes, and distribute copies after conference to participants.

D. Review conditions of installation, preparation and installation procedures and coordination with related work.

E. OWNER will issue a punch list of items which need repair, replacement and/or restoration.

1.08 COMMUNICATION

A. Notify OWNER of start of work on project.

B. Notify OWNER of hours to be worked.

C. Notify OWNER in advance when work will be suspended for any reason.

D. Notify OWNER of each subsequent startup.

E. There will be a charge of $200.00 for each time required notification is not provided.

1.09 EMERGENCY CALL OUT

A. Have an employee available at all times for calls and problems which may arise during the project. Employee shall:
   1. Have authority to act and resolve any problems.
   2. Be available after normal working hours, weekends, and holidays.
   3. Carry a pager or cellular phone.

B. Provide the OWNER with employee's name, home phone number, place of residence and pager/cell number.

C. Respond within one hour to a call from the OWNER.

D. Notify the OWNER's office when problem has been resolved.

E. The ENGINEER or OWNER will resolve or repair the problem if there is no response within one (1) hour of the call. If deemed an emergency by the OWNER, no written notice that the OWNER may correct defective work shall be required.

F. All costs incurred by the OWNER or ENGINEER shall be billed to the CONTRACTOR with a minimum charge of One Thousand dollars ($1,000.00) for each event.

G. Failure of the CONTRACTOR or the emergency call out employee to respond to two (2) call outs will result in a work stop order, potential termination of the Contract and/or replacement of that employee as emergency call out employee.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01 42 19

REFERENCE STANDARDS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Quality assurance

B. Schedule of references

1.02 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date for receiving bids.

C. Obtain copies of standards when required by Contract Documents and maintain at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

D. Should specified reference standards conflict with Contract Documents, request clarification from ENGINEER before proceeding.

E. The contractual relationship of the parties shall not be altered by mention or inference contained in any reference document.

1.03 SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331

AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
ANSI	American National Standards Institute 11 West 42nd Street New York, NY 10036
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWS	American Welding Society 550 LeJeune Road, N.W. Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195

HYDRAULIC INSTITUTE STANDARDS
712 Lakewood Center North
14600 Detroit Avenue
Cleveland, OH 44107

MUTCD Manual of Uniform Traffic Control Devices
New York State Department of Transportation
1530 Jefferson Road
Rochester, NY 14623

NEW YORK STATE STANDARD SPECIFICATIONS
New York State Department of Transportation
Official NYSDOT documents posted at:
https://www.dot.ny.gov/main/business-center/engineering/specifications/busi-e-standards-usc

STATE BUILDING CODE
New York State - Department of State
162 Washington Avenue
Albany, NY 12231

SSPC Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213

UL Underwriters' Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

1.04 ABBREVIATIONS

CORSCCD City of Rochester Standard Construction Contract Documents

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Interruption of Service

B. Planned Shutdowns and Notifications

C. Shutdowns

1.02 INTERRUPTION OF SERVICE

A. Do not shut down or interrupt flow through any facility unless specifically permitted to do so, in writing, by the OWNER.

B. Do not operate main line valves, pumps, electrical controls, and other facilities controlling flow. Assist the OWNER in closing all valves necessary for interruption or shutdown of flow.

C. When an interruption of service occurs, work continuously and with expedience until completion of all work necessary to restore service to its normal state.

1.03 PLANNED SHUTDOWNS AND NOTIFICATIONS

A. Notify OWNER and ENGINEER in writing of proposed shutdown of any facility, and approximate duration thereof, a minimum of three (3) days in advance. Include date, time, and extent of duration of shutdown in the written notification to OWNER.

B. Notify all customers, in writing, twenty-four (24) hours prior to shutdown with the notification form provided by OWNER. Completely fill out notification form and distribute it to all affected customers prior to shutdown.

C. Immediately prior to individual service and lateral work, notify the customer again to verify that all water use has been stopped.

D. Bear all responsibility for any loss or damage arising out of the failure of any such customer to receive notice of proposed shutdown or interruption of service.

E. Identify material, size and location of utility or service prior to making shutdown. Do not shut down or cause any interruption of flow until all labor, material, and equipment necessary to perform the work are present at the work site.

F. Provide temporary service where utility cannot be restored within four hours.

G. Restore service as soon as possible. Immediately notify OWNER of said restoration of service.

1.04 EMERGENCY SHUTDOWNS

A. In the event of a rupture of a water main or other failure of any facility, whether the result of the CONTRACTOR's activities or other unrelated matters, act in accordance with the provisions of the Section 015600 – Temporary Barriers and Enclosures.

B. As soon as the shutdown or interruption of service has occurred, notify the Owner of the area affected and the proposed number of hour's duration of the shutdown. In addition, notify the customers who are affected by the shutdown by going door-to-door.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

SECTION 01 55 26

TRAFFIC CONTROL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Work within Right-of-Ways

B. Signs, Signals, and Devices

C. Construction Parking

D. Flagmen

E. Flares and Lights

F. Haul Routes

G. Traffic Signs and Signals

H. Sign Removal

1.02 REFERENCES

A. MUTCD (available at the OWNER'S and ENGINEER's office for review)

1.03 WORK WITHIN RIGHT-OF-WAYS

A. Prevent damage to vehicles on highways and to facilities of the State of New York, county, or town in which the work is being done. Conduct operations so as not to interfere with the movement of traffic on highways and with operations of the particular Department of Public Works involved.

B. Provide written notice to the City of Rochester, State of New York, County or Town Department of Public Works five (5) days before work is to begin in their right-of-way.

1.04 SIGNS, SIGNALS, AND DEVICES

A. Post Mounted and Wall Mounted Traffic Control and Informational Signs: Specified in Part 201 MUTCD.

B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions: Specified in Parts 292 and 294 in MUTCD.

C. Flagman Equipment: As approved by local jurisdictions and Part 293 in MUTCD.

D. Work Zone Warning Signs: As approved by local jurisdiction or as specified in MUTCD Section 238 and Section 300.

1.05 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic, parking, and access by emergency vehicles.

B. Prevent parking on or adjacent to access roads or in non-designated areas.

1.06 FLAGMEN

A. Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

1.07 FLARES AND LIGHTS

A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic as specified in Part 294 of MUTCD.

1.08 HAUL ROUTES

A. Consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

1.09 TRAFFIC SIGNS AND SIGNALS

A. Locate traffic signs and/or signals at approaches to site, on-site, crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic, as specified in Part 201 of MUTCD.

B. Relocate as work progresses, to maintain effective traffic control.

1.10 REMOVAL

A. Remove equipment and devices when no longer required.

B. Repair damage caused by installation.

1.11 TRAFFIC REGULATION

A. Maintain safe and continuous through traffic.

B. Maintain ingress and egress for all adjacent driveways, service roads and public streets.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

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SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Water Control

B. Dust Control

C. Erosion and Sediment Control

D. Noise Control

1.02 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.03 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into atmosphere. This shall include as a minimum, sprinkling and sweeping on paved areas and sprinkling and mulching in unpaved areas.

C. Do not use calcium chloride unless directed by the ENGINEER/OWNER.

1.04 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. Utilize erosion control procedures, including mulching, on site. Furnish erosion control as required and, immediately following (weather permitting), completion of site and access clearing.

G. Allow sediment to settle out of water that interferes with construction before such water enters any surface waterway. Pump water as far as possible from waterway banks when dewatering. Do not damage or kill vegetation by excessive watering or accumulating silt in the discharge area. Install settling basins and plastic filter fabric to achieve environmental objectives as ordered by the ENGINEER.

1.05 NOISE CONTROL

A. Provide all construction equipment with adequate muffler devices.

B. Restrict work to the hours between 7:00 a.m. and 8:00 p.m., unless further restricted as a condition of permits, local regulations, or as specified in the Purchase Order or instructions from the Owner.

1.06 SURFACE WATER CROSSINGS

A. Protect slopes at surface water crossings or drainage ways by installing riprap, sandbags, sod, jute mesh or excelsior blankets as conditions require.

B. Use water diversion berms, sodding, jute mesh or excelsior blankets on slopes exceeding 15 percent.

1.07 ENVIRONMENTAL CONTROLS

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Prohibited construction procedures include, but are not limited to:
   1. Dumping of spoil material in any stream corridor, any wetland, surface waterway or at unspecified locations.
   2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, wetland, or surface waterway.
   3. Damaging vegetation beyond the extent necessary for construction of facilities.

4. Open burning of project debris.
5. Pumping of silt laden water from trenches or other excavations into any surface waterway, stream corridor, or wetland.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION
(Not Used)

END OF SECTION

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SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide labor, materials, equipment and supplies to perform the required clearing and grubbing, excavation, backfill, and grading indicated on the Contract Drawings.

1.02 REFERENCED STANDARDS

A. OSHA's Construction Standards for Excavation, 29 CFR 1926, Subpart P: Excavation, latest revision, as published in the F.R. Vol. 54, No. 209, dated 10/31/89.

B. New York State Department of Transportation Standard Specifications, May 4, 2006.

1.03 DEFINITIONS

A. The following terms shall have the meanings ascribed to them in this Section, wherever they appear in this specification.

B. Rock: Limestone, sandstone, shale, granite, or similar material in solid beds or masses in its original or stratified position which, in the opinion of the Engineer, can be removed only by blasting, drilling, wedging, or use of pneumatic tools, and all boulders with a volume greater than one (1.0) cubic yard. Removal of materials which can be loosened with a pick or backhoe, frozen materials, soft laminated shale or hardpan, pavements, curbs, and similar materials shall be considered as earth excavation.

C. Subgrade Surface: Surface upon which subbase or topsoil is placed.

D. Subbase: Select granular material or other porous material, which is placed immediately beneath pavement or concrete slabs.

E. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Method C).

1.04 SUBMITTALS

A. Samples: Furnish pit location and current DOT acceptance number with each sample.
   1. Select Granular Material: 40 - 50 lbs.
   2. Selected Fill: 40 - 50 lbs.
   3. Crushed Stone: 40 - 50 lbs.
   4. Pea Gravel: 40 - 50 lbs.
   5. Sand: 40 - 50 lbs.
   6. Filter Fabric: 1 sq. yd.

B. Product Data: Manufacturer's specifications, performance characteristics and operating instructions for compaction equipment.

C. Sheeting, Shoring, Bracing: If deemed necessary, submit to the Engineer a detailed plan of any intended slope protection, by sheeting, shoring, or bracing, which shall be in conformance with OSHA's 29 CFR Part 1926, Subpart P, latest revision, and signed by a licensed Professional Engineer. This submittal will not relieve the Contractor of complete responsibility for the successful performance of the intended sheeting, shoring, and bracing methods.

1.05 JOB CONDITIONS

A. Protect newly graded areas from traffic and erosion and keep them free of trash and debris until physical completion of the work.

B. Protect existing public and private utilities and/or structure below ground surface, adjacent to the work site.

C. Protect existing trees and plants during performance of the work. Box trees and plants within the grading limit lines with temporary snow fencing or solidly constructed wood barricades as required. Protect root systems from smothering. Do not store excavated material or allow vehicular traffic or parking within the branch drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems.

D. Cold Weather Requirements: When freezing temperatures are predicted, do not excavate to final required elevations for Concrete Work unless concrete can be placed immediately. Retain enough earth over the bottom elevation of footings to prevent frost penetration.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Select Granular Material: Shall be angular crusher run limestone as delivered unsorted from the crusher and shall be well graded, durable, and composed of rock pieces, chips, and fines. Select Granular Material shall be free from organic or other deleterious materials and in also meet the requirements of (DOT Subbase Course Type 2):

Sieve	Percent Passing
2 inch	100
1/4 inch	25 - 60
No. 40	5 - 40
No. 200	0 - 10

1. Magnesium Sulphate Soundness Test: 20 percent maximum loss by weight after 4 test cycles.

B. Select Fill: Covered under Section 31 23 24.

C. Suitable Fill Material: For use as fill in landscaping and other such applications. Suitable Fill Material shall consist of available site material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, or mixtures thereof. Maximum particle size shall not exceed 2/3 of the layer thickness prior to compaction. Material containing cinders, industrial waste, sludge, building rubble, organic matter including topsoil, sod, muck, and peat shall be considered unsuitable for fill and backfill.

D. Suitable Native Material: Shall be available site material consisting of mineral soil (inorganic), loose materials free from rocks and/or hard chunks of clay, free of sharp materials, and free of frozen materials. If materials on site are found to be not suitable, the Contractor shall import suitable material.

E. Crushed Stone and Crushed Gravel: Shall be clean, durable crushed stone or gravel consisting of regular fragments obtained by crushing. It shall be free from sand, silt, clay, shale, broken slag, organic material, or any other deleterious materials. The material shall be obtained from sources which are approved by the New York State Department of Transportation (NYSDOT), and shall conform to the NYSDOT Standard Specifications, latest edition, Material Designation 703-0201 and 703-0202 respectively, in the sizes stated below.

NYSDOT (Table 704-4 Size)									
1B	1A	1ST	1	2	3A	3	4A	4	5

F. Pea Gravel: Screened Gravel, DOT Material Designation 703-0203, Size 1ST (Table 703-4)

G. Sand cushion: Sand meeting NYS DOT Standard Specifications Section 703-06

H. Sand: ASTM C 33.

I. Stone Filling: (Meeting the requirements of DOT 620-2.01 and 620-2.02)

1. Fine Stone Filling:	90-100%	smaller than 8 inches
	50-100%	larger than 3 inches
	0-10%	smaller than No. 10 Sieve
2. Light Stone Filling:	90-100%	lighter than 100 pounds
	50-100%	larger than 6 inches
	0-10%	smaller than 1/2 inch
3. Medium Stone Filling:	50-100%	heavier than 100 pounds
	0-10%	smaller than 4 inches
4. Heavy Stone Filling	50-100%	heavier than 600 pounds
	0-10%	smaller than 6 inches

J. Dry Rip-Rap: (Meeting the requirements of DOT 620-2.01 and 620-2.03) Dry Rip-Rap shall consist of stones shaped a nearly as practicable in the form of right rectangular prisms. At least 50%, by weight of the stones shall weigh more than 300 pounds each, and the remainder of the stones shall weigh from 100 to 300 pounds each.

2.02 COMPACTION EQUIPMENT

A. Compaction equipment used for the Work is subject to approval by the Engineer. Any equipment not originally manufactured for compaction purposes and equipment which is not in proper working order will not be approved. Furnish manufacturer's specifications covering data not obvious from a visual inspection of the equipment to determine its classification and performance characteristics.

2.03 SHEETING, SHORING AND BRACING

A. Steel sheet piling: Continuous interlock type complete with all required accessories conforming to ASTM A 328 or to ASTM A 572.
   1. Provide steel sheet piling of design, configuration, and length to sustain pressure of earth to be retained.

B. Timber Sheeting, Shoring and Bracing: Timber sheeting, structural grade timber or lumber uprights, stringers and cross braces of sufficient dimension to resist pressure of work to be retained, in conformance with OSHA's 29 CFR Part 1926 Subpart P, latest revision.

PART 3 – EXECUTION

3.01 CLEARING AND GRUBBING

A. Remove all trees, shrubs and other vegetation and all existing improvements both above and below grade only to the extent required to provide new construction.

B. Protect all trees which are to remain with fencing erected beyond the drip line of outermost branches. Contractor shall take all precautions necessary to prevent damage to trees or shrubs to be retained.

C. Where limbs are removed to accommodate construction, they shall be removed carefully, and exposed wood treated with approved dressing. Where roots are exposed or damaged by construction, they shall be carefully and cleanly cut, and the area backfilled to prevent desiccation.

D. Where necessary, the trees shall be pruned to restore the appearance of the tree, or to restore the balance between the root system and top growth.

E. Any tree which is designated to remain that dies or becomes damaged beyond repair shall be replaced by the Contractor at his expense, with a tree of a size and species as directed by the Engineer.

3.02 REMOVAL OF TOPSOIL

A. Strip and stockpile topsoil that will be reused in the Work. Place, grade, and shape stockpiles as directed by the Engineer for protection against erosion and for proper drainage.

3.03 UNDERGROUND UTILITIES

A. Support and protect to the satisfaction of the utility owner, active utilities from any damage during excavation operations.

B. In areas where there appears to be conflict between the existing underground utilities and the construction of the work covered by this Contract, it shall be the responsibility of the Contractor to dig test pits, uncover the existing utility, and promptly inform the Engineer of the existence of a conflict for his review and

determination regarding resolving such situations. The Contractor shall perform the required task of uncovering existing utilities well ahead of the time he intends to perform the new work in such areas. No payment will be made for uncovering existing utilities where they appear to be in conflict with the construction of the new work.

3.04 EXCAVATION AND TRENCHING

A. Effective January 2, 1990, the Contractor shall familiarize himself, and strictly comply with OSHA's Construction Standards for Excavation, 29 CFR Part 1926, Subpart P: Excavation, latest revision, as published in the Federal Register, Vol. 54, No. 209, dated Thursday October 31, 1989. The intended effect of these revised Standards is to increase the protection and safety of employees working in excavations.

B. Excavate earth as required for the Work.

C. Unauthorized Excavations (removal of any material below subgrade elevations indicated on the Drawings, or beyond lateral dimensions indicated or specified herein, without specific written instruction from the Engineer): Backfill and compact unauthorized excavations as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.

D. Slope the sides of excavations to retain soil repose. Sheet and shore excavations where sloping is not possible due to space restrictions or stability of material. Maintain sides and slopes of excavation in a safe condition to conform to OSHA and NYS Department of Labor rules and regulations, latest revisions, until completion of backfilling.

E. Concrete Slabs and Bases: Excavate to the following depths below bottom of concrete for addition of select granular material, unless otherwise indicated:
   1. Interior: 6 inches.
   2. Exterior: 12 inches.

F. Bell and Spigot Pipe: Unless otherwise indicated on the drawings, excavate trenches 24 inches wide for pipes up to 18" diameter plus the outside diameter of the pipe. Excavate trenches 36 inches wide for pipes greater than 18" diameter plus the outside diameter of the pipe. Cut trench bottom true and even. Excavate adequate bell holes to allow ample room for pipe connections and to allow for uniform bearing of pipe on a minimum of 6" depth of stone bedding or as shown on the applicable pipe bedding detail, for its full length.

G. Conduit, Cable, Tubing and Piping (other than bell and spigot): Provide sufficient trench width for installation and to accommodate special backfill when specified.

H. Comply with applicable governing restrictions during excavation and trenching. Shore and brace, or slope sides of excavations when directed in order to conform to governing laws of OSHA, NYS Labor Department.

I. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as directed.

3.05 SHEETING, SHORING AND BRACING

A. Where sloping of excavations is not possible due to space restrictions, provide temporary sheeting with shoring and bracing as required to prevent damage or settlement to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in compliance with OSHA's 29 CFR Part 1926, Subpart P, latest revision. Promptly remove temporary sheeting and shoring when no longer required.

B. Provide permanent steel sheet piling or pressure creosoted timber sheet piling wherever subsequent removal of temporary sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops 12 inches below grade.

3.06 DEWATERING

A. Prevent surface and subsurface water from flowing into excavations and trenches which will interfere with the progress of the work. Pump out any accumulated water and dispose of in a manner approved by the OWNER and the ENGINEER.

3.07 EXISTING DRAINAGE DITCHES

A. Provide positive drainage of surface water at all times during construction of work required under this Contract.

B. Restore existing ditches to their original condition or better, immediately after installing the new work.

C. The Contractor shall be responsible for any damages to public and/or private property resulting from blockage of drainage due to his construction activities and/or any delay in restoration of existing drainage ditches.

D. Fertilize and seed slopes and bottom of ditches to prevent erosion after restoration of these ditches.

3.08 PLACING FILL AND BACKFILL

A. Backfill as promptly as practical, but only after approval by the Engineer. Do not backfill with excavated material unless it meets the requirements of this section.

B. Place backfill and fill materials in layers not more than 12 inches loose depth, except under pavements where layers shall be not more than 6 inches of loose depth. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen or contain frost or ice.

C. Under Exterior Concrete Slabs and Bases:
   1. Up to subgrade surface elevation: Place selected fill when fill or backfill is required.
   2. Subbase material: Place 12 inches of select granular material over subgrade surface.

D. Under Exterior Pavement and Walks:
   1. Up to subgrade surface elevation: Place selected fill when fill or backfill is required.
   2. Subbase material: Select granular material.

E. Landscaped Areas: Place suitable excavated native material or select fill if ordered in writing by the Engineer up to subgrade surface elevation. Do not use material containing rocks over 4 inches diameter within the top 12 inches of suitable material.

3.09 COMPACTION

A. Compact each layer of fill and backfill to the percentage of maximum density specified below. Compact bearing surface material at a moisture content suitable to obtain the required densities, but at not less than 3 percent drier than the optimum content as determined by ASTM D-1557.
   1. Structures (area within 10 ft outside perimeter): 95 Percent
   2. Lawn or unpaved areas: 85 percent
   3. Pavements and walks: 95 percent

3.10 GRADING

A. Rough Grading: Trim and grade excavations required by this contract, to a level 4 inches below finished grades indicated unless otherwise specified herein or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.

B. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
   1. Grassed areas: Finish areas to receive topsoil to within not more than 1 inch above or below the required subgrade surface elevations.
   2. Pavements, Walks, and Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified to within 1/4 inch above or below the required subbase elevation.

C. Spread approved topsoil directly upon prepared subgrade surface to a depth measuring 4 inches after natural settlement of topsoil has occurred in areas to be seeded or to receive sod. Provide greater depth to adjust grades when directed by the Engineer.

3.11 RESTORATION

A. Restore grades to indicated levels where settlement or damage due to performance of Work has occurred. Correct conditions contributing to settlement. Remove and replace improperly placed or poorly compacted fill materials.

B. Restore asphalt concrete pavements, drives, gutters, curbs, and other exterior surfaces damaged during performance of the Work, to match the appearance and performance of existing adjacent surfaces as closely as practicable and in conformance with the applicable municipality's requirements.

C. Restore damaged lawn areas by topsoiling and seeding, or sodding. Water restored lawn areas as required until physical completion of the Work.

3.12 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing.

B. Transport surplus topsoil to area designated by the Owner or the Engineer. Smooth grade deposited topsoil.

END OF SECTION

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SECTION 31 23 17

TRENCHING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Trenches for pipelines and appurtenances

B. Maintaining trenches

C. Encountering underground facilities

D. Existing structures and pavements within the trench limits

E. Trees, bushes, and plantings

F. Surplus material

G. Dust control

H. Voids under adjacent structures

1.02 DEFINITIONS

A. Trenching or Excavation
   1. Grubbing, stripping, removing, storing, and rehandling of all materials of every name and nature necessary to be removed for all purposes incidental to the construction and completion of all the work under construction;
   2. All dikes, ditches, flumes, cofferdams, pumping, bailing, draining, well points, or otherwise disposing of water;
   3. The removing and disposing of all surplus materials from the excavations in the manner specified;
   4. The maintenance, accommodation and protection of travel and the temporary paving of highways, roads and driveways;
   5. The supporting and protecting of all tracks, rails, buildings, curbs, sidewalks, pavements, overhead wires, poles, trees, vines, shrubbery, pipes, sewers, conduits or other structures or property in the vicinity of the work, whether over or underground or which appear within or adjacent to the excavations and the restoration of the same in case of settlement or other injury;
   6. All temporary bridging and fencing and the removing of same.

B. Earth
   1. All materials such as sand, gravel, clay, loam, ashes, cinders, pavements, muck, roots, or pieces of timber, soft or disintegrated rock, not requiring blasting, barring, or wedging from their original beds, and specifically excluding all ledge or bedrock and individual boulders or masonry larger than one-half cubic yard in volume.

C. Backfill
   1. The refilling of excavation and trenches to the line of filling indicated on the Contract Drawings or as directed using materials suitable for refilling of excavations and trenches; and the compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required.

D. Spoil
   1. Surplus excavated materials not required or not suitable for backfill or embankments.

E. Embankments
   1. Fills constructed above the original surface of the ground or such other elevation as specified or directed.

F. Limiting Subgrade
   1. The underside of the pipe barrel for pipelines.

G. Excavation Below Subgrade
   1. Excavation below the limiting subgrade of pipelines.
   2. Excavate to such new lines and grades as required when material encountered at the limiting subgrade is not suitable for proper support of pipelines.

PART 2 – PRODUCTS
(Not Used)

PART 3 – EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum. Locate all utilities and underground obstructions prior to starting excavations, including cutting pavements.

B. Cut pavement and pavement base over the proposed trench before excavating for pipeline installation. Utilize a jackhammer, wheel cutter ("Pizza Cutter") or power-driven saw. Cut pavement to the required trench width as approved by the OWNER.

C. Relocate, remove, and later restore, or replace existing structures in the proposed trench limits and those structures which would be damaged or impede progress.

D. Protect the trunks of trees adjacent to the Work that are not to be cut. Tie back overhanging branches and limbs not to be cut to prevent injury from excavating machinery or any other operations related to the work.

E. Do not cut or remove branches, limbs and roots except for those plantings included in clearing and grubbing areas. In the case of unavoidable damage to plantings, neatly trim the injured portions without splitting or crushing.

F. Remove and temporarily store in soil, any plants and flowers which would be injured by the work. Replant in their original position after the Work has been substantially completed. Maintain until re-established. Replace with plantings of the same kind, quality and size that existed prior to construction when the original plantings die or their growth, beauty or usefulness is diminished as a result of the work.

G. Maintain support of existing power, lighting, telephone, traffic control and utility poles adjacent to excavations as required by the owners of the poles.

H. Do not operate on paved surfaces equipment which has treads or wheels that would cut or damage the pavement.

I. Avoid damage to existing pavement other than pavement within the limits of the trench. Provide the pads of outriggers with protective covers, or place planks or timbers under the pads to prevent damaged to pavements. No payment shall be made for replacement or restoration of pavements beyond the payment limits which are damaged during the Work.

J. Strip and stockpile topsoil in areas to be restored as field for eventual redistribution to its original profile location. Strip the entire depth of topsoil to a width of the trench payment limit plus 2 feet or greater as may be required by conditions or other installations. Stockpile topsoil on the parcel of land from which it was stripped at locations approved by the ENGINEER. Remove 10" and larger rocks from the topsoil.

3.02 EXCAVATION

A. Excavate trenches to the lines and grades specified and as required. Backfill with special granular materials, concrete or other materials as directed by the ENGINEER, any excavated space carried beyond or below the lines and grades shown on the Contract Drawings, or as directed by the ENGINEER. Backfill unauthorized excavations at the CONTRACTOR's expense.

B. Excavate the trench sides vertically between the centerline of the pipe and an elevation 1 foot above the top of the pipe unless this conflicts with the requirements of OSHA. In the case of rock excavation, excavate to 6 inches below invert elevation of pipe and 12 inches wider than the nominal pipe diameter. Maintain a minimum clearance of 6 inches around the pipe.

C. Provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and remove all such water as fast as it may collect, in such a manner as shall not interfere with the progression of the work or the proper placing of pipes, or other work.

D. Prevent damage to surrounding pavement, gutters and structures while excavating.

E. Furnish, place, and maintain such sheeting, bracing, and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, damage the pipe, structures, or other work; diminish the width necessary for construction; otherwise damage or delay the work of the Contract; endanger existing structures, pipes or pavements; or cause the excavation limits to exceed the right-of-way limits.
   1. In no case will bracing be permitted against pipes or structures in trenches or other excavations.
   2. Drive sheeting vertically with the edges tight together as the excavation progresses, and in such manner as to maintain pressure against the original ground at all times. Design all bracing to maintain sheeting in its proper position.
   3. The adequacy of all sheeting and bracing is the sole responsibility of the CONTRACTOR.
   4. Remove and dispose all material which slides, falls, or caves into the established limits of excavations due to any cause whatsoever, at the CONTRACTOR's expense. No extra compensation will be paid to the CONTRACTOR for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

F. Discontinue machine excavation in the vicinity of pipes, conduits and other underground structures and facilities and complete the excavation with hand tools as required by Industrial Code Rule 753.

G. When determination of the exact location of a pipe or other underground structure is necessary for completing the work properly, excavate test holes to determine such locations.

H. When the bottom of any excavation is taken out beyond the limits indicated or prescribed, backfill, and compact the resulting void with #1 or #2 crusher run compacted to 95% maximum modified Proctor density.

I. Remove material which, in the opinion of the ENGINEER, is found to be unsuitable for foundation of the pipeline and appurtenances during excavation. Payment shall be made under the appropriate item of the bid.

J. Use suitable surplus excavated materials for backfill of excavations in rock or to replace other materials unacceptable for use as backfill except in areas which require select backfill. Surplus excavated materials may be stockpiled at appropriate locations as needed for future use or as directed by the ENGINEER.

K. Remove from the site all surplus excavated materials not needed.

L. Replace existing structures (including concrete gutters, concrete sidewalks and curbs that are crossed by the proposed utility) and stone shoulders or other stone areas which are damaged or removed during the Work.

M. When existing driveway culverts are encountered, replace with adequate size (minimum 12-inch diameter). Methods, materials, and alignment to be determined by the applicable highway department.

N. Minimize the creation and dispersion of dust. Sweep and sprinkle with water as required by conditions.

O. Completely fill all voids which occur under existing sidewalks, curbs, gutters, or other structures during the excavation with Type 5 Select Fill.

P. Place and maintain a 2" thick layer of compacted temporary asphalt over backfilled trenches until permanent pavement is placed. Materials and workmanship for temporary pavement shall conform to the State of New York Department of Transportation specifications, the City of Rochester's Standard Specifications, and the specifications of any applicable municipality. The plant mix (cold patch or other approved material) shall be suitable for providing a smooth surface for traffic. Temporary pavement, if required, shall be paid for under the appropriate item in the bid.

END OF SECTION

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SECTION 31 23 18

ROCK REMOVAL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Removal of rock by mechanical methods.

B. Rock excavation and disposal.

1.02 DEFINITIONS

A. Ledge Rock: Solid mineral material with a volume in excess of one (1) cubic yard or solid mineral material that cannot be removed with a 3/4 cubic yard capacity power shovel and which requires drilling, wedging, barring or hammering.

1.03 SUBMITTALS

A. Shop Drawings: Indicate proposed method of rock removal.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Expansive Disintegration Compounds: Grout-type mix of materials that expand upon curing.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify site conditions under provisions of General Conditions.

B. Note subsurface irregularities affecting Work of this section.

C. The Contractor shall provide seismic monitoring, additional XC Insurance, permits and conducting a pre-blast survey.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

3.03 ROCK REMOVAL

A. Excavate and remove rock by the mechanical method. Hammer or drill holes and utilize tools, wedges, or expansive disintegration compounds to fracture rock.

3.04 EXCAVATION, BACKFILL AND DISPOSAL

A. Remove rock from the excavation to the required lines and grades.

B. Excavate to 6 inches below invert elevation of pipe, conduit, or structure, and 12 inches wider than the nominal pipe or conduit diameter or structure width. Maintain a minimum clearance of 6 inches around pipe.

C. Correct over-excavation of rock in accordance with requirements of Section 31 23 17.

D. Install bedding and backfill in accordance with Section 31 23 23.

E. Remove surplus excavated materials from site.

END OF SECTION

SECTION 31 23 23

BACKFILLING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Backfilling around and above pipe and appurtenances

B. Consolidation and compaction

C. Backfill in paved areas, lawn areas and field areas

D. Surplus material

E. Fine grading

1.02 REFERENCES

A. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

B. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

C. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

D. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 – PRODUCTS

2.01 SELECT FILL MATERIALS

A. As specified in Section 31 23 24.

2.02 SUITABLE NATIVE MATERIALS

A. Suitable Native Material: Shall be available site material consisting of mineral soil (inorganic), loose materials free from rocks and/or hard chunks of clay, free of sharp materials, and free of frozen materials. If materials on site are found to be not suitable, the CONTRACTOR shall import suitable material.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify installation has been inspected by the ENGINEER.

3.02 PREPARATION

A. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with select fill and compact to 95% maximum modified Proctor density.

B. When required to obtain the optimum moisture content, add, at no additional cost to OWNER, sufficient water during compaction to assure the specified maximum density of the backfill. If, due to rain or other causes, the material exceeds the optimum moisture content, it shall be allowed to dry, assisted if necessary, before resuming compaction or filling efforts.

3.03 BACKFILLING

A. Backfill all excavations to the original surface of the ground or to such other grades as may be shown, specified, or directed.
   1. Backfill with suitable excavated materials which can be satisfactorily compacted during refilling of the excavation. In the event the excavated materials are not suitable, use select fill as specified or ordered by the ENGINEER.
   2. Refill and compact settlements and repair finished work damaged by settlement at no additional cost to OWNER.

B. Backfill the zone around pipes (under, around and to a depth of 12 inches above the pipe) with washed #1 & #2 stone bedding in accordance with the Pipe Bedding Details. Place the material in by shovel in such a manner as not to damage pipe or appurtenances and in layers not to exceed 6 inches in depth. Compact to 95% maximum modified Proctor density.

C. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

D. Backfill trenches under streets, roads, driveways, walks, gutters and curbs or other areas requiring structural support with select fill, or as directed by the ENGINEER.
   1. Place and compact the select fill or native soil in uniform layers not exceeding 6" in compacted depth. Compact to 95% maximum modified Proctor density. Maintain optimum moisture content of backfill materials to attain required compaction density. Use compaction equipment suitable for material excavated, and pipe or appurtenance installed.

E. For other areas use native soil which was removed during the construction excavations or replacement fill. Distribute stones in the backfill to prevent the formation of voids. Do not incorporate in the backfill stones over 6 inches in any one dimension.

F. Trenches in open fields, lawn areas and wooded areas, may be backfilled by filling in the entire trench, except for the zone around the pipe and the topsoil when stripped and stockpiled, in one operation and compacting the backfill with construction equipment, leaving the fill mounded slightly over the trench. Maintain the surface over the trench during the guarantee period.
   1. For trenches in areas to be restored under the field restoration item, backfill to allow for the original depth of the topsoil which was stockpiled. Upon completion of the subsoil backfilling, place the stockpiled topsoil on top of the subsoil. Remove large rocks (2" and above) and boulders from the topsoil. The cost of this work shall be included in the field restoration item of the bid.

G. Employ a placement method that does not disturb or damage other work. Do not backfill against unsupported foundation walls.

H. Remove surplus backfill materials from site.

I. Each day complete fine grading operations of the work completed the previous day in areas other than pavement. In pavement areas, complete fine grading and install temporary asphalt the same day.

J. Fine grade by leveling disturbed areas to as close to final finish grade as possible, leaving the fill mounded slightly over the trench. Remove all debris and place temporary asphalt as specified in the bid or as directed by the ENGINEER. Payment for temporary asphalt shall be made under the appropriate item of the bid.

3.04 FIELD QUALITY CONTROL

A. The CONTRACTOR shall be responsible for all damage or injury done to pipes, structures, property, or persons due to improper placing or compacting of backfill.

B. Compaction testing shall be performed in accordance with ANSI/ASTM D1556.

END OF SECTION

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SECTION 31 23 24

SELECT FILL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Types of Select Fill

B. Placement and Installation

C. Disposal of Displaced Material

1.02 REFERENCES

A. ASTM D422, Standard Method for Particle-Size Analysis of Soils.

1.03 SUBMITTALS

A. Submit name of supplier and source for each type of select fill material.

B. Provide sample and test report for each type of select fill material.

PART 2 – PRODUCTS

2.01 SELECT FILL MATERIALS

A. Type 1 is #1 Crusher Run Stone - NYSDOT Standard Specification Item No. 304.03: Hard durable limestone or approved equal with the following gradation:

Sieve Size Designation	Percent Passing By Weight
2 inch	100
1/4 inch	25 - 60
No. 40	5 - 40
No. 200	0 - 10

B. Type 2 is #2 Crusher Run Stone - NYSDOT Standard Specification Item No. 304.02: Hard durable limestone or approved equal with the following gradation:

Sieve Size Designation	Percent Passing By Weight
3 inch	100
2 inch	90 - 100
1/4 inch	30 - 65
No. 40	5 - 40
No. 200	0 - 10

C. Type 3 is Run-of-Bank Gravel: Run-of-bank gravel or other approved granular material free from organic matter with a gradation:

Sieve Size Designation	Percent Passing By Weight
1-1/2 inch	100
1/4 inch	30 - 65
No. 200	0 - 10

D. Type 4 is Sand: Coarse sand having the following gradation:

Sieve Size Designation	Percent Passing By Weight
3/8 inch	100
No. 4	90 - 100
No. 8	80 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	10 - 30
No. 100	2 - 10

E. Type 5 is Controlled Density Fill (CDF): "K-Krete", "Flowable Fill", or approved equal with a compressive strength of 50 to 100 psi. Fly ash or other pozzolan-containing materials are not acceptable in the mix design. The consistency shall be suitable for pumping or flowing into the annular space between a casing pipe and the carrier pipe.

F. Type 6 Select Fill (Washed #1, or Washed #1 and #2 Mix).

PART 3 – EXECUTION

3.01 STORAGE AND PROTECTION

A. Store loose granular materials on solid flat surfaces in a well-drained area.

B. Protect materials and prevent mixing with foreign matter.

3.02 INSTALLATION

A. Place select fill in accordance with Section 02227, "Backfill" or as otherwise specified or directed.

B. Employ a placement method that does not disturb or damage other work.

3.03 DISPOSAL OF DISPLACED MATERIALS

A. Remove and properly dispose of surplus or displaced materials.

END OF SECTION

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SECTION 32 12 00

FLEXIBLE PAVING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This Section covers the construction of permanent asphalt pavement and temporary pavement for vehicular traffic, where permanent restoration cannot be completed due to weather or seasonal availability of paving materials.
   1. Contractor shall provide all labor, equipment, and materials necessary to furnish, place pavement, and maintain temporary pavement.

1.02 REFERENCES

A. New York State Department of Transportation's Standard Specifications - Construction and Materials dated May 4, 2006 or latest revision (NYSDOT Standard Specification).

B. City of Rochester, Department of Environmental Services, Standard Construction Contract Documents, November 1991, or latest revision

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with NYSDOT Standard Specifications: Section 400 Bituminous Pavements, Section 600 - Incidental Construction, and Section 700 - Materials Details.

1.04 ENVIRONMENTAL REQUIREMENTS

A. The following weather and environmental limitations shall apply unless otherwise directed by the ENGINEER:
   1. Do not place asphalt base or binder courses when base surface temperature is less than 40 degrees F, or when the surface is wet or frozen.
   2. Do not place asphalt top course when base surface or ambient temperature is less than 45 degrees F, or when the surface is wet or frozen.

1.05 SUBMITTALS

A. Provide mix design.

B. Demonstrate compliance with the appropriate portions of the NYSDOT Standard Specifications.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Permanent Asphalt:
   1. Base Course: NYSDOT Standard Specification Item No. 402.37.
   2. Binder Course: NYSDOT Standard Specification Item No. 402.19.
   3. Top Course: NYSDOT Standard Specification Item No. 402.09.

B. Temporary Cold Mix Asphalt: shall meet the requirements NYS DOT Type 1 Cold Mix Bituminous, item No. 405.0101.

C. Temporary Asphalt Base shall meet the requirements of Type 1 Select Fill.

2.02 ACCESSORIES

A. Tack Coat: NYSDOT Standard Specification Item No. 407.0101, Tack Coat.

PART 3 – EXECUTION

3.01 REQUIREMENTS

A. Furnish all materials, labor, plant, tools, traffic control devices and equipment and complete all work necessary to replace and protect street pavement, driveways, and other pavements removed or damaged during the Work.

B. Replace street pavements, driveways, and other pavements in accordance with the requirements of the City of Rochester, Town, County or State Public Works Department having jurisdiction.

C. When the Work results in the removal or damage to pavement, pavement foundations, or appurtenances, remove the affected portions to the extent ordered by the ENGINEER and replace so that the entire roadway will have a true, uniform surface and the proper grade, alignment, and cross section.

D. All flexible pavements which have been damaged by the CONTRACTOR shall be restored to original condition or per Contract Drawings at no additional cost to the OWNER. Materials and methods for all restoration shall be subject to approval by the ENGINEER.

3.02 EXAMINATION

A. Verify base conditions under provisions of the General Conditions.

B. Verify that compacted subgrade or granular base is dry and ready to support paving and imposed loads.

C. Verify gradients and elevations of subgrade are correct.

3.03 PREPARATION

A. General
   1. Cut existing pavement with an approved power-driven pavement saw at the pavement payment limits or to a point that encompasses all cracked, broken, damaged or undermined pavement. Cuts shall be parallel or perpendicular to the trench to produce straight, even edges. Do not over-cut pavement at corners.
   2. Remove temporary pavement and backfill materials to depth required for permanent base and surface courses. Remove loose or damaged material and trim existing surface course back to solid pavement to ensure bonding with new surface course.
   3. Grade and compact subgrade. Remove soft or weaving spots in subgrade and replace with appropriate select fill material.
   4. Consolidate subbase with a road roller, or other approved compaction device in confined areas, with a minimum of three (3) passes or until there is no visible creeping or settling under the roller.

B. Asphalt
   1. Apply tack coat in accordance with manufacturer's instructions.
   2. Apply tack coat to contact surfaces of curbs, gutters, and existing asphalt.
   3. Use clean fine grit "black beauty" or approved equal to blot excess tack coat.
   4. Coat surfaces of the sides of appurtenances, and manhole and catch basin frames with vegetable-based oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.04 INSTALLATION OF PERMANENT ASPHALT PAVEMENT

A. Place binder course to compacted thickness identified in schedule at end of section.

B. Place wearing course within twenty-four (24) hours of placing and compacting binder course. Place wearing course on all binder patches prior to weekends or holidays.

C. Place wearing course to compacted thickness identified in schedule at end of section.

D. Compact pavement by rolling a minimum of three (3) passes without displacing pavement from position. Hand compact with approved methods and equipment in areas inaccessible to rolling equipment.

E. Develop rolling with consecutive passes to achieve an even, smooth finish without roller marks.

F. Immediately after placement, protect pavement from mechanical damage until vehicular loading can be applied.

G. Apply tack coat to joints, a minimum of twelve (12) hours after the final asphalt course is installed.

H. Apply clean fine grit "black beauty", or approved equal, to tack coated joints to protect vehicular traffic. Grit material shall be free of stones, weeds, sticks and other foreign matter and shall be approved by the ENGINEER prior to use.

3.05 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/4 inch.

3.06 TEMPORARY PAVEMENT PLACEMENT

A. A temporary pavement shall be provided following excavation and backfill operations or where ordered by the Engineer to accommodate vehicular traffic.

B. The temporary pavement shall be composed of a minimum of 2 inches of Type 1 Cold Mix Bituminous Pavement.

C. The temporary pavement shall be kept reasonably smooth and hard at all times. It should remain drained, free of potholes, bumps, irregularities, and depressions.

D. The necessary equipment and personnel to attain and maintain a satisfactory riding surface shall be available at all times and should be used as needed.

E. Grade and cross slope shall match existing driveway or roadway.

F. Special attention to maintenance of the temporary pavement shall be given during weekends, holidays, and during the winter season.

G. The specified asphalt material shall be placed in accordance with the appropriate construction details as outlined in NYS DOT Section 405.

H. The subbase select fill course shall be placed in accordance with the appropriate construction details as specified in Section 31 23 24.

I. Cold mix asphalt shall be placed only when hot mix asphalt is not available due to weather restrictions or as directed by the Engineer.

J. Upon completion of the period that temporary pavement will be required, the asphalt material and subbase course shall be removed.

3.07 SCHEDULES

A. Asphalt Pavements
   1. Street: Comply with the requirements of the Public Works Department having jurisdiction but no less than 1½-inch top course and 1½-inch binder course (measured after compaction).
   2. Driveways and Parking Areas: Match existing pavement courses and thickness but no less than 1-inch top course and 2-inch binder course (measured after compaction).

END OF SECTION

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SECTION 32 13 00

RIGID PAVING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Construction of rigid concrete slabs

1.02 REFERENCES

A. New York State Department of Transportation's Standard Specifications - Construction and Materials dated May 4, 2006 or latest revision (NYSDOT Standard Specification).

B. City of Rochester, Department of Environmental Services, Standard Construction Contract Documents, November 1991, or latest revision

C. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

D. ASTM A185 - Standard Specification for Welded Wire Fabric, Plain, for Concrete Reinforcement.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with NYSDOT Standard Specifications: Section 500 Rigid Pavements, Section 600 - Incidental Construction, and Section 700 - Materials Details.

1.04 ENVIRONMENTAL REQUIREMENTS

A. The following weather and environmental limitations shall apply unless otherwise directed by the ENGINEER:
   1. Do not place concrete when base surface or ambient temperature is less than 40 degrees F, or when the surface is wet or frozen.

1.05 SUBMITTALS

A. Product Data: Provide data on all materials, admixtures and curing compounds.

B. Provide mix design.

C. Demonstrate compliance with the appropriate portions of the NYSDOT Standard Specifications.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Concrete Materials:
   1. NYSDOT Standard Specification Section 501 - Portland Cement Concrete - General Class A.
      a. Compressive Strength: 4000 psi minimum @ 28 days.

2.02 FORM MATERIALS

A. Forms: Steel material, profiled to suit conditions.

B. Expansion Joints: Full depth, 1/2 inch thick, premolded, bituminous-impregnated felt material.

2.03 REINFORCEMENT

A. Welded Steel Wire Fabric: NYSDOT Standard Specification Section 709-02 in conformance with ASTM A82 or A185.
   1. Driveways: 6" x 6" 8/8 (Wire = 0.1620")
   2. Sidewalks: 6" x 6" 10/10 (Wire = 0.1350")
   3. Sidewalks or other rigid slabs in areas of vehicular traffic and loading: 6" x 6" 8/8 (Wire 0.1620")

PART 3 – EXECUTION

3.01 REQUIREMENTS

A. Furnish all materials, labor, plant, tools, traffic control devices and equipment and complete all work necessary to replace and protect street pavement, driveways, gutters, curbs, walks and other pavements and slabs removed or damaged during the Work.

B. Replace street pavements, driveways, gutters, curbs, walks and other pavements in accordance with the requirements of the City of Rochester, Town, County or State Public Works Department having jurisdiction.

C. When the Work results in the removal or damage to pavement, pavement foundations, or appurtenances, remove the affected portions to the extent ordered by the ENGINEER and replace so that the entire roadway will have a true, uniform surface and the proper grade, alignment, and cross section.

D. All sidewalks, gutters and curbs which have been damaged by the CONTRACTOR shall be restored to original condition or per Contract Drawings at no additional cost to the OWNER. Materials and methods for all restoration shall be subject to approval by the ENGINEER.

3.02 EXAMINATION

A. Verify base conditions under provisions of the General Conditions.

B. Verify that compacted subgrade or granular base is dry and ready to support paving and imposed loads.

C. Verify gradients and elevations of subgrade are correct.

3.03 PREPARATION

A. General
   1. Cut existing pavement with an approved power-driven pavement saw at the pavement payment limits or to a point that encompasses all cracked, broken, damaged or undermined pavement. Cuts shall be parallel or perpendicular to the trench to produce straight, even edges. Do not over-cut pavement at corners.
   2. Remove temporary pavement and backfill materials to depth required for permanent pavement. Remove loose or damaged material and trim existing surface course back to solid pavement to ensure bonding with new surface course.
   3. Grade and compact subgrade. Remove soft or weaving spots in subgrade and replace with appropriate select fill material.
   4. Consolidate subbase with a road roller, or other approved compaction device in confined areas, with a minimum of three (3) passes or until there is no visible creeping or settling under the roller.

B. Concrete
   1. Compact existing select fill subgrade or furnish and compact a minimum 6-inch base of Type 1 Select Fill in any areas where gravel subgrade does not exist.
   2. Moisten base to minimize absorption of water from fresh concrete.
   3. Use accelerating admixtures in cold weather only when approved by ENGINEER. Use of admixtures will not relax cold weather placement requirements.
   4. Use of calcium chloride is strictly prohibited.
   5. Use set retarding admixtures during hot weather only when approved by the ENGINEER.

3.04 CONSTRUCTING RIGID CONCRETE SLABS

A. Forming
   1. Check subbase course for proper cross section. Regrade high areas to proper elevation. Fill in low areas with required select fill and compact.
   2. Use steel forms free from warp and of sufficient strength to resist the pressure of the concrete without springing. For finished concrete, use forms that extend for the full depth of the concrete to be placed. Forms shall be approved by the ENGINEER before commencing concrete placement.
   3. Place forms to correct location, alignment, dimensions, and profile. Secure with braces and stakes to retain both horizontal and vertical alignment until removal.
   4. Assemble formwork to permit easy dismantling without damaging concrete.
   5. Place expansion joints in vertical position, and straight lines. Secure during concrete placement.

B. Reinforcement
   1. Place reinforcement at mid-height of slabs-on-grade.
   2. Interrupt reinforcement at expansion joints.

C. Placing Concrete
   1. Place concrete in accordance with NYSDOT Standard Specification Section 500.
   2. Ensure reinforcement, inserts, embedded parts, formed joints and appurtenances are not disturbed during concrete placement.
   3. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur except for concrete subbase.

D. Joints
   1. Sidewalks: Place expansion joints extending to the full depth of the concrete at 25-foot intervals and around fixed structures abutting or extending into or through the concrete. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab at 5-foot intervals between expansion joints.

E. Finishing
   1. Sidewalks: Light broom, radius to 1/4-inch radius, and trowel joint edges.
   2. Driveways, Curbs and Gutters: Light broom or smooth finish to match existing in vicinity.
   3. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

F. Protection
   1. Immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical damage.

3.05 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/4 inch.

3.06 FIELD QUALITY CONTROL

A. Three concrete test cylinders shall be taken for every 75 or less cubic yards of concrete placed each day, at the cost of the OWNER.

B. One additional test cylinder shall be taken during cold weather and cured on site under the same conditions as concrete it represents.

C. One slump test shall be taken for each set of test cylinders taken.

3.07 SCHEDULES

A. Concrete Pavements
   1. Driveways: Match existing thickness, but no less than 6 inches.
   2. Sidewalks: Match existing thickness, but no less than 5 inches, except for driveway areas where a minimum of 6 inches shall be placed.
   3. Road Subbase: Match existing thickness, but no less than 8 inches.
   4. Gutters and other miscellaneous slabs: Match existing thickness or utilize a minimum thickness determined by the ENGINEER.

END OF SECTION

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SECTION 32 92 19

SEEDING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil

B. Placing topsoil

C. Seeding, hydroseeding, mulching and fertilizing

D. Maintenance

1.02 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.03 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. Substantial Completion of Seeding: The Work shall not be accepted as substantially complete until such time as restoration of seeded areas has been completed in accordance with this Section, with the exception of Section 329219, Article 1.07, Maintenance and Protection of Seeded Areas and Article 3.07 Maintenance.

1.04 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

B. All seed to be fresh, clean and from current season's crop.

1.05 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of General Conditions.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.07 MAINTENANCE AND PROTECTION OF SEEDED AREAS

A. Maintain and protect seeded areas from vehicular and pedestrian traffic immediately after placement until grass is well established and exhibits a vigorous growing condition.

PART 2 – PRODUCTS

2.01 SEED MIXTURE

A. Seed Mixture for Lawn Areas:
   1. 29.40% Kentucky Bluegrass, 80% germination
   2. 32.64% Creeping Red Fescue, 85% germination
   3. 35.64% Perennial Ryegrass, 90% germination
   4. 0.30% Crop
   5. 0.50% Weed
   6. 1.52% Inert

B. Seed Mixture for Field and other Non-Lawn Areas:
   1. 50% Annual Ryegrass, 90% germination
   2. 50% Perennial Ryegrass, 90% germination

C. Seed Mixture for Low Maintenance Areas:
   1. 15.0% Birdsfoot Trefoil (Empire), 80% germination
   2. 85.0% Red Fescue (Pennlawn), 85% germination

D. Germination rates shall be based on test results from the previous year.

2.02 SOIL MATERIALS

A. Topsoil for Lawn Areas: Screened, fertile, friable, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay, stone or impurities, plants, weeds, and roots; pH value of minimum 5.5 and maximum 7.5.

B. Topsoil for Field and other Non-lawn Areas: Use the stockpiled topsoil which was stripped from these areas.

C. Topsoil for Low Maintenance Areas: Use stockpiled and screened topsoil as defined above.

D. Stockpile materials onsite at locations approved by the ENGINEER. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

2.03 ACCESSORIES

A. Fertilizer: FS O-F-241, Type I Grade A, recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions: Nitrogen 10 percent, phosphoric acid 6 percent, soluble potash 4 percent.

B. Water: Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

C. Erosion Fabric: Jute matting, open weave.

D. Stakes: Softwood lumber, chisel pointed.

E. String: Inorganic fiber.

2.04 TESTS

A. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the ENGINEER for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this section.

3.02 PREPARATION OF SUBSOIL

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

C. Scarify subsoil to a depth of 3-inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.03 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4-inches in lawn areas. In field areas reapply topsoil that was stripped and stockpiled to its original depth. In areas designated as low maintenance, reapply topsoil that was stripped and stockpiled, and if necessary, add topsoil to obtain a minimum depth of 3-inches. Rake until smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage. The compacted topsoil shall match the preconstruction grade.

3.04 FERTILIZING

A. Apply fertilizer at a rate of 5 pounds per 1000 square feet.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Mix thoroughly into upper 2-inches of topsoil.

D. Water lightly to aid the dissipation of fertilizer.

3.05 HYDROSEEDING

A. If CONTRACTOR elects not to place fertilizer as per Article 3.04, fertilizer is to be incorporated into the seeded slurry.

B. Apply seeded slurry with a hydraulic seeder at a rate of 5 pounds per 1000 square foot evenly.

C. Seeded slurry shall contain wood cellulose fiber, green in color, applied at a rate of 1,000 to 1,500 pounds per acre.

D. Seeded slurry to contain soil seal applied at the manufacturer's recommended rate.

E. Apply water with a fine spray immediately after each area has been mulched. Saturate soil to a depth of 4-inches.

F. Planting Season: April 1 to July 1 and August 15 to October 15.

3.06 PROTECTION OF RESTORED AREAS

A. Identify seeded areas with stakes and string around area periphery. Set string height to 30-inches.

B. Cover seeded slopes where grade is 4-inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

C. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

D. Secure outside edges and overlaps at 36-inch intervals with stakes.

E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6-inches.

3.07 MAINTENANCE

A. Water seeded areas until these areas exhibit a dense, vigorous growth of grass. After three weeks, reseed those areas which do not exhibit a dense, vigorous growth of grass.

B. Roll surface to remove minor depressions or irregularities.

C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

D. Immediately reseed areas which show bare spots.

E. Protect seeded areas with warning signs during maintenance period.

3.08 SCHEDULE

A. Areas maintained as Lawns: Grass seed mixture specified, 4-inches topsoil hydroseed.

B. Field and other non-lawn Areas: Grass seed mixture specified, native soil, and hydroseed.

C. Low Maintenance Areas: Grass seed mixture specified, native and, if necessary, screened topsoil to achieve a minimum depth of 3-inches, hydroseed.

END OF SECTION

SECTION 33 05 08

DIRECTIONAL DRILLING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This Section describes the furnishing and installing, or installing OWNER provided, HDPE pipe along with stainless steel HDD tracer wire using horizontal directional drilling and preparing record documentation of installed materials.

B. Construct directional borings including the drilling of a pilot hole, by means of horizontal directional drilling, enlarging the pilot hole to a diameter suitable for the installation of the product pipe and pulling the product pipe into the enlarged hole, where indicated in the Drawings and in accordance with these specifications.

C. Work specifically indicated to be covered under separate payment items shall be performed in accordance with and paid for under that item.

D. Contractor shall furnish the equipment, labor, and materials; and perform the services as herein provided to install the product pipe. Work shall be completed in accordance with the Contract Documents, Purchase Orders, permits, approvals, easements, and rights-of-way as provided.

1.02 DEFINITIONS

A. *Frac-out*: When directional drilling fluid penetrates fractured bedrock or seeps or flows into the rock, sand, or soil that surrounds the bedrock and travels toward the Earth's surface. A frac-out frequently occurs as result of excessive down-hole pressure.

B. *Potholing*: Investigative construction method to confirm vertical and horizontal location of existing underground utilities or structures by means of vacuum extraction or tractor backhoe.

1.03 REFERENCE STANDARDS

A. ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

B. ASTM D638 – Standard Test Method for Tensile Properties of Plastics

C. AWWA C906 – Polyethylene (Pe) Pressure Pipe & Fittings 4 in (100mm) thru 63 in (1575 mm) for Water Distribution and Transmission

1.04 BONDS AND PERMITS

A. Contractor shall comply with all conditions of the permits relating to Work.

B. Conduct construction operations in conformance with the rules and regulations of all involved Agencies.

1.05 BORING CONTRACTOR

A. Directional borings shall be performed by an approved contractor with experience in such operations, of similar magnitude and conditions.

B. Submit the following data to the Engineer for consideration:
   1. Detailed list of previously completed borings, including name of Owner, name of contact person and phone number.
   2. List of equipment proposed for use.
   3. Proposed construction methods and time schedule for work to be performed.
   4. Qualifications and experience of superintendent and foreman that will supervise directional boring work.
   5. Description of methods to establish and maintain vertical and horizontal control.

1.06 SUBMITTALS

A. Shop Drawings: Complete shop drawings of pipe, fittings, slurry, and accessory materials shall be submitted to the Engineer.
   1. Submit samples of HDPE butt fusion joint produced by personnel and equipment that are proposed for construction of joints on the HDPE pipe. Joint will be reviewed for conformance with USDOT Materials Transportation Bureau, CFR 49, Part 192, fusion qualification procedures. No fusion of pipe to be installed shall commence prior to Engineer review and acceptance of fusion samples.
      a. Submit 2 samples from each joint to be tested.
      b. Test one joint prior to start of work and one joint after installation of 100 linear feet of pipe

B. Prepare and submit a plan to the ENGINEER for approval, detailing the plan and profile route of the conduit. The OWNER will direct the horizontal route to be used. Minimum depth of cover shall be 3 feet over the conduit, 4 feet for sewer and 5 feet for water pipes.
   a. Plan and profile shall be at a scale of not smaller than 1-inch equals 20 feet horizontal and vertical.

C. Pre-construction cost estimate.

D. Certifications
   1. Submit to the Engineer "Certificates of Compliance" with the requirements of ASTM specified hereafter for HDPE pipe delivered to the site, together with Affidavit from the material manufacturer to the Contractor and the Owner, jointly, that the material delivered to the job site meets in every aspect the ASTM requirements set forth in these Specifications. Material delivered to the site without the Certification of Compliance and the Affidavit will not be permitted for use in this project.

1.07 RECORD DRAWINGS

A. Provide record of pilot hole coordinates. The coordinates shall include the station, offset, and elevation of the pilot hole every 30 feet maximum.

1.08 PRECONSTRUCTION PREPARATION

A. Provide for field layout of the bore staging and route including evaluation of soil conditions, utility stakeout and other obstruction information.

PART 2 – PRODUCTS

2.01 MATERIALS

A. The HDPE pipe shall meet the requirements of the following American Society for Testing Material (ASTM): Cell Classification 345434C, ASTM D3350 and meet the requirements of AWWA C906.

Test Description	ASTM Procedure	Test Values
Brittleness Temperature	D746	$-180^{O}F$
Coefficient of Thermal Expansion	D696	$\leq 1.2x10^{-4}$ in/in/^{O}F
Tensile Strength	D638	> 3,200 PSI
Flexural Properties of Plastic	D790	$\geq$ 135,000 PSI
Melt Index	D1238	< 0.11 gm/10 min.
Density	D1505	> 0.955 gm/cm^3
UV Stabilizer	D1603	2.5 % C
Hardness	D2240	65 Shore ":D"

B. HDPE pipe material shall contain suitable UV and thermal stabilizers to provide protection during thermal fusion, and subsequent weather exposure.

C. All HDPE fittings shall be supplied by the same manufacturer of the HDPE pipe, to ensure compatibility of polyethylene resins.

2.02 HDPE PIPE DIMENSIONS

A. Pipe and fittings shall meet AWWA C906 standards

B. Pipe outside diameter shall be equal to ductile iron pipe size.

C. Piping shall be provided as specified on the Purchase Order.

2.03 JOINTS

A. HDPE pipe shall be joined to one another and to polyethylene fitting by thermal butt-fusion, socket fusion, or electro-fusion.

B. Joints shall be smooth on the inside and internal projection beads shall be no greater than .02 inches. Tensile strength at yield of the butt-fusion joints shall not be less than those specified for the pipe.

B. Test a specimen of pipe cut across the butt-fusion joint in accordance with ASTM D638.

2.04 COUPLINGS, FITTINGS, AND ADAPTERS

A. All couplings, fittings, and adapters shall be Mechanical Joint and meet the requirements of AWWA C906.

B. Transition couplings shall be a mechanical-joint type adapter.

2.05 EQUIPMENT, MATERIALS AND SERVICES FURNISHED BY CONTRACTOR

A. The machinery, equipment, tools, materials, supplies, instruments, services, and labor hereinafter listed, including any transportation required for such items, shall be provided at the drill site at the expense of Contractor unless otherwise noted by this Contract.
   1. Drilling Rig: Contractor shall utilize a complete directional drilling rig with adequate thrust, pullback force and rotational torque. Rig shall be adequately equipped with the following major items of equipment: mud pump, auxiliary mud pump, mud mixer, mud cleaner, drill pipe of adequate length and diameter, reamer cutters, drilling bits, stabilizers, pulling head, walkover guidance system or wire line guidance system.
      a. General: Drilling rig equipment used by the Contractor shall be specifically described by the Contractor and be of suitable size and suitable capacity

required for the work to be performed. In the event that the Contractor chooses to use drill rig equipment of greater capacity than suitable for the work, payment will be made at the rate applicable to the suitable equipment. The Owner will determine the suitability of the equipment.

b. Drilling Rig Type 1: The horizontal directional drilling rig shall have a rated minimum thrust and pullback force of 24,000 pounds and rated minimum rotational torque of 3,000 foot-pounds. The rig shall be capable of completing drills in the 500-foot to 2,000-foot range, and the capacity to ream or pull product up to 8-inches in diameter. The rig shall be able to operate in rock, cobble, and gravel soil conditions. The rig shall incorporate a drilling fluid mixing and cleaning system with a rated minimum pump capacity 40 gallons per minute.

c. Drilling Rig Type 2: The horizontal directional drilling rig shall have a rated minimum thrust and pullback force of 40,000 pounds and rated minimum rotational torque of 4,000 foot-pounds. The rig shall be capable of completing drills in the 500-foot to 2,000-foot range, and the capacity to ream or pull product up to 12-inches in diameter. The rig shall be able to operate in rock, cobble, and gravel soil conditions. The rig shall incorporate a drilling fluid mixing and cleaning system with a rated minimum pump capacity of 70 gallons per minute.

2. Trucking service and other transportation, hauling, or winching services as required to move Contractor's property to location, rig up Contractor's rig, rig down Contractor's rig, and remove all of Contractor's equipment from the drill site.
3. Circulating mud pits.
4. Drilling mud, chemicals, other additives, and lost circulation material.
5. Fuel.
6. Tracer Wire: 10- or 12-guage stainless steel as approved by the ENGINEER, conforming to ASTM A555 – Specification for General Requirements for Steel Wire and Wire Rods.
7. Pull Tape: Flat, woven, polyester tape - Lubricated for easy pulling and reduced friction; durably printed w/ sequential footage or meter markings; low elongation for enhanced worker safety; lightweight and easily blown into conduit or innerduct; packaged on sturdy wooden or plastic reels; easily spliced using conventional methods or the MULEKNOT™.
   a. 1,800 pounds minimum pull strength
   b. 830 pounds minimum bowline strength
   c. 1,400 pounds minimum mule knot strength
   d. 3,000-feet maximum reel length
   e. Sequential footage markings
   f. Approximate width of 3/8"
   g. Acceptable Product: Neptco Model RP 1800P or Owner approved equal.

2.06 WATER

A. Contractor shall arrange with the local Water Department for the purchase of water needed for completion of Work. Contractor shall provide temporary water storage tanks, meters, pumps, and accessories of sufficient capacity to complete the Work.

PART 3 – EXECUTION

3.01 EXCAVATIONS

A. Excavate, sheet and brace and adequately dewater excavations in accordance with applicable requirements in Section 31 23 17 - Trenching.

3.02 RESPONSIBILITY FOR ACCESS AND MAINTENANCE OF DRILLSITE

A. Owner shall provide Contractor access to site in accordance with the Purchase Order or Owner's job specific instructions. Contractor shall make temporary site improvements, including clearing and grading, as needed to provide a sound drill site adequate in size and capable of properly supporting the drilling rig. It is recognized that Contractor has superior knowledge of specific needs to complete the Work. The Contractor is to provide and maintain a temporary access road, as needed to allow free access and movement to and from the drilling site in an ordinarily equipped construction vehicle. If it is necessary to use bulldozers, tractors, or any other specialized transportation equipment for the movement of necessary personnel, machinery, or equipment over access roads or on the drilling location, the Contractor so designated shall furnish same at its expense.

3.03 SUBSURFACE AND PHYSICAL CONDITIONS

A. Owner shall provide Contractor data regarding Subsurface and Physical Conditions if available.

3.04 PREPARATION

A. Prepare directional boring machine at the proper horizontal distance from the entry pit to initiate boring operations. All required clearing, grubbing, and restoration work will be completed at no additional cost to the Owner.

B. Initiate directional boring operations by boring at the required line and grade to the entry pit utilizing a computer-controlled drill head of appropriate size. At the entry pit, inspect the line and grade of the boring and make all necessary adjustments before continuing operations.

C. From the entry pit, continue directional boring operations maintaining the proper line and grade to the receiving pit. All required materials, pumps, tarpaulins, coverings, etc. shall be held at the site ready for use to enable work to continue in the event of inclement weather.

D. From the receiving pit, install the appropriately sized backream drill head and backream the necessary sized hole simultaneously pulling back the HDPE pipe to the entry pit. The backream drill head diameter shall be appropriately sized to allow sufficient room to accommodate the product pipe; but not unnecessarily large that it will create a large void.

E. To prevent contamination and entry of debris and deleterious materials from product pipe, close all open ends of pipes and fittings securely with removable watertight plugs to be connected to in the future, at end of workday, during storms, when the work is left at any time, and at such times as the Engineer may direct.

F. Establish erosion controls prior to the start of work.

3.04 PILOT HOLE

A. Contractor shall drill a pilot hole of the appropriate diameter and having the following characteristics:
   1. Pilot Hole Size - to be determined by Contractor.
   2. Entry Angle and Exit Angles - 8° to 25°.
   3. Entry and Exit Point Locations - as shown on the Contract Drawings.
   4. Horizontal tolerances for the entry point shall be plus or minus 5 feet.
   5. Horizontal tolerances for the exit point shall be plus or minus 15 feet.
   6. Vertical tolerances at the plus or minus 5 feet at the center of the drilling (low point).
   7. The pilot hole shall be drilled at a radius, referred to herein as the Bend Radius; greater than or equal to that set forth in the following table. The Bend Radii are based upon HDPE Pipe manufacturer's recommendations regarding minimum allowable bending radii of piping. Greater bending radii may be required to accommodate the flexibility of the drill rods.

Minimum Allowable Bending Radius Table

Nominal Pipe Size inches	O.D. inches	Minimum Bend Radius feet
4	4.80	10
6	6.90	15
8	9.05	19
10	11.10	24
12	13.20	28

3.06 RESTORATION AND MAINTENANCE OF PILOT HOLE

A. Contractor shall be responsible for all efforts to restore the pilot hole to such condition that further drilling or other operations may be conducted. In the event of loss or damage to the pilot hole because of any delay by Contractor or the failure, at any time, of materials, equipment, goods, or services provided by Contractor, including without limitation to the foregoing, the failure of product pipe or equipment either during or after the installation of such product pipe, shall be the Contractor's responsibility.

B. Contractor shall be responsible; in the event it is necessary to shut down Contractor's rig for repairs, including routine rig servicing while Contractor is performing work. Abandoned drill holes shall be filled with approved material in an appropriate manner to prevent settlement and subsurface contamination.

3.07 DRILLING METHODS AND PRACTICES

A. Contractor shall maintain equipment in good condition at all times and shall use all reasonable means to prevent and control loss of circulation and to protect the pilot hole.

B. Subject to the terms hereof, at all times during the drilling of the directional crossing, Contractor shall have the right to control the mud program. The drilling fluid must be of a type and have characteristics acceptable to the Contractor and be maintained by the Contractor. The cost of maintaining the drilling fluid will be borne by the Contractor. Owner shall have the right to make any tests of the drilling fluid that may be necessary at Owner's expense.

C. Contractor agrees to furnish equipment, workmen and instruments acceptable to Engineer and to locate the bottom hole assembly. If, in the opinion of Owner, it becomes advisable to obtain the use of an additional instrument and accessory equipment for the purpose either of checking previous readings or of determining the location of the bottom hole assembly the cost thereof shall be paid by the Owner. Should the pilot hole at any point during the time Contractor is performing work, have either a deviation from the running line or a change of inclination more than the limits prescribed, Contractor agrees to restore the hole to a condition satisfactory to Owner either by conventional methods and procedures while drilling ahead or by redrilling. While operations are being performed Contractor agrees to exercise due diligence and care to maintain the pilot hole specifications, but all risk and expense of maintaining such specifications or restoring the hole in a condition suitable to Owner shall be assumed by Contractor.

D. Work shall include all hauling and disposal of drilling fluids, spoils, and slurry, and site restoration.

3.08 LOSS OR DAMAGE TO DRILLING

A. Subject to the provisions hereof, should the directionally drilled crossing be lost or damaged while Contractor is engaged in the performance of work hereunder, all such loss of or damage to the hole shall be borne by Contractor; and if the hole is not in condition to be carried to the contract length as herein provided, Contractor shall commence a new directionally drilled crossing without delay at Contractor's cost. The right to drill a substitute directionally drilled crossing shall be recurring and the drilling of the new directionally drilled crossing shall be conducted under the terms and conditions of this Contract as if it were the first directionally drilled crossing.

B. Contractor shall not be entitled to any payment or compensation for expenditures made or incurred on or in connection with the abandoned directionally drilled crossing(s).

3.09 SIDETRACKING/SUBSTITUTE DIRECTIONAL DRILLED CROSSING

A. If, before completion of the directionally drilled crossing, Contractor encounters any condition which in Contractor's judgment makes drilling abnormally difficult or hazardous including, but not limited to loss of circulation, partial loss of circulation, water flow, heaving shale, cobble or other similar condition which precludes further drilling using normal procedures, the Contractor, at its sole option, may elect to discontinue operations or to sidetrack or commence operations for the drilling of a substitute directionally drilled crossing at a location agreeable to both parties. The right, but not the obligation, to sidetrack or drill a substitute directionally drilled crossing(s) shall be recurring. Any substituted directionally drilled crossing shall be drilled under the terms and conditions of this Contract.

3.10 DAMAGE TO UNDERGROUND FACILITIES

A. Unless prohibited by laws, rules, or regulations of any federal, state, or local governmental authority that are now or may become applicable to the operations under this Contract, the Contractor shall be responsible for the protection of underground facilities and utilities.

3.11 RECORD KEEPING, COMMITMENTS AND LIABILITY

A. Upon completion of all operations to be performed, Contractor shall notify Owner of such completion by noting the date and hour of such completion upon the daily drilling report form required hereunder.

3.12 INSPECTION AND TESTING OF MATERIALS

A. Contractor agrees to visually inspect all materials furnished before using the same and to notify Owner of any apparent defects therein.

B. The Contractor shall complete a preliminary air pressure test on the piping prior to installation, to ensure fusion of joints and the polyethylene piping is free of leaks and defects.

C. After piping is installed, the Contractor shall perform a hydrostatic pressure test in accordance with the provisions of ASTM F2164. Slowly fill the piping with water, taking care to expel all air from the piping. Perform the hydrostatic test at a pressure appropriate for the end-use of the pipe system, or at a pressure designated in the individual Purchase Order.

D. All testing shall be completed in the presence of the Engineer.

E. The CONTRACTOR shall test the continuity of the installed tracer wire.

3.13 POLLUTION AND CONTAMINATION

A. Except as hereinafter provided, while operations are being conducted, Contractor shall assume all responsibility for, and shall protect, defend, and indemnify Owner from and against any loss, expense, claim, demand or liability for pollution or contamination (including control and removal thereof) originating from:
   1. Spills, leaks or discharges of fuels, lubricants, motor oils, pipe dope, paints, solvents, ballast, seepage and garbage, or any other liquid or solid whatsoever in Contractor's possession and control and directly associated with Contractor's equipment and facilities.
   2. In the event of lost circulation and the inadvertent discharge of drilling fluids outside the pilot hole, Contractor assumes liability for control of such. Contractor shall also be liable for a series of and/or several losses occurring which are attributable directly or indirectly to one accident, event, or cause.

3.14 OTHER INSTALLATION METHODS

A. Other Methods: Submit to the Engineer and appropriate Authorities for their review and approval, the proposed materials, method, and procedures for proposed installation.

3.15 HDPE PIPE JOINTING

A. Assemble and join sections of the HDPE pipe above ground, at the job site, prior to its installation.

B. Joining shall be by Thermal Butt-Fusion method, in strict accordance with the manufacturer's written instructions and in accordance with the applicable ASTM F2620 requirements.

C. The tensile strength at yield of the butt-fusion joints shall not be less than the pipe. Cut a specimen of the pipe across the butt-fusion joints and test in accordance with ASTM D638 requirements. Testing shall be witnessed by the Owner's Representative.

D. Perform all fusion jointing with equipment designed for Butt-Fusion of thermoplastic pipe and by trained and certified personnel.

3.16 BACKFILLING

A. Unless otherwise directed, excavations shall be backfilled, as soon as possible after the work is inspected, tested as required, and accepted, and when the Engineer has given permission to backfill. Immediately prior to backfilling, all rubbish, debris, forms etc., shall be removed from the excavations. Backfilling shall not be done with frozen materials, nor when materials already placed are frozen.

B. Backfill Material: As specified in Section 31 23 23.

END OF SECTION

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SECTION 33 05 65

CONCRETE VAULTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section describes the requirements for precast concrete splice boxes and pull boxes, and accessories.

B. Work shall consist of furnishing and installing or installing pull boxes and splice boxes; including the saw cutting of asphalt and concrete pavements, excavation of all materials, disposal of waste materials, protection from the hazards of falling or sliding material, backfill and compaction, furnishing, and utility marker. The width of excavation around the perimeter of the pre-cast concrete boxes must be of adequate dimension to sufficiently compact backfill surrounding the boxes by mechanical means.

C. Cast iron frame and cover will be provided by the Owner and installed by the Contractor.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C496 – Specification for Steel Wire, Deformed, for Concrete Reinforcement
   2. ASTM C615 – Specification for Deformed, and Plain Billet-Steel Bars for Concrete Reinforcement
   3. ASTM C858 – Standard Specification for Underground Precast Concrete Utility Structures

1.03 SUBMITTALS

A. Submit a minimum of three (3) copies of each shop drawing for ENGINEER's review.
   1. Two (2) copies will be retained for the ENGINEER's use and the remainder will be returned.

B. Submit product information and drawings with plan, section, and elevation views including dimensions.

C. Acceptance of shop drawings does not relieve the CONTRACTOR from verifying details including, but not limited to, dimensions, field conditions, spacing, tolerances, materials, etc.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver precast units to project site. Offload carefully to avoid damage to structures. Store structures in an area to protect from damage. Damaged structures are subject to refusal by the Owner.

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE STRUCTURES

A. Splice Boxes: 4,000 psi precast reinforced concrete with open-bottom and 24-inch diameter opening in top. Integral top and side walls. 12-inch x 12-inch knock-out or cored hole connection for conduit/duct entry. Hanger-hook adjacent to 24-inch top opening for coiling of tracer wire.
   1. 4000 psi at 28-days, grade 60 reinforcement
   2. Design Loading: AASHTO HS20-44 with 30% impact and equivalent soil pressure of 130 pounds per square foot.
   3. Dimensions as shown on Figure 7.01.

B. Pull Boxes: 4,000 psi precast reinforced concrete with open-bottom and 24-inch diameter opening in top. Integral top and side walls. 12-inch x 12-inch knock-out or cored hole connection for conduit/duct entry. Hanger-hook adjacent to 24-inch top opening for coiling of tracer wire.
   1. 4000 psi at 28-days, grade 60 reinforcement
   2. Design Loading: AASHTO HS20-44 with 30% impact and equivalent soil pressure of 130 pounds per square foot.
   3. Dimensions as shown on Figure 7.02.

C. Acceptable Manufacturer:
   1. Kistner Concrete Products, Inc.
   2. OWNER approved equal.

PART 3 – EXECUTION

3.01 GENERAL

A. This work shall consist of furnishing and installing or installing pull boxes and splice boxes; including the saw cutting of asphalt and concrete pavements, excavation of all materials, disposal of waste materials, protection from the hazards of falling or sliding material, backfill and compaction, furnishing and utility marker. The width of excavation around the perimeter of the pre-cast concrete boxes must be of adequate dimension to sufficiently compact backfill surrounding the boxes by mechanical means.

In addition, the CONTRACTOR shall install the OWNER provided frames and covers.

3.02 CONSTRUCTION

A. Install pull boxes and splice boxes on minimum of 6-inches of No. 1 and No. 2 crushed stone leveling base. Backfill around splice and pull boxes with material appropriate for the site condition. The width of excavation around the perimeter of the pre-cast concrete boxes must be of adequate dimension, as approved by the ENGINEER, to sufficiently compact backfill surrounding the boxes by mechanical means.

B. Grass Areas: Common earth meaning clay, loam, sand, gravel, topsoil, and similar material free from debris and frozen materials, and which may contain some stones, pebbles, lumps, and rock fragments up to 3-inches in greatest dimension.

C. Asphalt and Concrete Areas: Select fill sand, gravel, and similar material free from clay, loam, organic material, debris, frozen material, and shall contain only small amounts of stone, pebbles, or lumps over one inch in greatest dimension, but none over 2-inches in greatest dimension up to the asphalt or concrete sub-base.
   1. In asphalt and concrete areas, provide materials and methods to match or exceed existing materials.

D. Set frame and cover provided by Owner. Set frame on mortar leveling course or provide brick course or precast concrete adjustment rings so that top of frame is flush with finish grade.

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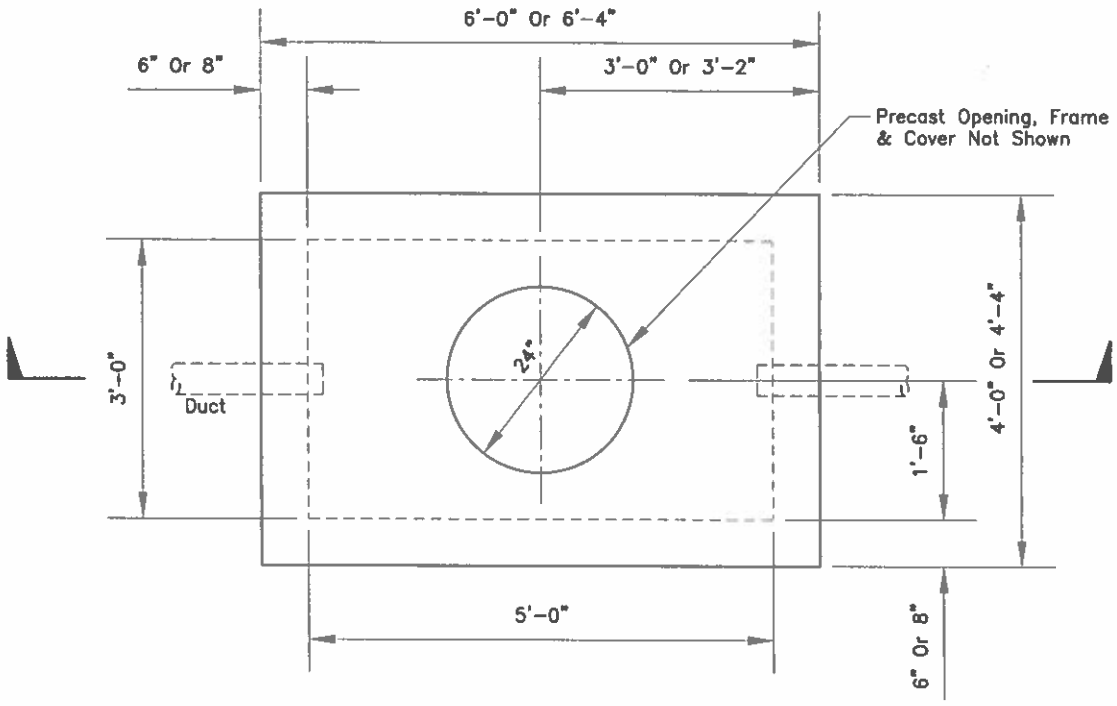

PLAN VIEW
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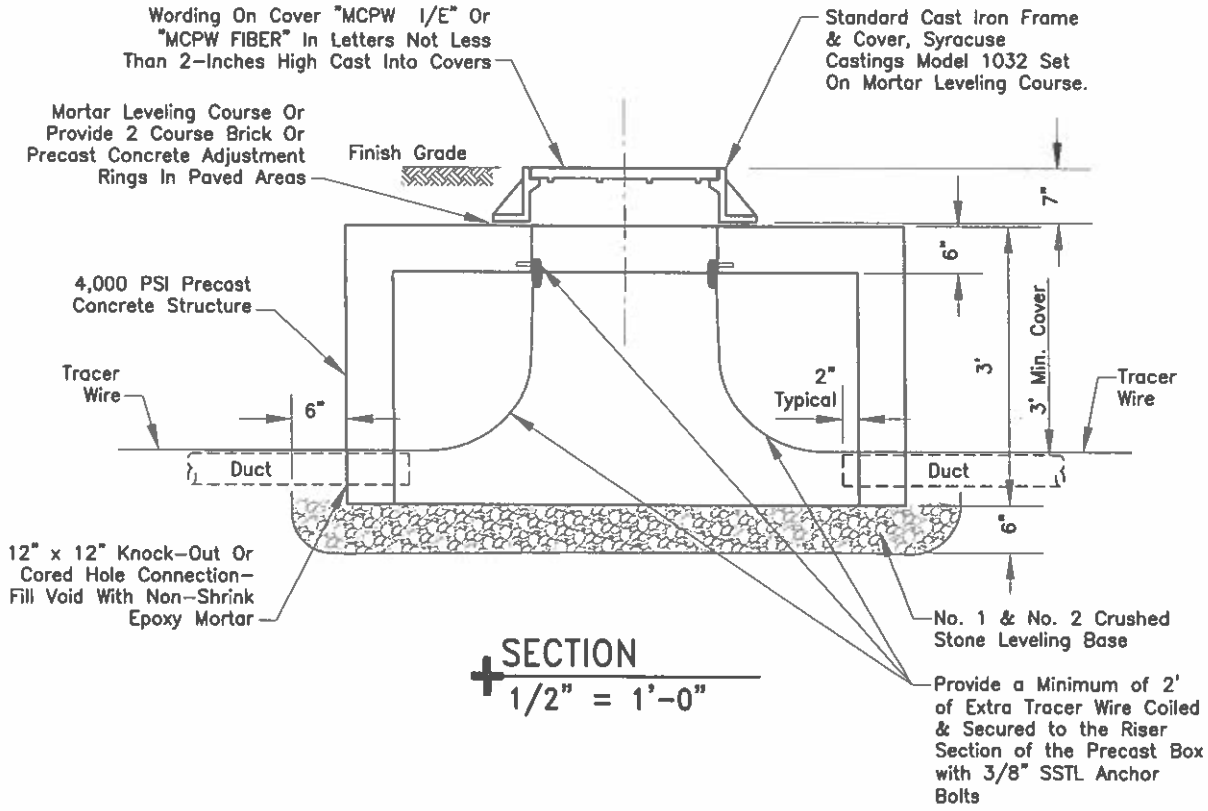

SECTION
1/2" = 1'-0"

MONROE COUNTY PURE WATERS

January 2021	3'-0" x 5'-0" Precast Concrete Splice Box Type 1 Detail	FIGURE 7.01

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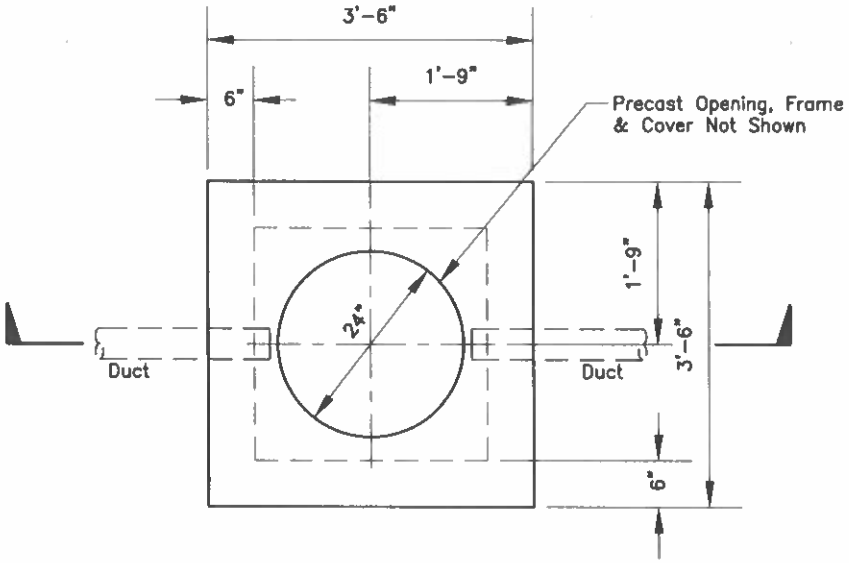
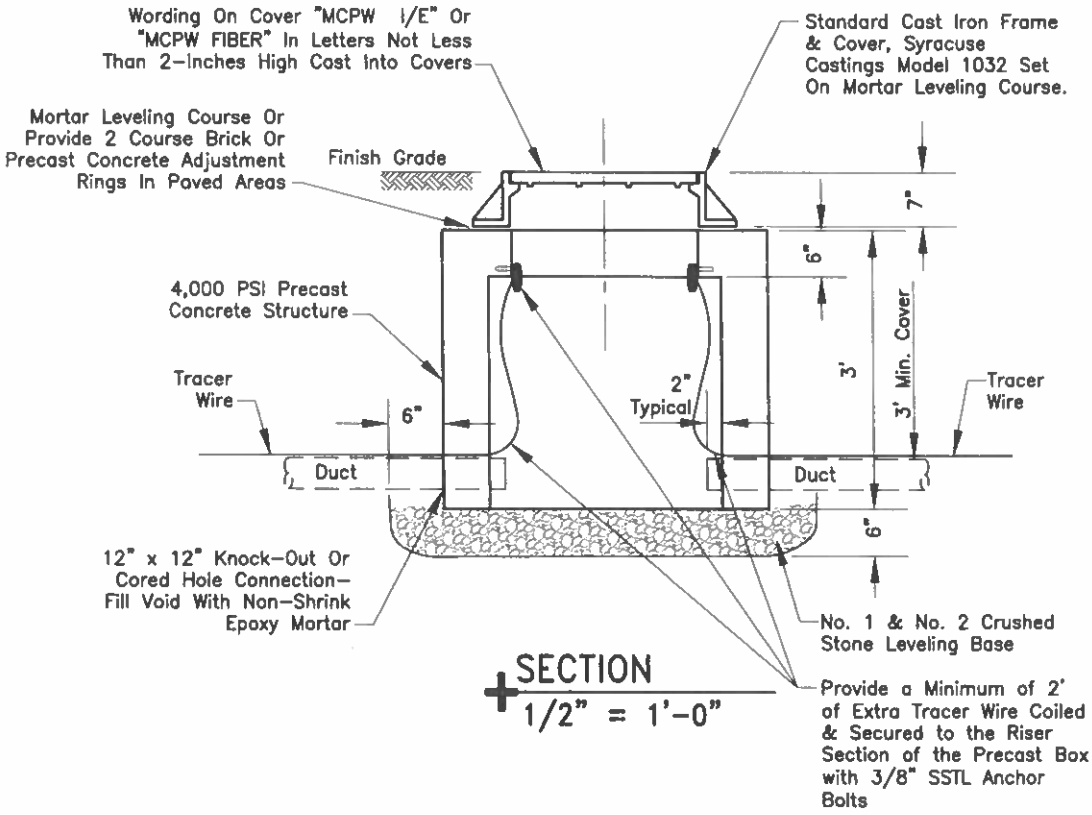
Time Printed: Fri Jan 8 13:57 2021 Filename: MCOES\Tcc#6\Tcc#6precastConc-Fig7.01 Layout: Pull Box Type 1 Pen Setting File: 800psFullcolor.ctb



PLAN VIEW
1/2" = 1'-0"



SECTION
1/2" = 1'-0"

MONROE COUNTY PURE WATERS

January 2021	30" x 30" Precast Concrete Pull Box Type 1 Detail	FIGURE 7.02

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CONTRACT TITLE: TCC#6, Horizontal Directional Drilling
CONTRACTOR: Burrows Brothers, Inc. (Vendor# 11112226)
AGREEMENT: 7700000054

TCC#6 Pay Item	TCC#6 Description (SAP Short Text)	Net Price	OPU (Order Price Unit)
120I	Connect HDPE to Existing Structure	$ 242.00	EA
401A	Heavy Duty Pavement Restoration	$ 25.00	SF
401E	Medium Duty Pavement Restoration	$ 17.60	SF
401I	Light Duty Pavement Restoration	$ 14.80	SF
401M	Concrete Base Pavement Restoration	$ 22.00	SF
401R	Temp. Pavement Patch (Asph.) as Req'd by CORSCCD	$ 12.20	SF
401S	Temp. Pavement Patch (Concr.) as Req'd by CORSCCD	$ 19.50	SF
402A	Concrete Sidewalk Restoration	$ 30.30	SF
402B	Concrete Driveway Restoration	$ 19.52	SF
402C	Asphalt Driveway Restoration - Light Duty	$ 14.80	SF
402D	Asphalt Driveway Restoration - Medium Duty	$ 17.65	SF
402I	Turf Restoration	$ 1.48	SF
501A	Downtime (Directed by Owner)	$ 300.00	HR
600A	Pot Holing in Unpaved Areas (Restor. Paid Sep.)	$ 110.00	EA
600B	Pot Holing in Ashpalt Pavement (Restor. Paid Sep.)	$ 285.00	EA
600C	Pot Holing in Concrete Pavement (Restor. Paid Sep.)	$ 285.00	EA
600D	Underground Truck Type 1 w/ Drectional Bore Equip.	$ 487.00	HR
600E	Underground Truck Type 2 w/ Directional Bore Equip.	$ 680.00	HR
600F	Vacuum Truck with Operator	$ 260.00	HR
601A	Bore & Pull Back One (1) - 4" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 5.00	LF
601B	Bore & Pull Back One (1) - 6" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 6.50	LF
601C	Bore & Pull Back One (1) - 8" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 8.65	LF
601D	Bore & Pull Back One (1) - 10" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 17.00	LF
601E	Bore & Pull Back One (1) - 12" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 19.00	LF
601I	Bore & Pull Back Two (2) - 4" HDPE (Pipe & Tracer Wire Paid Sep.)	$ 8.00	LF
601J	Bore & Pull Back One (1) to Three (3) - 2" HDPE (Pipe & Tracer Wire Paid Se	$ 5.00	LF
601K	Fish Pull Tape Through HDPE (Pull Tape Mtls Paid Sep.)	$ 0.30	LF
601L	Fusing 2"-4" Diameter HDPE Pipe Joints	$ 135.00	HR
601M	Fusing 6"-8" Diameter HDPE Pipe Joints	$ 217.00	HR
601N	Fusing 10"-12" Diameter HDPE Pipe Joints	$ 217.00	HR
602A	Pull Box Installation (Pre-Cast Structure and F&C Paid Sep. or Furnished by C	$ 700.00	EA
602B	Splice Box Installation (Pre-Cast Structure and F&C Paid Sep. or Furnished by	$ 1,400.00	EA
603A	Open Shallow Trench Pipe Installation (Pipe Mts & Tracer Wire Paid Sep)	$ 13.16	LF