



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 #: 0108-16 (4700007348)

CONTRACT DATES: 05/26/16 – 12/31/16

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VENDOR(S): BURROWS BROTHERS INC.
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WEBSTER, NY 14580

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CONDITIONS OF CONTRACT

(The following are pertinent excerpts from Burrows Brothers, Inc. contract with Monroe County for "Other Agencies" use.)

CONTRACT TERM

The Contract shall extend from January 1, 2016 through December 31, 2016 with the option to extend for four (4) additional one (1) year periods at the mutual consent of both parties.

SCOPE OF WORK

Horizontal Directional Drilling -Term Construction Contract (TCC#6) 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).

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 One Hundred Thousand Dollars (\$100,000).
- 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.

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.

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.

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.

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.

INSURANCE

- 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.

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.

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 obligations 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 possession of the premises and of all materials, tools, and appliances 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.

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.

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.

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**SECTION 01015
GENERAL PROVISIONS**

1. GENERAL

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.

2. SCOPE OF WORK

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.

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

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.

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.

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:

- High Density Polyethylene (HDPE) pipe and fittings.
- Pre-cast concrete structures.
- Stainless steel HDD tracer wire.
- Polyester pull tape.

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.

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

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.

3. DEFINITION

- a. Within this section (Section 01015, "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.

4. 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.

5. PROTECTION OF PROPERTY

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.

6. 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.

7. 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.

8. 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.

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.

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.

9. 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.

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.

11. DUST CONTROL

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.

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.
- e. 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.

13. CONSTRUCTION PHOTOGRAPHS

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 so as 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.

END OF SECTION

**SECTION 01050
MEASUREMENT AND PAYMENT**

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 (Section 01050, "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 such as, but not limited to, dimensions, field conditions, spacing, tolerances, materials, etc.

1.12 PAYMENT ITEM DESCRIPTIONS

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

PAYMENT ITEM #**DESCRIPTION**

ITEM 120I 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 120I - CONNECTING HDPE TO EXISTING STRUCTURE

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

METHOD OF MEASUREMENT:

ITEM 120I - CONNECTING HDPE TO EXISTING STRUCTURE

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

BASIS OF PAYMENT:**ITEM NO.****ITEM****PAY UNIT**

ITEM 120I

CONNECTING HDPE TO EXISTING STRUCTURE

Each

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

Asphalt concrete base 3" to <8" thick.

ITEM 401E: MEDIUM DUTY PAVEMENT RESTORATION

Asphalt concrete base <3" thick.

ITEM 401I: LIGHT DUTY PAVEMENT RESTORATION

Concrete base 8" or > thick.

ITEM 401M: CONCRETE BASE PAVEMENT RESTORATION

As required by CORSCCD or other governing agencies.

ITEM 401R - TEMPORARY PAVEMENT PATCH (ASPHALT)

As required by CORSCCD or other governing agencies.

ITEM 401S - 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. In areas of cold milling, the area of the pavement replacement over the sewer excavation will be deducted from the milled area for separate payment.

BASIS OF PAYMENT:

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

PAYMENT ITEM #**DESCRIPTION**

ITEM 402A	CONCRETE SIDEWALK RESTORATION
ITEM 402B	CONCRETE DRIVEWAY RESTORATION
ITEM 402C	ASPHALT DRIVEWAY RESTORATION - LIGHT DUTY
ITEM 402D	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.

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:

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

PAYMENT ITEM #

ITEM 402I

DESCRIPTION

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.

402I

ITEM

TURF RESTORATION

PAY UNIT

Square Foot

PAYMENT ITEM #**DESCRIPTION**

ITEM 501A DOWNTIME (DIRECTED BY THE OWNER)

GENERAL DESCRIPTION:

This work of this item is defined as the period of time when the CONTRACTOR is directed by the OWNER to temporarily stop work (downtime) for the OWNER'S conveniences. The period of time 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**

501A

DOWNTIME (DIRECTED BY THE OWNER)

Hour

PAYMENT ITEM #**DESCRIPTION**

501F

MOBILIZATION/DEMOBILIZATION

GENERAL DESCRIPTION:

This work is defined as a condition when the OWNER directs the CONTRACTOR to mobilize materials and equipment for the convenience of the OWNER. Mobilization means the act of transporting materials and equipment to the project site.

This work shall consist of:

1. Mobilization of all construction equipment, materials, supplies appurtenances and the like, manned and ready for commencing and continuing the Work.
2. The laying out of the bore staging and route including evaluation of soil conditions, utility stakeout and other obstruction information.
3. Preparation and submittal of 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.
4. Preparation of a pre-construction cost estimate.
5. The removal of all construction equipment, unused materials and supplies, waste materials, appurtenances and the like from the Work site.

METHOD OF MEASUREMENT:

The quantity shall be the number of mobilization requests provided to the CONTRACTOR by the OWNER.

BASIS OF PAYMENT:**ITEM NO.****ITEM****PAY UNIT**

501F

MOBILIZATION/DEMOBILIZATION

Each

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

The quantity shall be the number of potholes excavated.

BASIS OF PAYMENT:

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

PAYMENT ITEM #

DESCRIPTION

ITEM 600D

UNDERGROUND TRUCK WITH DIRECTIONAL BORE EQUIPMENT

GENERAL DESCRIPTION:

This work shall consist of the furnishing and operating a horizontal directional drilling rig 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.

EQUIPMENT:

The horizontal directional drilling rig shall have a minimum of 40,000 pounds of push/pull, and 4,000 pounds of torque. 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 minimum mud motor size of 3 3/8 inches and minimum pump capacity 80 gallons per minute. The minimum size of the inner diameter bore or watercourse shall be 1 inch.

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

600D UNDERGROUND TRUCK WITH DIRECTIONAL BORE EQUIPMENT

Hour

<u>PAYMENT ITEM #</u>	<u>DESCRIPTION</u>
ITEM 601A	BORE AND PULL BACK ONE (1)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
ITEM 601B	BORE AND PULL BACK ONE (1)-6" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
ITEM 601C	BORE AND PULL BACK ONE (1)-8" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
ITEM 601I	BORE AND PULL BACK TWO (2)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)
ITEM 601J	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. Tracer wire shall be 10 or 12 gauge stainless steel, as approved by the ENGINEER, conforming to ASTM A555- Specification for General Requirements for Steel Wire and Wire Rods.

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:

<u>ITEM NO.</u>	<u>ITEM</u>	<u>PAY UNIT</u>
601A	BORE AND PULL BACK ONE (1)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601B	BORE AND PULL BACK ONE (1)-6" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601C	BORE AND PULL BACK ONE (1)-8" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601I	BORE AND PULL BACK TWO (2)-4" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot
601J	BORE AND PULL BACK ONE (1) TO THREE (3)-2" HDPE (PIPE MATERIALS AND TRACER WIRE MATERIAL PAID SEPARATELY)	Linear Foot

PAYMENT ITEM #

ITEM 601K

DESCRIPTION

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.

The polyester tape shall be Model # RP 1800P as manufactured by Neptco or approved equal. The polyester tape strength shall be a minimum of 1800 lbs, with a typical bowline strength of 830 lbs; a typical mule knot Strength of 1400 lbs; Min Reel Length: 3000'; Max Reel Length: 3000'; with sequential footage markings; with an approximate width of 3/8".

Features/Benefits include: 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.

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

601L

FISH PULL TAPE THROUGH HDPE PIPE

Linear Foot

PAYMENT ITEM #**DESCRIPTION**

ITEM 602A

PULL BOX INSTALATION
(PRE-CAST STRUCTURE PAID SEPARATELY, FRAME & COVER PROVIDED BY OWNER)

ITEM 602B

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 in order to sufficiently compact backfill surrounding the boxes by mechanical means. In addition, the CONTRACTOR shall install the OWNER provided frames and covers.

REFERENCES:

American Society for Testing and Materials (ASTM):

ASTM C496 – Specification for Steel Wire, Deformed, for Concrete Reinforcement

ASTM C615 – Specification for Deformed, and Plain Billet-Steel Bars for Concrete Reinforcement

MANUFACTURED UNITS:

Pull boxes and splice boxes shall be reinforced pre-cast concrete, 4000 psi at 28-days, grade 60 reinforcement.

1. Design Loading: AASHTO HS20-44 with 30% impact and equivalent soil pressure of 130 pounds per square foot.

Splice boxes shall be reinforced pre-cast concrete, 4000 psi at 28-days, grade 60 reinforcement.

1. Design Loading: AASHTO HS20-44 with 30% impact and equivalent soil pressure of 130 pounds per square foot.

Acceptable Manufacturer:

1. Kistner Concrete Products, Inc.
2. OWNER approved equal

Provide wording on cover in letters not less than 2-inches tall: "MCPW I/E" or "MCPW FIBER".

CONSTRUCTION:

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, in order to sufficiently compact backfill surrounding the boxes by mechanical means.

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.

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.

In asphalt and concrete areas, provide materials and methods to match or exceed existing materials

METHOD OF MEASUREMENT

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

BASIS OF PAYMENT:

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

PAYMENT ITEM #

ITEM 603A

DESCRIPTIONOPEN 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**

603A

OPEN SHALLOW TRENCH PIPE INSTALLATION
(PIPE MATERIALS, TRACER WIRE AND
RESTORATION PAID SEPARATELY)

Linear Foot

End of Section

**SECTION 01100
COORDINATION AND MEETINGS**

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.
- E. 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 situation 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.

END OF SECTION

**SECTION 01101
REFERENCE STANDARDS**

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 Box 19150 Reford Station Detroit, MI 48219
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, Ohio 44107

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

NEW YORK STATE STANDARD SPECIFICATION
New York State Department of Transportation
1530 Jefferson Road
Rochester, New York 14623

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

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

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

END OF SECTION

**SECTION 01102
CARE AND PROTECTION OF PROPERTY**

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.

END OF SECTION

**SECTION 01103
INTERRUPTION OF CUSTOMER SERVICE**

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 entitled, "Care and Protection of Property".
- B. As soon as the shutdown or interruption of service has actually taken place, 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.

END OF SECTION

**SECTION 01104
TEMPORARY CONTROLS**

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, sand bags, 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.

END OF SECTION

**SECTION 01105
TRAFFIC REGULATION**

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.

END OF SECTION

DIVISION 2: SITE WORK

02200 EARTHWORK	8
02225 TRENCHING	5
02227 BACKFILLING	3
02229 ROCK REMOVAL	2
02230 SELECT FILL	2
02444 DIRECTIONAL BORING	8

SECTION 02200

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

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

- B. Select Fill: Covered under Section 2230.
- 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)

Fine Stone Filling:	90-100%	smaller than 8 inches
	50-100%	larger than 3 inches
	0-10%	smaller than No. 10 Sieve
Light Stone Filling:	90-100%	lighter than 100 pounds
	50-100%	larger than 6 inches
	0-10%	smaller than 1/2 inch
Medium Stone Filling:	50-100%	heavier than 100 pounds
	0-10%	smaller than 4 inches
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 as nearly as practicable in the form of right rectangular prisms. At least 50%, by weight of the stones shall weigh in excess of 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

**SECTION 02225
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 - None

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.

In no case will bracing be permitted against pipes or structures in trenches or other excavations.

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.

The adequacy of all sheeting and bracing is the sole responsibility of the CONTRACTOR.

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

**SECTION 02227
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 02230.

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.

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.

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.

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 in the course of 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.

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.

A.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

**SECTION 02229
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 02225.
- D. Install bedding and backfill in accordance with Section 02227.
- E. Remove surplus excavated materials from site.

END OF SECTION

**SECTION 02230
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:

<u>Sieve Size Designation</u>	<u>Percent Passing By Weight</u>
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:

<u>Sieve Size Designation</u>	<u>Percent Passing By Weight</u>
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:

<u>Sieve Size</u> <u>Designation</u>	<u>Percent Passing</u> <u>By Weight</u>
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:

<u>Sieve Size</u> <u>Designation</u>	<u>Percent Passing</u> <u>By Weight</u>
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

SECTION 02444
DIRECTIONAL BORING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK INCLUDED

- A. 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.
- 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 REFERENCE STANDARDS

- A. ASTM D3350 - HDPE Pipe.

1.03 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.

1.04 BORING CONTRACTOR

- A. Directional borings shall be performed by an approved contractor with past 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.

1.05 SUBMITTALS

A. Shop Drawings

Complete shop drawings of pipe, fittings, slurry and accessory materials shall be submitted to the Engineer.

B. Certifications

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.

1.06 RECORD DRAWINGS

- A. The Contractor shall provide records of pilot hole coordinates. The coordinates shall include the station, offset and elevation of the pilot hole every 30 feet maximum.

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 also meet the requirements of AWWA C906.

<u>Test Description</u>	<u>ASTM Procedure</u>	<u>Test Values</u>
Brittleness Temperature	D746	-180°F
Coefficient of Thermal Expansion	D696	$\leq 1.2 \times 10^{-4}$ in/in/°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 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 or by socket fusion in compliance with ASTM D2657.
- B. Joints shall be smooth on the inside and internal projection needs 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.
- C. 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

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.

- A. Drilling Rig: Contractor shall utilize a complete directional drilling rig with adequate thrust, pullback power and rotary 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.
- B. 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 drillsite.
- C. Circulating mud pits.
- D. Drilling mud, chemicals, other additives and lost circulation material.
- E. Fuel.

2.07 WATER

Contractor shall make arrangements 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 02225: 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 drillsite 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

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 appropriate sized backream drill head and backream the necessary sized hole simultaneously pulling back the HDPE water main 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 work day, during storms, when the work is left at any time, and at such times as the Engineer may direct.

- F. Contractor shall include all hauling and disposal of drilling fluids, spoils and slurry in Bid. Contractor shall also include site restoration and erosion controls in Bid.

3.05 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
14	15.30	32
16	17.40	37
18	19.50	41
20	21.60	45
24	25.80	54

3.06 RESTORATION AND MAINTENANCE OF PILOT HOLE

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 as a result 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.

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.

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.

- B. 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 in excess of 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 re-drilling. 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.

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 slowly fill the piping with water, taking care to expel all air from the piping. Contractors shall then perform a hydrostatic test at 200 psi for 2-hours with no pressure loss and no leakage, 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 together 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 D2657 requirements.
- C. The tensile strength at yield of the butt-fusion joints shall not be less than the pipe. A specimen of the pipe, cut across the butt-fusion joints shall be tested in accordance with ASTM D638 requirements.
- 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 02227.

END OF SECTION

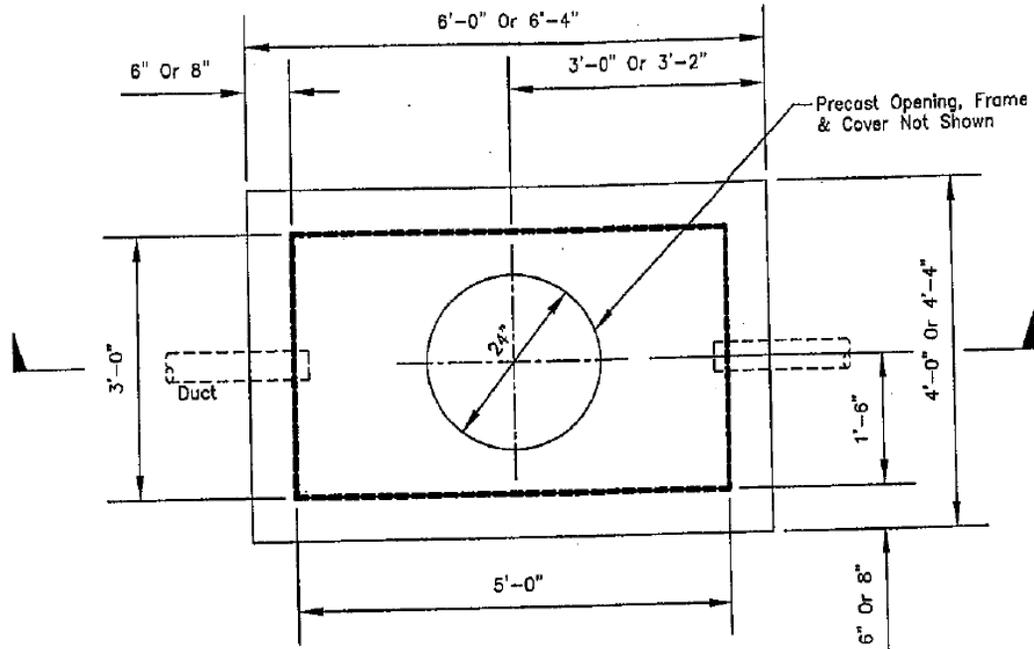
**APPENDIX A
DRAWINGS**

FIGURE #

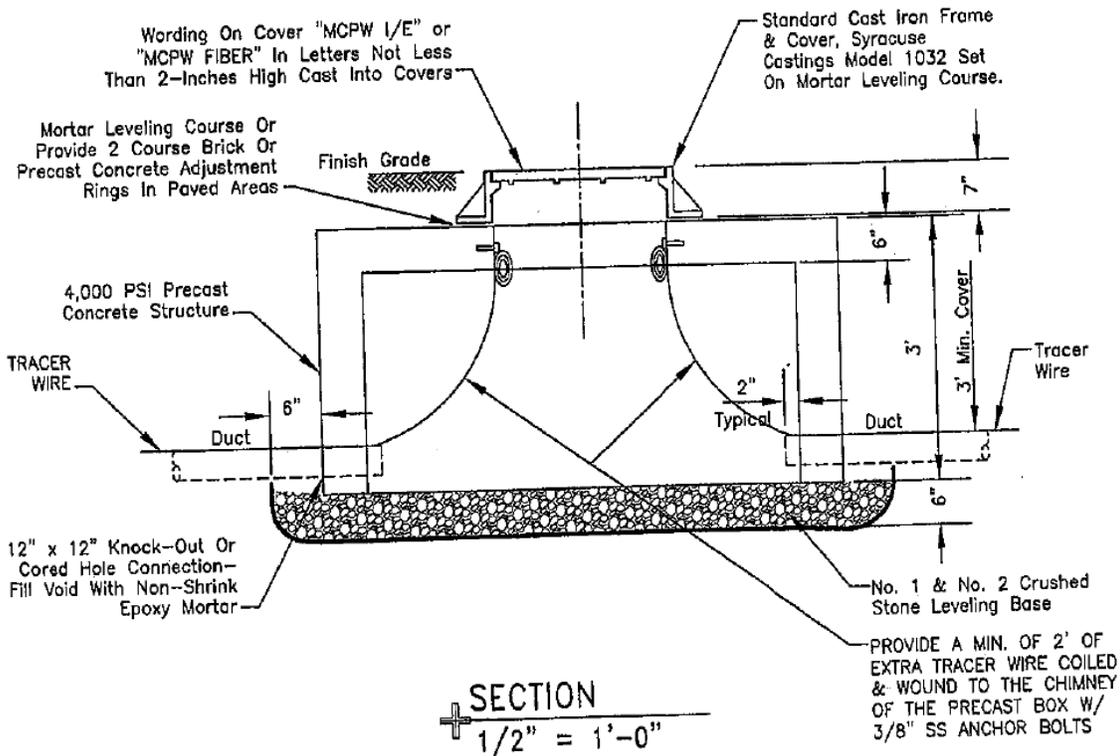
FIGURE TITLE

Figure 7.01
Figure 7.02

3' x 5' Precast Concrete Splice Box Type 1 Detail
30" x 30" Precast Concrete Pull Box Type 1 Detail



PLAN VIEW
 $\frac{1}{2}'' = 1'-0''$



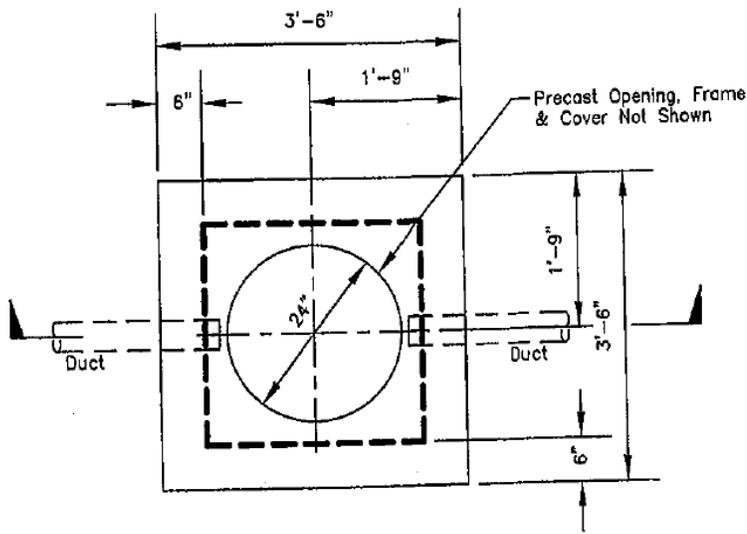
SECTION
 $\frac{1}{2}'' = 1'-0''$

MONROE COUNTY PURE WATERS

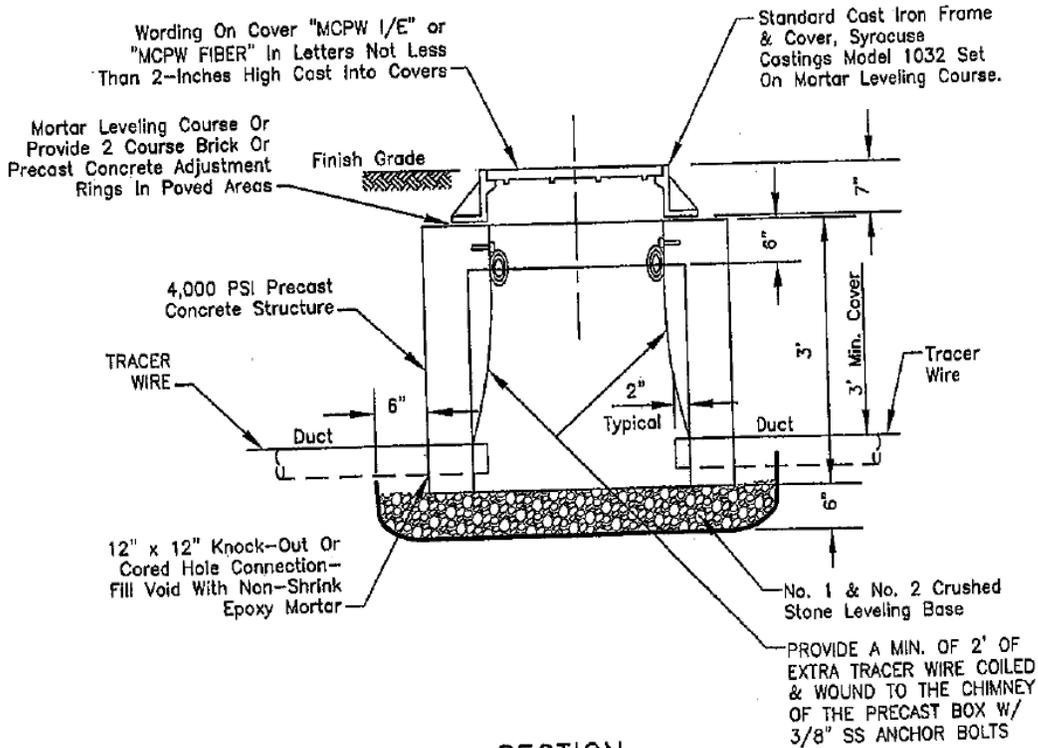
December 2008

3'-0" x 5'-0" Precast Concrete Splice Box
 Type 1 Detail

FIGURE 7.01



PLAN VIEW
 $\frac{1}{2}'' = 1'-0''$



SECTION
 $\frac{1}{2}'' = 1'-0''$

MONROE COUNTY PURE WATERS

December 2008	30" x 30" Precast Concrete Pull Box Type 1 Detail	FIGURE 7.02
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PROPOSAL
SCHEDULED PAYMENT ITEMS

The following Scheduled Payment Items are the only payment items under this Contract. Payment to the CONTRACTOR will be based on multiplying the appropriate payment item unit price, times the quantity of the item. The payment items shall include all labor and materials, equipment, overhead, bonds, insurances, profit, and other contingencies; no separate or additional compensation will be made under this Contract unless otherwise hereinafter specified.

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.

Note: Where the OWNER determines that work is required which is not included in or covered by the Payment Item Schedule, the payment for this work shall be either the actual cost for labor, direct overhead, materials, supplies, equipment and other services necessary to complete the work plus an added amount of fifteen (15) percent of the actual cost to cover the cost of general overhead and profit, or a negotiated price.

CONTRACT TITLE: TCC#6, Horizontal Directional Drilling
CONTRACTOR: Burrows Brothers, Inc. (Vendor# 112226)
AGREEMENT: 4700007348 (thru 12/31/2016)

SAP Item #	SAP Material #	TOC#6 Pay Item	TCC#6 Description (SAP Short Text)	Net Price	OPU (Order Price Unit)	Mat. Grp
010	1041645	120I	Connect HDPE to Existing Structure	\$ 240.00	EA	96850000
020	1041646	401A	Heavy Duty Pavement Restoration	\$ 20.50	SF	96850000
030	1041647	401E	Medium Duty Pavement Restoration	\$ 16.00	SF	96850000
040	1041648	401I	Light Duty Pavement Restoration	\$ 14.50	SF	96850000
050	1041649	401M	Concrete Base Pavement Restoration	\$ 28.80	SF	96850000
060	1041650	401R	Temp. Pavement Patch (Asph.) as Req'd by CORSCCD	\$ 10.25	SF	96850000
070	1041651	401S	Temp. Pavement Patch (Concr.) as Req'd by CORSCCD	\$ 15.30	SF	96850000
080	1041652	402A	Concrete Sidewalk Restoration	\$ 15.00	SF	96850000
090	1041653	402B	Concrete Driveway Restoration	\$ 17.75	SF	96850000
100	1041654	402C	Asphalt Driveway Restoration - Light Duty	\$ 9.65	SF	96850000
110	1041655	402D	Asphalt Driveway Restoration - Medium Duty	\$ 12.65	SF	96850000
120	1041656	402I	Turf Restoration	\$ 1.45	SF	96850000
130	1041658	501A	Downtime (Directed by Owner)	\$ 255.00	HR	96850000
140	1041659	501F	Mobilization/Demobilization	\$ 750.00	EA	96850000
150	1041660	600A	Pot Holing in Unpaved Areas (Restor. Paid Sep.)	\$ 110.00	EA	96850000
160	1041661	600B	Pot Holing in Asphalt Pavement (Restor. Paid Sep.)	\$ 270.00	EA	96850000
170	1041662	600C	Pot Holing in Concrete Pavement (Restor. Paid Sep.)	\$ 270.00	EA	96850000
180	1041663	600D	Underground Truck W/ Directional Bore Equip.	\$ 300.00	HR	96850000
190	1041664	601A	Bore & Pull Back One (1) - 4" HDPE (Pipe & Tracer Wire Paid Sep.)	\$ 9.30	LF	96850000
200	1041665	601B	Bore & Pull Back One (1) - 6" HDPE (Pipe & Tracer Wire Paid Sep.)	\$ 16.85	LF	96850000

210	1041666	601C	Bore & Pull Back One (1) - 8" HDPE (Pipe & Tracer Wire Paid Sep.)	\$	18.10	LF	968500000
220	1041667	601I	Bore & Pull Back Two (2) - 4" HDPE (Pipe & Tracer Wire Paid Sep.)	\$	18.10	LF	968500000
230	1041668	601J	Bore & Pull Back One (1) to Three (3) - 2" HDPE (Pipe & Tracer Wire Paid Sep.)	\$	9.30	LF	968500000
240	1041669	601K	Fish Pull Tape Through HDPE (Pull Tape Mtls Paid Sep.)	\$	0.60	LF	968500000
250	1041670	602A	Pull Box Installation (Pre-Cast Structure and F&C Paid Sep. or Furnished by Owner)	\$	540.00	EA	968500000
260	1041671	602B	Splice Box Installation (Pre-Cast Structure and F&C Paid Sep. or Furnished by Owner)	\$	750.00	EA	968500000
270	1041672	603A	Open Shallow Trench Pipe Installation (Pipe Mts & Tracer Wire Paid Sep)	\$	12.65	LF	968500000
280	1041673	604	HDD Materials Cost - No Mark-up	\$	1.00	DL	968500000

MONROE COUNTY PURCHASING
Vendor Performance Survey

Contract Title: _____

Contract Number: _____

Vendor: _____

Please rank the vendor performing the contract specified on a scale from "1" to "10" with "1" being poor, "5" average and "10" excellent. Please include any additional comments or suggestions in the space provided below. Monroe County Purchasing appreciates your input.

	Poor				Average					Excellent
	1	2	3	4	5	6	7	8	9	10
Item(s) supplied met specifications										
Product provided value (taking into account price, quality, etc.)										
Timeliness of delivery										
Completeness and accuracy of order										
Ability to contact representatives of vendor when needed? (If unavailable was call back prompt?)										
Invoices received promptly and accurately										
Recommendations received from the vendor (i.e. product information, cost saving strategies, ideas for better use of resources, etc.)										

Survey Completed by:

Name: _____

Title: _____

Agency: _____

Telephone: _____ Fax: _____

E-mail: _____

Please submit this survey to Monroe County Purchasing.