CONTRACT DOCUMENTS
AND
SPECIFICATIONS

FOR

TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION

CONTRACT NO. 1A - GENERAL CONSTRUCTION
CONTRACT NO. 1B - ELECTRICAL CONSTRUCTION

TOWN OF VOLNEY
OSWEGO COUNTY, NEW YORK

TOWN BOARD

DENNIS LOCKWOOD - TOWN SUPERVISOR

GREGORY HARTRANFT
KEVIN CONNELLY
LINDA LOCKWOOD
GEORGE SPRAGUE

BARBARA MACEWEN - TOWN CLERK
ALLISON J. NELSON - TOWN ATTORNEY

MARCH 2005

PREPARED BY:

BARTON & LOGUIDICE, P.C.
CONSULTING ENGINEERS
290 ELWOOD DAVIS ROAD
BOX 3107
SYRACUSE, NEW YORK 13220

BIDDING & CONTRACT REQUIREMENTS

SECTION 00020

ADVERTISEMENT FOR BIDS

Sealed bids for the furnishing of all labor and material necessary for the Town of Volney Airport Water District - Water Mains and Pump Station, Contract Nos. 1A and 1B will be received by the Town Clerk at the Town Office at 1445 County Route 6, Fulton, New York until 11:00 A.M. local time April 22, 2005 at which time and place they will be publicly opened and read aloud.

Bids will be received for the following Contracts:

Water Mains and Pump Station:

Contract No. 1A - General Construction: Furnish and install one pre-engineered package duplex booster pump station and associated site work, approximately 2,835 linear feet of 4-inch water main, approximately 22,775 linear feet of 8-inch water main, approximately 27,357 linear feet of 10-inch water main including valves, hydrants and other appurtenances; two (2) NYS highway crossings, five (5) County road crossings; approximately 264 water services; and one connection to an existing 54-inch water main.

Contract No. 1B - Electrical Construction: Furnish and install all electrical wiring and conduit for the pre-engineered package duplex booster pump station and water storage tank to provide a complete operational system as described herein. Furnish and install main power feed distribution for the duplex booster pump station and water storage facility.

Contract Documents, including Advertisement For Bids, Information For Bidders, Wage Rates, Additional Instructions, Bid Documents, Agreement, General Conditions, General Requirements, Specifications, Contract Drawings and any Addenda, may be examined at no expense at the office of Barton & Loguidice, P.C., Consulting Engineers, 290 Elwood Davis Road, Liverpool, New York 13088, or at Town of Volney, 1445 County Route 6, Fulton, New York 13069. Copies of the Contract Documents may be obtained from Barton & Loguidice, P.C., upon deposit of One Hundred Dollars ($100.00) for each set. Any bidder upon returning such set in good condition within thirty (30) following the award of the Contract or the rejection of the bids will be refunded his payment, and any non-bidder upon so returning such set in good condition will be refunded Fifty Dollars ($50.00). Checks only shall be made payable to the Town of Volney.

SECTION 00020

ADVERTISEMENT FOR BIDS

CASH DEPOSITS WILL NOT BE ACCEPTED. ALL HANDLING COSTS (MAIL, DELIVERY SERVICES, ETC.) SHALL BE THE RESPONSIBILITY OF THE BIDDER.

Each bid must be accompanied by security in an amount not less than five percentum (5%) of the amount of the bid in the form and subject to the conditions provided in the Information for Bidders. No Bidder may withdraw his bid within forty-five (45) days after the actual date of opening thereof.

This is an exempt capital improvement project, and Bidders shall not include in their bid sales and compensating use taxes on the cost of materials which are to be incorporated into the work and which are to be separately sold by the Contractor to the Town of Volney prior to incorporation into the work of the Contract.

The attention of Bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under this Contract.

The right is reserved to waive any informalities in the Bid and to reject any or all Bids.

The project is being funded by assistance from the New York Drinking Water State Revolving Fund (DWSRF) program and Rural Development (RD). Bidders will be required to comply with certain Minority and Women's Business Enterprise - Equal Employment Opportunity (M/WBE-EEO) criteria and other programs required.

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(BASE BID)

No.	Description	Quantity	Unit
1	Clearing	Nec.	L.S.
2	Furnish and Install 4-Inch Ductile Iron Water Main (Class 52) and Appurtenances	2,835	L.F.
3	Furnish and Install 8-Inch Ductile Iron Water Main (Class 52) and Appurtenances	22,775	L.F.
4	Furnish and Install 10-Inch Ductile Iron Water Main (Class 52) and Appurtenances	27,357	L.F.
5	Furnish and Install 4-Inch Gate Valves with Valve Boxes	8	EA.
6	Furnish and Install 8-Inch Gate Valves with Valve Boxes	22	EA.
7	Furnish and Install 10-Inch Gate Valves with Valve Boxes	43	EA.
8	Furnish and Install Hydrant Assembly Complete	80	EA.
9	Furnish and Install 1-Inch Blowoff Assembly Complete	5	EA.
10	Furnish and Install 3/4-Inch Water Service (Near Side)	129	EA.
11	Furnish and Install 3/4-Inch Water Service (Far Side)	131	EA.
12	Furnish and Install 1-Inch Water Service (Near Side)	2	EA.
13	Furnish and Install 1-Inch Water Service (Far Side)	2	EA.
14	Furnish and Install 3/4-Inch Type K Copper Tubing	8,250	EA.

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(BASE BID)

No.	Description	Quantity	Unit
15	Furnish and Install 1-Inch Type K Copper Tubing	165	L.F.
16	Excavation Below Subgrade	2,800	C.Y.
17	Lining	7,035	C.Y.
18	Special Backfill	4,506	C.Y.
19	Maintenance and Protection of Traffic	Nec.	L.S.
20	Furnish and Install County Route 176 Highway Crossing No. 1	Nec.	L.S.
21	Furnish and Install County Route 176 Highway Crossing No. 2	Nec.	L.S.
22	Furnish and Install County Route 176 Highway Crossing No. 3	Nec.	L.S.
23	Furnish and Install County Route 176 Highway Crossing No. 4	Nec.	L.S.
24	Furnish and Install New York State Route 3 Highway Crossing No. 1	Nec.	L.S.
25	Furnish and Install New York State Route 3 Highway Crossing No. 2	Nec.	L.S.
26	Furnish and Install County Route 6 Highway Crossing	Nec.	L.S.
27	Furnish and Install County Route 176 Packaged Booster Pumping Station	Nec.	L.S.
28	Connection to Existing 54-Inch Water Main	Nec.	L.S.

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(ALTERNATE BID)

No.	Description	Quantity	Unit
1a	Clearing	Nec.	L.S.
2a	Furnish and Install 4-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances	2,835	L.F.
3a	Furnish and Install 8-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances	22,775	L.F.
4a	Furnish and Install 10-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances	27,357	L.F.
5a	Furnish and Install 4-Inch Gate Valves with Valve Boxes	8	EA.
6a	Furnish and Install 8-Inch Gate Valves with Valve Boxes	22	EA.
7a	Furnish and Install 10-Inch Gate Valves with Valve Boxes	43	EA.
8a	Furnish and Install Hydrant Assembly Complete	80	EA.
9a	Furnish and Install 1-Inch Blowoff Assembly Complete	5	EA.
10a	Furnish and Install 3/4-Inch Water Service (Near Side)	129	EA.
11a	Furnish and Install 3/4-Inch Water Service (Far Side)	131	EA.
12a	Furnish and Install 1-Inch Water Service (Near Side)	2	EA.
13a	Furnish and Install 1-Inch Water Service (Far Side)	2	EA.
14a	Furnish and Install 3/4-Inch Type K Copper Tubing	8,250	EA.

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(ALTERNATE BID)

No.	Description	Quantity	Unit
15a	Furnish and Install 1-Inch Type K Copper Tubing	165	L.F.
16a	Excavation Below Subgrade	2,800	C.Y.
17a	Lining	7,035	C.Y.
18a	Special Backfill	4,506	C.Y.
19a	Maintenance and Protection of Traffic	Nec.	L.S.
20a	Furnish and Install County Route 176 Highway Crossing No. 1	Nec.	L.S.
21a	Furnish and Install County Route 176 Highway Crossing No. 2	Nec.	L.S.
22a	Furnish and Install County Route 176 Highway Crossing No. 3	Nec.	L.S.
23a	Furnish and Install County Route 176 Highway Crossing No. 4	Nec.	L.S.
24a	Furnish and Install New York State Route 3 Highway Crossing No. 1	Nec.	L.S.
25a	Furnish and Install New York State Route 3 Highway Crossing No. 2	Nec.	L.S.
26a	Furnish and Install County Route 6 Highway Crossing	Nec.	L.S.
27a	Furnish and Install County Route 176 Packaged Booster Pumping Station	Nec.	L.S.
28a	Connection to Existing 54-Inch Water Main	Nec.	L.S.

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS
WATER MAINS AND PUMP STATION
CONTRACT NO. 1B – ELECTRICAL CONSTRUCTION

No.	Description	Quantity	Unit
1	Contract No. 1B - Electrical Construction	Lump Sum	L.S.
2	Additional Work Allowance	$1,000.00	L.S.

END OF SECTION

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BIDDING & CONTRACT REQUIREMENTS

SECTION 00068

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BIDDING & CONTRACT REQUIREMENTS

SECTION 00090

USDA, RURAL DEVELOPMENT (USDA RD) REQUIREMENTS
INFORMATION FOR BIDDERS

00090.01 RURAL DEVELOPMENT INFORMATION FOR BIDDERS

The following pages, identified as RUS Bulletin 1780-13 Attachment 2, are hereby incorporated into this Contract as Section 00091. Where provisions of RUS Bulletin 1780-13 Attachment 2 do not concur with provisions of other sections of the Contract Documents, the most stringent provisions shall take precedence.

00090.02 USDA, RURAL DEVELOPMENT SUPPLEMENTAL GENERAL CONDITIONS, GENERAL CONDITIONS

The USDA, Rural Development (USDA RD) General Conditions and Supplemental General Conditions are hereby made part of the Contract Documents as Sections 00090 and 00093, respectively.

Furthermore, where provisions of these Sections do not concur with provisions of other Sections of the Contract Documents, the more stringent provision will take precedence.

The following sections have been substituted in lieu of optional USDA RD documents:

1. Section 00020, pages 00020-1 through 00020-2 for RUS Bulletin 1780-13 Attachment 1

00090.03 RURAL DEVELOPMENT PERFORMANCE AND PAYMENT BOND FORMS

Sections 00610 and 00620 of the Bid documents contain forms for the performance and payment bonds, respectively, required under the Contract. These forms are required to be completed by the Bidder as instructed on the forms. All bidders shall read and be familiar with the requirements contained in these forms. Where the provisions of these forms do not concur with provisions of other sections of the Contract Documents, the most stringent provisions shall take precedence.

RUS Bulletin 1780-13
Attachment 2

INFORMATION FOR BIDDERS (USDA RD)

BIDS will be received by Town of Volney (herein called the "OWNER"), at 1445 County Route 6, Fulton, NY 13069, until 11:00 a.m. local time April 22, 2005, and then at said office publicly opened and read aloud.

Each BID must be submitted in a sealed envelope, addressed to Town Clerk at Town of Volney, 1445 County Route 6, Fulton, NY 13069. Each sealed envelope containing a BID must be plainly marked on the outside as BID for the contract for which the bid is submitted and the envelope should bear on the outside the BIDDER'S name, address, and license number if applicable, and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at:

Town of Volney
1445 County Route 6
Fulton, New York 13069

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve the contractor from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID bond payable to the OWNER for five percent of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsible BIDDERS. When the Agreement is executed the bonds of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the payment BOND and performance BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

A performance BOND and a payment BOND each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign BID BONDS or payment BONDS and performance BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the Agreement and obtain the performance BOND and payment BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD form, RUS Bulletin 1780-13, attachment 7, immediately follows this Section. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and BOND forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the Property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable performance BOND, payment BOND and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw the signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued on the Form RUS Bulletin 1780-13 Attachment 8 immediately following this section within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER AND CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted.

Award will be made to the lowest responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its BID.

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the SUPPLEMENTAL GENERAL CONDITIONS.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER.

Inspection trips for prospective BIDDERS will leave from the office of the _____
at _____.

The ENGINEER IS Barton & Loguidice, P.C.

The ENGINEER'S address is 290 Elwood Davis Road, Box 3107, Syracuse, New York 13220.

Free and Open Competition

The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in this section and the General Conditions, or those substitute or materials and equipment approved by the Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. Requests for the Engineer's clarification of materials and equipment considered "or-equal", during the bidding process, must be received by the Engineer at least 5 days prior to the date for receipt of bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by the Bidder and has been received by the Engineer at least 15 days prior to the date for receipt of Bids. Each request shall conform to the requirements of paragraph 8.1 of the General Conditions and this section. The burden of proof of the merit of the proposed item is upon the Bidder. The Engineer's decision of approval or disapproval of a proposed item will be final. If the Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

RUS Bulletin 1780-13
Attachment 7

NOTICE OF AWARD

TO:_____
_____
_____
_____
_____

PROJECT
Description:_____
_____
_____

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated _____, 20_____, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $_____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this_____ day of_____, 20____.

_____
Owner

By_____

Title_____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by_____. this
the_____ day of_____, 20_____.
By_____
Title_____

RUS Bulletin 1780-13
Attachment 8

NOTICE TO PROCEED

TO: _____ DATE: _____

_____ Project: _____

_____ _____

_____ _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20___, on or before _____, 20__, and you are to complete the WORK within _____ consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 20__.

_____
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____

_____,

this the _____, 20_____

_____

By _____

Title _____

Employer Identification Number _____

oOo

GENERAL CONDITIONS (USDA RD)

1. DEFINITIONS

1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated and shall be applicable to both the singular and plural thereof:

1.2 ADDENDA - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications, or corrections.

1.3 BID - The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4 BIDDER - Any person, firm, or corporation submitting a BID for the WORK.

1.5 BONDS - Bid, Performance, and Payment Bonds and other instruments of surety, furnished by the CONTRACTOR and the CONTRACTOR'S surety in accordance with the CONTRACT DOCUMENTS.

1.6 CHANGE ORDER - A written order to the CONTRACTOR authorizing an addition, deletion, or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7 CONTRACT DOCUMENTS - The contract, including Advertisement For BIDS, Information For BIDDERS, BID, BID BOND, Agreement, Payment BOND, Performance BOND, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.

1.8 CONTRACT PRICE - The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9 CONTRACT TIME - The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10 CONTRACTOR - The person, firm, or corporation with whom the OWNER has executed the Agreement.

1.11 DRAWINGS - The parts of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

1.12 ENGINEER - The person, firm or corporation named as such in the CONTRACT DOCUMENTS.

1.13 FIELD ORDER - A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14 NOTICE OF AWARD - The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15 NOTICE TO PROCEED - Written communication issued by the OWNER to the CONTRACTOR authorizing him/her to proceed with the WORK and establishing the date for commencement of the WORK.

1.16 OWNER - A public or quasi-public body or authority, corporation, association, partnership, or an individual for whom the WORK is to be performed.

1.17 PROJECT - The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18 RESIDENT PROJECT REPRESENTATIVE - The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

1.19 SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20 SPECIFICATIONS - A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.21 SUBCONTRACTOR - An individual, firm, or corporation having a direct contract with CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22 SUBSTANTIAL COMPLETION - That date certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS - Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

1.24 SUPPLIER - Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25 WORK - All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26 WRITTEN NOTICE - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at their last given address, or delivered in person to said party or their authorized representative on the WORK.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instructions thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which the CONTRACTOR proposes to carry on the WORK, including dates at which the various parts of the WORK will be started, estimated date of completion of each part and, as applicable:

3.2.1 The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payments that the CONTRACTOR anticipates will be earned during the course of the WORK.

4. DRAWINGS AND SPECIFICATIONS

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

5. SHOP DRAWINGS

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER's review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6. MATERIALS, SERVICES AND FACILITIES

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies, and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies, or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at the CONTRACTOR'S expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests, or approvals by the engineer or others shall not relieve the CONTRACTOR from the obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and the ENGINEER'S representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records or personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for the ENGINEER'S observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, if, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS

8.1 Whenever a material, article, or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees, and shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or product of a particular manufacturer or manufacturers is specified, however, if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, the CONTRACTOR shall be responsible for such loss unless the CONTRACTOR promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

10.2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistake that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, the CONTRACTOR shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13, CHANGES IN THE WORK.

11. PROTECTION OF WORK, PROPERTY, AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR will take all necessary precautions for the safety of, will provide the necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. The CONTRACTOR will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. The CONTRACTOR will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone directly or indirectly employed by any of them or anyone of whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER, of the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instructions or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. The CONTRACTOR will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

12. SUPERVISION BY CONTRACTOR

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles the CONTRACTOR to a change in CONTRACT PRICE or TIME, or both, in which event the CONTRACTOR shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

14. CHANGES IN CONTRACT PRICE

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

a. Unit prices previously approved.

b. An agreed lump sum.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority or allocation order duly issued by the OWNER.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and reexecute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless the required WRITTEN NOTICE has been given; provided that the OWNER may, if the OWNER determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION, AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of its property, or if CONTRACTOR files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or disregards the authority of the ENGINEER, or otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and its surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method the OWNER may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the CONTRACT. In such case the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until paid all amounts then due, in which event and upon resumption of the WORK CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

19. PAYMENT TO CONTRACTOR

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER'S title to the material and equipment and protect the OWNER'S interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing approval of payment, and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing the reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within ten (10) days of presentation of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate less the retainage. The retainage shall be an amount equal to 5% of said estimate. If at any time thereafter when the progress of the WORK is not satisfactory, additional amounts may be retained. Upon substantial completion of the work, any amount retained may be paid to the CONTRACTOR. When the WORK has been substantially completed except for WORK which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgment of the OWNER are valid reasons for noncompletion, the OWNER may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the WORK still to be completed.

19.2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demand of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, the CONTRACTOR'S Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or its sureties from any obligations under the CONTRACT DOCUMENTS or the Performance and Payment BONDS.

21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of, or result from, the CONTRACTOR'S execution of the WORK, whether such execution be by the CONTRACTOR, any SUBCONTRACTOR, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least fifteen 15) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at the CONTRACTOR'S own expense, during the CONTRACT TIME, Liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting the CONTRACTOR from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the CONTRACT DOCUMENTS, whether such operations be by the CONTRACTOR or by any SUBCONTRACTOR employed by the CONTRACTOR or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR employed by the CONTRACTOR. Insurance shall be written with a limit of liability of not less than $500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than $500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $200,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at the CONTRACTOR'S own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the WORK is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of the CONTRACTOR'S employees at the site of the PROJECT and in case any WORK is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statue, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of its employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, and the OWNER.

22. CONTRACT SECURITY

22.1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance BOND and a Payment BOND in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payment shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS

23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or of any right, title or interest therein, or any obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, its agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

25. SEPARATE CONTRACTS

25.1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate the WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT or the OWNER may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if the OWNER is performing the additional WORK) reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate the WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves it in additional expense or entitles it to an extension of the CONTRACT TIME, the CONTRACTOR may make a claim thereof as provided in Sections 14 and 15.

26. SUBCONTRACTING

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.
26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of its SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as the CONTRACTOR is for the acts and omissions of persons directly employed by the CONTRACTOR.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relationship between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY

27.1 The ENGINEER shall act as the OWNER'S representative during the construction period, shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed, and shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship, and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

28. LAND AND RIGHTS-OF-WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at its own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTEE

29.1 The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance BOND shall remain in full force and effect through the guarantee period.

30. ARBITRATION BY MUTUAL AGREEMENT

30.1 All claims, disputes, and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by making an acceptance of final payment as provided by Section 20, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the request for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and a copy shall be filed with the ENGINEER. Request for arbitration shall in no event be made on any claim, dispute, or other matter in question which would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

31. TAXES

31.1 The CONTRACTOR will pay all sales, consumer, use, and other similar taxes required by the laws of the place where the WORK is performed.

32. ENVIRONMENTAL REQUIREMENTS

The CONTRACTOR, when constructing a project involving trenching and/or other related earth excavation, shall comply with the following environmental constraints.

32.1 WETLANDS - The CONTRACTOR, when disposing of excess, spoil, or other construction materials on public or private property, WILL NOT FILL IN or otherwise CONVERT WETLANDS.

32.2 FLOODPLAINS - The CONTRACTOR, when disposing of excess, spoil, or other construction materials on public or private property, WILL NOT FILL IN or otherwise CONVERT 100 YEAR FLOODPLAIN areas delineated on the latest FEMA Floodplain Maps.

32.3 HISTORIC PRESERVATION - Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the PROJECT ENGINEER and a representative of RUS. Construction shall be temporarily halted pending the notification process and further directions issued by RUS after consultation with the State Historic Preservation Officer (SHPO).

32.4 ENDANGERED SPECIES - The CONTRACTOR shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the CONTRACTOR, the CONTRACTOR will immediately report this evidence to the PROJECT ENGINEER and a representative of RUS. Construction shall be temporarily halted pending the notification process and further directions issued by RUS after consultation with the U.S. Fish and Wildlife Service.

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RUS Supplemental General Conditions (USDA RD)

The provisions of the Rural Utilities Service (RUS) Supplemental General Conditions as described herein change, amend, or supplement the General Conditions and shall supersede any conflicting provisions of this CONTRACT. All provisions of the General Conditions which are not changed, amended, or supplemented, remain in full force.

1. Contract Approval.

1.1 The OWNER and the CONTRACTOR will furnish the OWNER'S Attorney such evidence as required so that the OWNER'S Attorney can complete and execute "Certificate of Owner's Attorney" (Section 14) before the OWNER submits the executed Contract Documents to RUS for approval.

1.2 Concurrence by the State Program Official or designee in the award of the CONTRACT is required before it is effective and the "RUS Concurrence" (Section 15), shall be attached and made a part of the Agreement.

1.3 Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the project is located. ***[Revision 1, 07/11/1997]***

1.4 This CONTRACT is expected to be funded in part with funds from the RUS. Neither the United States nor any of its departments, agencies, or employees is or will be a party to this CONTRACT or any SUBCONTRACT.

2. Contract Change Orders.

2.1 All changes affecting the project's construction cost or modifications of the terms or conditions of the contract must be authorized by means of a written contract change order which is mutually agreed to by the OWNER and CONTRACTOR and is approved by RUS. The contract change order will include extra work, work for which quantities have been altered from those shown in the bidding schedule, as well as decreases or increases in the quantities of installed units which are different than those shown in the bidding schedule because of final measurements. All changes must be recorded on a contract change order before they can be included in a partial payment estimate.

2.2 FORM RD 1924-7, "Contract Change Order" or similar form approved by RUS shall be used to record CONTRACT changes.

2.3 When the CONTRACT sum is, in whole or in part, based on unit prices, the OWNER reserves the right to increase or decrease a unit price quantity as may be deemed reasonable or necessary in order to complete the work contemplated by this CONTRACT.

3. Partial Payment Estimates.

3.1 FORM RD 1924-18, "Partial Payment Estimate," or similar form approved by RUS shall be used when estimating periodic payments due the CONTRACTOR.

3.2 The OWNER may after consultation with the ARCHITECT/ENGINEER withhold or, on account of subsequently discovered evidence, nullify the whole or part of any approved partial payment estimate to such extent as may be necessary to protect the OWNER from loss on account of:

3.2.1 Defective work not remedied.

3.2.2 Claims filed.

3.2.3 Failure of CONTRACTOR to make payments properly to subcontractors or suppliers.

3.2.4 A reasonable doubt that the WORK can be completed for the balance then unpaid.

3.2.5 Damage to another CONTRACTOR.

3.2.6 Performance of WORK in violation of the terms of the CONTRACT DOCUMENTS.

3.3 Where WORK on unit price items is substantially complete but lacks testing, clean-up and/or corrections, amounts shall be deducted from unit prices in partial payment estimates to amply cover such testing, clean-up and/or corrections.

3.4 When the items in 3.2 and 3.3 are cured, payment shall be made for amounts withheld because of them.

3.5 Payments will not be made that would deplete the retainage nor place in escrow any funds that are required for retainage nor invest the retainage for the benefit of the CONTRACTOR.

4. Conflict of Interest.

4.1. Unacceptable bidders. An ENGINEER (individual or firm including persons they employ) who has prepared plans and specifications will not be considered an acceptable bidder. Any firm or corporation in which such ENGINEER (including persons they employ) is an officer, employee, or holds or controls a substantial interest will not be considered an acceptable bidder. Contracts or purchases by the CONTRACTOR shall not be awarded or made to a supplier or manufacturer if the ENGINEER (firm or individual) who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Bids will not be awarded to firms or corporations which are owned or controlled wholly or in part by a member of the governing body of the OWNER or to an individual who is such a member.

4.2. The OWNER'S officers, employees, or agents shall not engage in the award or administration of this CONTRACT if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (a) the employee, officer or agent; (b) any member of their immediate family; (c) their partner or (d) an organization which employs, or is about to employ, any of the above has financial or other interest in the CONTRACTOR. The OWNER'S officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from the CONTRACTOR or subcontractor.

5. Protection of Lives and Property

5.1 In order to protect the lives and health of its employees under the CONTRACT, the CONTRACTOR shall comply with all pertinent provisions of the Occupational Safety and Health Administration (OSHA) and any State Safety and Health agency requirements.

5.2 The CONTRACTOR alone shall be responsible for the safety, efficiency, and adequacy of its plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

6. Remedies. Unless otherwise provided in this CONTRACT, all claims, counterclaims, disputes, and other matters in question between the OWNER and the CONTRACTOR arising out of or relating to this CONTRACT or the breach thereof will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the OWNER is located.

6.1 The arbitration provisions of this section may be initiated by either party to this CONTRACT by filing with the other party and the ENGINEER a WRITTEN REQUEST for arbitration.

6.2 Each party to this CONTRACT will appoint one arbitrator; the two arbitrators will select a third arbitrator.

6.3 The arbitrators will select a hearing location as close to the OWNER'S locale as possible

6.4 The procedure for conducting the hearings will follow the Construction Industry Arbitration Rules of the American Arbitration Association.

7. Gratuities.

7.1 If the OWNER finds after a notice and hearing that the CONTRACTOR, or any of the CONTRACTOR'S agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of the OWNER, the State, or RUS officials in an attempt to secure this CONTRACT or favorable treatment in awarding, amending, or making any determinations related to the performance of this CONTRACT, the OWNER may, by written notice to the CONTRACTOR, terminate this CONTRACT. The OWNER may also pursue other rights and remedies that the law or this CONTRACT provides. However, the existence of the facts on which the OWNER bases such findings shall be an issue and may be reviewed in proceedings under the Remedies clause of this CONTRACT.

7.2 In the event this CONTRACT is terminated as provided in paragraph 7.1 the OWNER may pursue the same remedies against the CONTRACTOR as it could pursue in the event of a breach of the CONTRACT by the CONTRACTOR. As a penalty, in addition to any other damages to which it may be entitled by law, the OWNER may pursue exemplary damages in an amount (as determined by the OWNER) which shall be not less than three nor more than ten times the costs the CONTRACTOR incurs in providing any such gratuities to any such officer or employee.

8. Audit and Access to Records. For all negotiated contracts (except those of $10,000 or less), the RUS, the Comptroller General, the OWNER or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the CONTRACTOR, which are pertinent to the CONTRACT, for the purpose of making audits, examinations, excerpts and transcriptions. The CONTRACTOR shall maintain all required records for three years after final payment is made and all other pending matters are closed.

9. Small, Minority and Women's Businesses. If the CONTRACTOR intends to let any subcontracts for a portion of the work, the CONTRACTOR shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services.

10. Anti-Kickback. The CONTRACTOR shall comply with the Copeland Anti-Kickback Act (18 USC 874) as supplemented in Department of Labor regulations (29 CFR, Part 3). This act provides that each CONTRACTOR shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. The OWNER shall report all suspected or reported violations to RUS.

11. Violating Facilities. Where this CONTRACT exceeds $100,000 the CONTRACTOR shall comply with all applicable standards, orders or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations 40 CFR Part 15 which prohibit the awarding of non-exempt federal contracts, grants, or loans to facilities included on EPA's list of violating facilities. The CONTRACTOR will report violations to the EPA.

12. State Energy Policy. The CONTRACTOR shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in the State Energy Conservation Plan, shall be utilized.

13. Equal Opportunity Requirements. For all contracts in excess of $10,000, the CONTRACTOR shall comply with Executive Order 11246, entitled "Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

13.1 If the CONTRACT exceeds $10,000, the CONTRACTOR will execute Form RD 400-6, "Compliance Statement."

13.2 The CONTRACTOR'S compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the CONTRACT is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the CONTRACT, and in each trade, and the CONTRACTOR shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the CONTRACTOR'S goals shall be a violation of the CONTRACT, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

13.3 The CONTRACTOR shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the CONTRACT resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the CONTRACT is to be performed.

14. Certificate of Owner's Attorney.

I, the undersigned, _____ , the duly authorized and acting legal representative of_____
_____, do hereby certify as follows

I have examined the attached contract(s) and performance and payment bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements are adequate and have has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

_____

Date:_____

NOTE: Delete phrase "performance and payment bonds" when not applicable.

15. RUS Concurrence.

As lender or insurer of funds to defray the costs of this contract, and without liability for any payments thereunder, the Rural Utilities Service (RUS) hereby concurs in the award of this CONTRACT to

_____

U.S. Department of Agriculture
Rural Utilities Service

By_____ Title _____

Date_____

This CONTRACT shall not be effective unless and until concurred in by the State Program Official of the Rural Utilities Service, U.S. Department of Agriculture or a delegated representative.

FORM APPROVED
OMB NO. 0575-0042

Form RD 1924-7
(Rev. 2-97)

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT AND
FARM SERVICE AGENCY

CONTRACT CHANGE ORDER

ORDER NO.

DATE

STATE

COUNTY

CONTRACT FOR

OWNER

To _____
(Contractor)

You are hereby requested to comply with the following changes from the contract plans and specifications:

Description of Changes (Supplemental Plans and Specifications Attached)	DECREASE in Contract Price	INCREASE in Contract Price
	$	$
TOTALS	$	
NET CHANGE IN CONTRACT PRICE	$	

JUSTIFICATION:

The amount of the Contract will be (Decreased) (Increased) By The Sum Of: _____

_____ Dollars ($ _____).

The Contract Total Including this and previous Change Orders Will Be: _____

_____ Dollars ($ _____).

The Contract Period Provided for Completion Will Be (Increased) (Decreased) (Unchanged): _____ Days.

This document will become a supplement to the contract and all provisions will apply hereto.

Requested _____ _____
(Owner) *(Date)*

Recommended _____ _____
(Owner's Architect/Engineer) *(Date)*

Accepted _____ _____
(Contractor) *(Date)*

Approved by Agency _____ _____
(Name and Title) *(Date)*

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to U.S. Department of Agriculture, Clearance Officer, STOP 7602, 1400 Independence Avenue, S.W., Washington, D.C. 20250-7602. Please DO NOT RETURN this form to this address. Forward to the local USDA office only. You are not required to respond to this collection of information unless it displays a currently valid OMB control number.

POSITION 6

ORIGINAL BORROWER'S CASE FOLDER

00093-10

FORM APPROVE
OMB NO. 0575-0(

Form RD 1924-18
(Rev. 6-97)

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT
FARM SERVICE AGENCY

PARTIAL PAYMENT ESTIMATE

CONTRACT NO.

PARTIAL PAYMENT ESTIMATE NO.

PAGE

OWNER:

CONTRACTOR:

PERIOD OF ESTIMATE
FROM _____ TO _____

CONTRACT CHANGE ORDER SUMMARY

No.	Agency Approval Date	Amount Additions	Amount Deductions
TOTALS			
NET CHANGE			

ESTIMATE

1. Original Contract .....
2. Change Orders .....
3. Revised Contract (1 + 2) .....
4. Work Completed* .....
5. Stored Materials* .....
6. Subtotal (4 + 5) .....
7. Retainage* .....
8. Previous Payments .....
9. Amount Due (6-7-8) .....

* *Detailed breakdown attached*

CONTRACT TIME

Original (days) _____
Revised _____
Remaining _____

On Schedule ☐ Yes ☐ No

Starting Date _____
Projected Completion _____

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates was issued and payments received from the owner, and that current payment shown herein is now due.

Contractor _____

By _____

Date _____

APPROVED BY OWNER:

Owner _____

By _____

Date _____

ARCHITECT OR ENGINEER'S CERTIFICATION:

The undersigned certifies that the work has been carefully inspected and to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents.

Architect or Engineer _____

By _____

Date _____

ACCEPTED BY AGENCY:

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the contract documents.

By _____

Title _____

Date _____

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

ITEM	DESCRIPTION	CONTRACT *(revised)*			THIS PERIOD		TOTAL TO DATE		% COM-PLETE
		QUANTITY	UNIT PRICE	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	
			$	$		$		$	
	TOTALS								

TYPICAL LUMP SUM PRICE BREAKDOWN *

ITEM	DESCRIPTION	SCHEDULED VALUE	WORK COMPLETED		% COM-PLETE
			THIS PERIOD	TO DATE	
		$	$	$	
	TOTALS				

TYPICAL STORED MATERIALS AND RETAINAGE BREAKDOWN *

MATERIALS STORED AT END OF THIS PAYMENT PERIOD			
DESCRIPTION	QUANTITY	UNIT VALUE	AMOUNT
		$	$

RETAINAGE			
	THIS ESTIMATE	PERCENT	RETAINED
	$	%	$
WORK COMPLETED:			
STORED MATERIALS:			
OTHER *(explain)*			
TOTAL			

* As a minimum, detailed breakdowns should contain this information.

RD 1924-18
REVERSE

00093-11

FORMS MANUAL INSERT **FORM RD 1924-18**

Used by Contractor to request partial payment on construction work completed. Submitted to loan approval official for disbursement.

(see reverse)

PROCEDURE FOR PREPARATION	:	RD Instruction 1924-A.
PREPARED BY	:	Contractor
NUMBER OF COPIES	:	Original and three, plus additional copies as appropriate.
SIGNATURES REQUIRED	:	Original and all copies will be signed by: Contractor; Architect/Engineer; Borrower representative; Agency representative; other funding agency representative as appropriate.
DISTRIBUTION OF COPIES	:	Original to Borrower; copy to District and County Office file; copy to Architect/Engineer; copy to Contractor; copies to State Office and other funding agencies as appropriate.

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00100

ADDITIONAL INFORMATION FOR BIDDERS

00100.01 LOCATION OF THE WORK

The work under Contract No. 1 is located at the following locations:

- Water Mains - located throughout the Town of Volney, northeast of the City of Fulton.

- Pump Station - The proposed County Route 176 Packaged Booster Pumping Station is to be located at County Route 176 near Gillespie Road in the Town of Volney.

00100.02 DESCRIPTION OF THE WORK

Contract No. 1A - General Construction: Furnish and install one pre-engineered package duplex booster pump station and associated site work, approximately 2,835 linear feet of 4-inch water main, approximately 22,775 linear feet of 8-inch water main, and approximately 27,357 linear feet of 10-inch water main including valves, hydrants and other appurtenances; two (2) NYS highway crossing, five (5) County road crossings and approximately 253 water services; and one connection to an existing 54-inch water main.

Contract No. 1B - Electrical Construction: Furnish and install all electrical wiring and conduit for the pre-engineered package duplex booster pump station and water storage tank to provide a complete operational system as described herein. Furnish and install main power feed distribution for the duplex booster pump station and water storage facility.

00100.03 USDA, RURAL DEVELOPMENT REQUIREMENTS

This project is partially funded by USDA Rural Development grants and loans. As such, USDA Rural Development requirements are required to be met both in bidding and Contract Administration. The Bidder's attention is called to Section 00090 of this document. The Owner assumes that all bidders have reviewed these requirements.

SECTION 00100

INFORMATION FOR BIDDERS

00100.04 COMMENCEMENT AND COMPLETION OF THE WORK

Upon execution of the Contract including delivery of the Performance Bond, Payment Bond and insurance policies and certificates by the Contractor to the Owner and the approval thereof by the Owner's attorney, the Contractor will be notified to proceed with the work. Such notification will be in the form of a letter to proceed from the Engineer.

The Contractor shall give the Engineer at least five (5) days written notice of the date he intends to start work at the site.

All work items of the Contracts shall be substantially completed within the more restrictive of the following requirements, unless such period is extended by the Owner as provided herein:

a. Within 180 calendar days of the date of the Notice to Proceed.

00100.05 COLLATERAL WORK AND CONDITIONS OF WORK

Each Bidder shall inform himself fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder, as Contractor, of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible, the Contractor, in carrying out the work, shall employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor. (See also Section 01012.01.)

Each Contractor will be required to coordinate his work with the work of other Contracts. Each Contractor will be required to adjust his schedule accordingly.

00100.06 RECEIPT & OPENING OF BIDS

The Town of Volney (herein called the Owner) invites Bids on the attached forms. Bids will be received by the Owner until the time and at the place stated in the attached Advertisement For Bids. Bids must be sealed in envelopes addressed to Town Clerk, 1445 County Route 6, Fulton, New York 13069. The outside of the envelope shall bear the name and address of the Bidder and shall be labeled to clearly show the Contract designation for which the Bid is submitted.

SECTION 00100

INFORMATION FOR BIDDERS

00100.07 INFORMALITIES, WAIVERS AND WITHDRAWALS

The Owner may consider informal any Bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any or all Bids. Bids which do not contain a price for every numbered item contained in the Bid form will not be accepted.

Any Bid may be withdrawn prior to the scheduled deadline for receipt of Bids or authorized postponement thereof, but no Bid may be withdrawn within forty-five (45) days after the actual date of the opening thereof. Any Bid received after the time and date specified will not be considered, and will be returned unopened.

00100.08 BID PREPARATION

Unless otherwise noted thereon, all blanks on the Bid forms must be appropriately filled in with ink and with both words and figures, and the Bid must be properly executed. Do not remove the Bid forms from this binder.

All Contract Documents, except the Contract Drawings, the Performance Bond, Labor & Materials Payment Bond, Certificate of Insurance and any Addenda, are contained in this binder. The Contract Drawings are bound separately. All Contract Documents, except the Contract Drawings, Performance Bond and Labor & Materials Payment Bond, and Certificate of Insurance must be submitted with the Bid. The Contract Documents are defined in the Agreement.

Any bidder may modify his Bid by telegraphic or facsimile communication at any time prior to the scheduled closing time for receipt of Bids, provided such telegraphic or facsimile communication is received by the Owner prior to the closing time, and, provided further, the

Owner is satisfied that a written confirmation of the telegraphic or facsimile modification over the signature of the Bidder was mailed prior to the closing time. The telegraphic or facsimile communication should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened. If written confirmation is not received within three days from the closing time, no consideration will be given to the telegraphic or facsimile modification.

SECTION 00100

INFORMATION FOR BIDDERS

00100.09 ADDENDA AND INTERPRETATIONS

No verbal interpretation of the intent of any of the Contract Documents will be made before receipt of Bids. Requests for interpretations prior to receipt of Bids must be presented in writing to the Engineer, Barton & Loguidice, P.C., Consulting Engineers, 290 Elwood Davis Road, Box 3107, Syracuse, New York 13220, and to be given consideration must be received by the Engineer at least seven (7) days prior to the date set for the opening of Bids.

Any interpretation, and any additional information or instruction will, if issued, be in the form of a written Addendum or Addenda sent by certified mail to all holders of Contract Documents at the addresses furnished therefore. Facsimile ("fax") communication may be issued in advance of any written Addendum or Addenda without diminishing any part of this Section.

Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligation under this Bid as submitted. All Addenda so issued shall become a part of the Contract Documents.

00100.10 QUALIFICATIONS OF BIDDERS

The Owner reserves the right to make such investigation as he may deem necessary or advisable to determine any Bidder's ability to do the work, and the Bidder shall furnish to the Owner on request all data and information pertinent thereto. The Owner reserves the right to reject any Bid if such investigation fails to satisfy the Owner that the Bidder is fully qualified to do the work.

Conditional Bids will be considered informal and will be rejected.

Immediately following the Canvass of Bids the Low Bidder, if so requested, shall furnish the Owner a sworn and notarized financial statement, and a statement of his qualifications and experience.

SECTION 00100

ADDITIONAL INFORMATION FOR BIDDERS

00100.11 OBLIGATIONS OF BIDDERS

At the time of the opening of Bids, each Bidder will be presumed to have inspected the Site, to have informed himself fully of the conditions relating to the work and labor required for the work, and to have read and acquainted himself with all the Contract Documents. Failure to do so will not relieve the Bidder who is awarded the Contract of his obligation to complete the work for the price or prices bid, or of any other obligation under the Contract. The failure or omission of any Bidder to receive or examine any Contract Documents shall in no way relieve him from any obligation in respect to his Bid.

00100.12 FREE AND OPEN COMPETITION

The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in this Section and the General Conditions, or those substitute or materials and equipment approved by the Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. Requests for the Engineer's clarification of materials and equipment considered "or-equal", during the bidding process, must be received by the Engineer at least 5 days prior to the date for receipt of bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by the Bidder and has been received by the Engineer at least 15 days prior to the date for receipt of Bids. Each request shall conform to the requirements of paragraph 8.1 of the General Conditions and this Section. The burden of proof of the merit of the proposed item is upon the Bidder.

The Engineer's decision of approval or disapproval of a proposed item will be final. If the Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

00100.13 LIQUIDATED DAMAGES FOR FAILURE TO EXECUTE CONTRACT

Should the successful Bidder refuse or fail to execute the Contract and Bond within five (5) working days after receipt of notice of the acceptance of his Bid, the security deposited with his Bid shall be forfeited to the Owner as liquidated damages for such refusal or failure.

SECTION 00100

ADDITIONAL INFORMATION FOR BIDDERS

00100.14 DISCREPANCY IN BIDS

In the event a discrepancy exists in any Bid between the prices written in words and the prices written in figures, the prices written in words shall govern. If a discrepancy exists in any bid between unit prices and the extended totals therefore, the unit prices shall govern. In either of the above cases, the extended totals, and the total of all extensions, shall be corrected, if necessary, and the Bid may not be considered informal.

00100.15 LOWEST BIDDER

Bids will be compared on the basis of the totals for the Contract, corrected as necessary in conformance with Article 00100.13, given at the bottom of the schedule of quantities, prices and extensions. Such total in each Bid shall be the sum of all lump sum prices, plus the sum of all the extensions produced by multiplying the unit price in each case by the corresponding listed quantity.

00100.16 AWARD OF CONTRACT

All Bidders are required to submit Bids for Base Bid and Alternate Bid Items. Any Bids, which are not completed for both the Base Bid and Alternate Bid Items may be considered non-responsive, and Bids may be rejected.

The Contract will be awarded to that responsible Bidder whose Bid, after corrections and adjustments, totals the least number of dollars.

At the Owner's option, low bid may be defined as the Base Bid or the Alternate Bid. See Additional Instructions (Section 00160.26) "Alternate Bid Items" for further detail.

The Owner reserves the right to reject any and all Bids.

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00150

LABOR AND EMPLOYMENT

00150.01 GENERAL

The Contractor and every Subcontractor on public works contracts shall comply with Article 8 of the State Labor Law, as amended.

00150.02 POSTING MINIMUM WAGE RATES & KEEPING RECORDS

The Contractor and every Subcontractor on public works contracts shall post in a prominent and accessible place on the Site a legible statement of all wage rates and supplements as specified in the Contract to be paid or provided, all redeterminations of such schedules as the case may be, for the various classes of mechanics, workmen and laborers employed on the work. Other notices to be posted are the Workers' Compensation Law Section 51 notice, the Department of Labor notice that this project is a public work project on which each worker is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working, and all other notices required by law to be posted at the site. The Contractor shall maintain such notices in a legible manner, written in plain English in lettering no smaller than two inches in height and two inches in width, weatherproof, and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason.

The Contractor and every Subcontractor shall keep original payrolls or verified transcripts thereof showing the hours and days worked by each workman, mechanic or laborer, the occupation at which he worked, the hourly wage rate paid and the supplements paid or provided, on the Site, when the Contractor or Subcontractor maintains no regular place of business in New York State and where the amount of the Contract is in excess of $25,000. All other Contractors and Subcontractors shall produce within five days on the Site and upon formal order of the Commissioner of Labor or his designated representative such original payrolls or verified transcripts thereof, as may be deemed necessary to adequately enforce the provisions of this Section.

Notwithstanding the aforementioned requirements, every Contractor and Subcontractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter, a transcript of the original payroll record, as provided by Article 8 of the Labor Law, subscribed and affirmed as true under penalties of perjury. The original payrolls or transcripts shall be preserved for three years from the completion of the work.

SECTION 00150

LABOR AND EMPLOYMENT

00150.03 NON-DISCRIMINATION AND LABOR PRACTICES

In accordance with Section 220-e of Article 8 of the State Labor Law, the Contractor agrees:

A. That in the hiring of employees for the work of this Contract or any Subcontract, neither he nor any Subcontractor, nor any person acting on behalf of the Contractor, or any Subcontractor, shall by reasons of race, creed, color, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which his employment relates; and

B. That neither the Contractor, nor any Subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, creed, color, sex, disability or national origin; and

C. That there may be deducted from the amount payable to the Contractor by the Owner, a penalty of Fifty Dollars for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this Contract; and

D. That this Contract may be cancelled or terminated by the Owner, and all monies due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Section of the Contract; and

E. That the aforesaid provisions of this Section covering contracts for the manufacture, sale or distribution of materials, equipment or supplies shall be limited to operations performed within the territorial limits of the State of New York.

F. During the performance of this Contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, disability or national origin, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, sex, color or national origin. Such action shall be taken with reference, but not be limited to: recruitment, employment, job assignment, promotion, upgrading, demotion,

SECTION 00150

LABOR AND EMPLOYMENT

00150.03 NON-DISCRIMINATION AND LABOR PRACTICES - Continued

transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.

2. The Contractor will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice to be provided by the State Division of Human Rights, advising such labor union or representative of the Contractor's agreement under subparagraphs (1) through (7) (hereinafter called "non-discrimination clauses"). If the Contractor was directed to do so by the contracting agency as part of the Bid or negotiation of this Contract, the Contractor shall request such labor union or representative to furnish him with a written statement that such labor union or representative either will affirmatively cooperate, within the limits of its legal and contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses or that it consents and agrees that recruitment, employment and the terms and conditions of employment under this Contract shall be in accordance with the purposes and provisions of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the State Division of Human Rights of such failure or refusal.

3. The Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Division of Human Rights setting forth the substance of the provisions of subparagraphs (1) and (2) and such provisions of the State's laws against discrimination as the State Commissioner of Human Rights shall determine.

4. The Contractor will state, in all solicitations, or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, sex, color, disability or national origin.

SECTION 00150

LABOR AND EMPLOYMENT

00150.03 NON-DISCRIMINATION AND LABOR PRACTICES - Continued

5. The Contractor will comply with the provisions of Sections 291-299 of the Executive Law and the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such sections of the Executive Law, and will permit access to his books, records and accounts by the State Commissioner of Human Rights, the Attorney General and the Commissioner of Labor for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.

6. This Contract may be forthwith cancelled, terminated or suspended, in whole or in part, by the contracting agency upon the basis of a finding made by the State Commissioner of Human Rights that the Contractor has not complied with these non-discrimination clauses, and the Contractor may be declared ineligible for future contracts made by or on behalf of the State or a public authority or agency of the State, until he satisfies the State Commissioner of Human Rights that he has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by the State Commissioner of Human Rights after conciliation efforts by the State Division of Human Rights have failed to achieve compliance with these non-discrimination clauses and after verified complaint has been filed with the State Division of Human Rights, notice thereof has been given to the Contractor and an opportunity has been afforded him to be heard publicly before the State Commissioner of Human Rights or his designee. Such sanctions may be imposed and remedies otherwise provided by law.

7. The Contractor will include the provisions of sub-paragraph (1) through (7) of this paragraph A and in every Subcontract or purchase order in such a manner that such provisions will be binding upon each Subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take such action in enforcing such provisions of such Subcontract or purchase order as the contracting agency may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved in or is threatened with litigation with a Subcontractor or vendor as a result of such direction by the

SECTION 00150

LABOR AND EMPLOYMENT

00150.03 NON-DISCRIMINATION AND LABOR PRACTICES - Continued

contracting agency, the Contractor shall promptly so notify the Attorney General, requesting him to intervene and protect the interest of the State of New York.

G. It is hereby agreed that all applicable provisions of the Labor Law of the State of New York shall be carried out in the performance of this Contract.

H. This agreement shall be void and of no effect unless the Contractor shall secure compensation insurance for the benefit of, and keep insured during the life of this agreement, such employees engaged therein as are required to be insured by the provisions of the Worker's Compensation Law of the State of New York.

00150.04 LEGAL DAY'S WORK

In accordance with Section 220 (2) of Article 8 of the State Labor Law, no laborer, workman or mechanic employed by the Contractor, a Subcontractor or other person doing or contracting to do any part of the work shall be permitted or required to work more than eight hours in any one calendar day or more than five days in any week except in cases of extraordinary emergency including fire, flood or danger to life or property, or in case of national emergency when so proclaimed by the President of the United States.

00150.05 WAGE RATES

In accordance with Section 220 of Article 8 of the State Labor Law, the wages to be paid for a legal day's work, as hereinbefore defined, to laborers, workmen or mechanics employed by the Contractor or Subcontractors, shall be not less than the prevailing rate of wages as hereinafter defined. Each laborer, workman or mechanic employed by the Contractor, Subcontractors, or other person upon or about the work, shall be paid not less than the wages and supplements herein provided.

Any person or corporation that willfully pays or provides less than the stipulated wage scale or supplements shall be guilty of a misdemeanor and upon conviction shall be punished as provided by law.

SECTION 00150

LABOR AND EMPLOYMENT

00150.05 WAGE RATES - Continued

It shall be the duty of the Commissioner of Labor, or, if the Owner is a city, the comptroller or other analogous officer of such city, to make a determination of the schedule of wages to be paid all laborers, workmen and mechanics employed on the Project (if it is a public works project) including supplements for welfare, pension, vacation and other benefits. These supplements include hospital, surgical or medical insurance or benefits, life insurance or death benefits, accidental death or dismemberment insurance, and pension or retirement benefits. If the amount of supplements provided by the employer is less than the total supplements shown on the wage schedule, the difference shall be paid in cash to employees.

The supplements to be provided shall be in accordance with prevailing practices in the locality. The amount for wages and for supplements listed in the schedule in these Contract Documents does not necessarily include all types of prevailing wages and supplements in the locality, and a future determination by the Commissioner of Labor may require the Contractor to pay increased wages or provide additional supplements.

00150.06 VERIFICATION OF AMOUNTS DUE FOR WAGES AND SUPPLEMENTS

In accordance with Section 220-a of Article 8 of the State Labor Law, the New York State schedule of prevailing wages and supplements, as included in this Contract or as subsequently redetermined by the New York State Department of Labor, shall be specifically included in each and every Subcontract, regardless of tier, awarded by the Contractor or his Subcontractors.

Subcontractors, regardless of tier, shall provide to the Contractor a verified statement attesting that the Subcontractor has received and reviewed the prevailing wage rate and supplement schedule and agreeing that it will pay its employees the applicable wages and will pay or provide the supplements specified therein. The Contractor shall submit to the Owner copies of all such verified statements.

The Owner will not make final payment to the Contractor unless and until the Contractor submits the following:

- verified statements as described in the preceding paragraph

SECTION 00150

LABOR AND EMPLOYMENT

00150.06 VERIFICATION OF AMOUNTS DUE FOR WAGES AND SUPPLEMENTS - Continued

- certification to the amounts then due from the Contractor to any and all laborers for wages or supplements on account of labor performed upon the work under the Contract

- certification to the amounts then due from any Subcontractor, regardless of tier, for wages and supplements, on account of labor performed upon the work under the Contract, or shall certify that the Contractor has no knowledge of such amounts owing to or on behalf of any laborers of its Subcontractors.

In the event it is determined by the New York State Commissioner of Labor that the wages and/or supplements of any employees of the Contractor's Subcontractors, regardless of tier, have not been paid or provided pursuant to the appropriate schedule of wages and supplements, the Contractor shall be responsible for payment of such wages or supplements.

00150.07 MINIMUM RATES

New York State Department of Labor wage rates will be in effect on this Project.

The minimum wage rates designated by the Commissioner of Labor of the State of New York are attached. These minimum rates and supplements may be modified during the life of the Contract. If the prevailing wage rates should subsequently be legally modified or increased by any means other than by the action of the Owner, the Contractor shall assume full responsibility for the payment of said increases without recourse to the Owner.

END OF SECTION

NEW YORK STATE DEPARTMENT OF LABOR
BUREAU OF PUBLIC WORK
STATE OFFICE CAMPUS, BLDG. 12
ALBANY, NY 12240

SCHEDULE 2003

Date 09/05/03

VOLNEY AIRPORT WATER DIST

PRC 0306375 OSWEGO COUNTY 01

BARTON AND LOGUIDICE PC
ATTN: ANAN SRIRAM
290 ELWOOD DAVIS ROAD
P O BOX 3107
SYRACUSE NY 13210

Location and Type of Project
PROJECT ID #: NONE
INSTALL WATERMAIN/TANKS
WITHIN VOLNEY AIRPORT
WATER DISTRICT

In response to your request, enclosed is the schedule of the prevailing hourly wage rates and the prevailing hourly supplements for the above project, together with copies of the Notice of Contract Let (PW-16) for your use.

THE SCHEDULE MUST BE ANNEXED TO AND FORM A PART OF THE SPECIFICATIONS FOR THIS PROJECT WHEN IT IS ADVERTISED FOR BIDS.

These schedules have been prepared and forwarded in accordance with Article 8 of the NYS Labor Law, which provides that it shall be the duty of the fiscal officer to ascertain and determine the schedules of supplements to be provided and wages to be paid to workers, laborers and mechanics employed on public work projects, and to file such schedules with the Department having jurisdiction.

This schedule is effective from July 1, 2003 through June 30, 2004. All updates, corrections and future copies of the annual determination are available on the Department's website (www.labor.state.ny.us).

The attached rates are based on the latest information available to the Department of Labor, Bureau of Public Work. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project.

NOTICE TO CONTRACTING AGENCIES:

Upon cancellation or completion of this project, enter the necessary information and return this page to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

PROJECT HAS BEEN COMPLETED/CANCELLED:

Date _____

Signature _____

Title _____

For additional information, contact our local District Offices:

Albany	(518) 457-2744	Syracuse	(315) 428-4056
Binghamton	(607) 721-8005	Rochester	(716) 258-4505
Buffalo	(716) 847-7159	Utica	(315) 793-2314
Garden City	(516) 228-3915	White Plains	(914) 997-9507
New York City	(212) 352-6088		

PW-200 (6-03)

Oswego County General Construction Rates

Prevailing Wage Rates for 07/01/04 - 06/30/05

INFORMATION ABOUT PREVAILING RATE SCHEDULE

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

CLASSIFICATION

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

PAID HOLIDAYS

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.
The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

SUPPLEMENTAL BENEFITS

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is for each hour worked, some classifications require the payment or provision of supplements for each hour paid (including paid holidays on which no work is performed) and/or may require supplements to be paid or provided at a premium rate for premium hours worked.

EFFECTIVE DATES

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.state.ny.us) for current wage rate information.

APPRENTICE TRAINING RATIOS

The following are the allowable ratios of registered Apprentices to Journey-workers.
For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one

Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6821 if you have any questions.

Title (Trade)	Ratio
Boilermaker	1:1,1:4
Mason	1:1,1:4
Carpenter	1:1,1:4
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:4
Iron Worker	1:1,1:6
Laborer	1:1,1:3
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - New York City	212-352-6088	212-352-6580
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

(7/01/2004) NOTES Admin.

03/01/2005

OVERTIME/HOLIDAY CODES

OVERTIME

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

(A) Time and one half of the hourly rate after 7 hours per day.
(AA) Time and one half of the hourly rate after 7 and one half hours per day.
(B) Time and one half of the hourly rate after 8 hours per day.
(B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.Double the hourly rate for all additional hours.
(C) Double the hourly rate after [illegible] hours per day.
(C1) Double the hourly rate after [illegible] and one half hours per day.
(D) Double the hourly rate after 8 hours per day.
(D1) Double the hourly rate after 9 hours per day.
(E) Time and one half of the hourly rate on Saturday.
(E1) Time and one half 1st 4 hours on Saturday. Double the hourly rate all additional Saturday hours.
(E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather.
(E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week.
(E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather.
(F) Time and one half of the hourly rate on Saturday and Sunday.
(G) Time and one half of the hourly rate on Saturday and Holidays.
(H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays.
(I) Time and one half of the hourly rate on Sunday.
(J) Time and one half of the hourly rate on Sunday and Holidays.
(K) Time and one half of the hourly rate on Holidays.
(L) Double the hourly rate on Saturday.
(M) Double the hourly rate on Saturday and Sunday.
(N) Double the hourly rate on Saturday and Holidays.
(O) Double the hourly rate on Saturday, Sunday, and Holidays.
(P) Double the hourly rate on Sunday.
(Q) Double the hourly rate on Sunday and Holidays.
(R) Double the hourly rate on Holidays.
(S) Two and one half times the hourly rate for Holidays, if worked.
(S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays. One and one half times the hourly rate all additional hours.
(T) Triple the hourly rate for Holidays, if worked.
(U) Four times the hourly rate for Holidays, if worked.
(V) Including benefits at SAME PREMIUM as shown for overtime.
(W) Time and one half for benefits on all overtime hours.

NOTE:BENEFITS are PER HOUR WORKED,for each hour worked, unless otherwise noted

HOLIDAYS

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally

classified.

(1) None.
(2) Labor Day.
(3) Memorial Day and Labor Day.
(4) Memorial Day and July 4th.
(5) Memorial Day, July 4th, and Labor Day.
(6) New Year's Day, Thanksgiving Day, and Christmas Day.
(7) Lincoln's Birthday, Washington's Birthday, and Veterans Day.
(8) Good Friday.
(9) Lincoln's Birthday.
(10) Washington's Birthday.
(11) Columbus Day.
(12) Election Day.
(13) Presidential Election Day.
(14) 1/2 Day on Presidential Election Day.
(15) Veterans Day.
(16) Day after Thanksgiving Day.
(17) July 4th.
(18) 1/2 Day before Christmas Day.
(19) 1/2 Day before New Years Day.
(20) Thanksgiving Day.
(21) New Year's Day.
(22) Christmas Day.
(23) Day before Christmas.
(24) Day before New Year's Day.
(25) Presidents' Day.
(26) Martin Luther King, Jr. Day.

03/01/2005

Asbestos Worker

CAYUGA COUNTY:	Entire County
CHENANGO COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
OTSEGO COUNTY:	Entire County
SCHUYLER COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST LAWRENCE COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS WORKED BETWEEN THE HOURS LISTED BELOW:

	REGULAR RATE	SPECIAL RATE
	7/01/2004	7/01/2004
1ST SHIFT (MORNING).....	$ 24.50	$ 19.25
2ND SHIFT (AFTERNOON).....	28.18	22.14
3RD SHIFT (NIGHT).....	30.63	24.06

WAGES: (per hour)

	7/01/2004
Asbestos Worker	
Insulation Work (On mechanical systems only)...	$ 24.50

OVERTIME PAY: See (B1, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE

Overtime:.... See (4, 6) on HOLIDAY PAGE
Triple time for LABOR DAY if worked.

APPRENTICES:(1) yr terms at the following percentage of Journeyman's wage

1st yr	2nd	3rd	4th
40%+$3.00	50%+$3.00	70%	80%
$12.80	$15.25	$17.15	$19.60

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman ..... $ 10.29

Apprentices 1st and 2nd year..... 7.29
Apprentices 3rd and 4th year..... 10.29

SPECIAL RATE: See below

THE FOLLOWING RATES APPLY TO WORK ON: SCHOOLS,HOSPITALS,NURSING HOMES,HEALTH CARE FACILITIES,PUBLIC HOUSING, HOTELS AND MOTELS,EXCLUDING UNDERGROUND WORK,STAND ALONE STEAM AND ELECTRIC GENERATION PLANTS ASSOCIATED WITH THESE FACILITIES.

WAGES(per hour)

Journeyman..... $19.25

Apprentices:

1st Year..... $12.80
2nd Year..... 15.25
3rd Year..... 17.15

SUPPLEMENTAL BENEFITS:(per hour worked)

Journeyman..... $7.29
Apprentices..... $7.29

6-30-Syracuse

03/01/2005

Asbestos Worker - Abatement

ALLEGANY COUNTY:	Entire County	BROOME COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	CAYUGA COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	CHEMUNG COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	CORTLAND COUNT:	Entire County

ERIE COUNTY:	Entire County	GENESEE COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County	LIVINGSTON COUNTY:	Entire County
MADISON COUNTY:	Entire County	MONROE COUNTY:	Entire County
NIAGARA COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
ORLEANS COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
OSWEGO COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
SENECA COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
ST. LAWRENCE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County	WAYNE COUNTY:	Entire County
WYOMING COUNTY:	Entire County	YATES COUNTY:	Entire County

WAGES: (per hour)

	7/01/2004
Asbestos Worker Removal & Abatement Only.....	$ 18.72

Only for the removal of insulation materials from mechanical systems which are not going to be scrapped, for all other removal work, please refer to the appropriate building laborer category.

OVERTIME:..... See (B, E, Q*, T*,V) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE.
Overtime:..... See (2,4,6 25) on HOLIDAY PAGE.
*Code T applies to 2.
*Code Q applies to 4,6,& 25.

SUPPLEMENTAL BENEFITS: (per hour paid)

Journeyman..... $ 11.25

1-201West

03/01/2005

Boilermaker

CAYUGA COUNTY:	Entire County
CLINTON COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST LAWRENCE COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County

WAGES: (per hour)

	7/01/2004	10/01/2004	1/01/2005
Boilermaker.....	$ 24.98	ADDITL $ 1.00	ADDITL $ .60

OVERTIME PAY: New Work See (B,E,Q) on OVERTIME PAGE. Time & 1/2 for the 9th & 10th hours Monday thru Saturday, double all addtl. hours

OVERTIME PAY: Maint. See (B,E,Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:..... See (5, 6, 10, 11, 15) on HOLIDAY PAGE

APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS: (per hour worked) *NOTE See below

Journeyman.....$ 14.87

*Note (Portion of Supplemental benefits per hour paid at same premium as shown for overtime.)

*Journeyman.....$ 7.40

Apprentice	Per hrs worked	* Per hrs Paid
1st year.....	$ 12.49	$ 5.02
2nd year..		
1st 6 months.....	$ 12.88	$ 5.41
2nd 6 months.....	$ 13.27	$ 5.80
3rd year..		
1st 6 months.....	$ 13.65	$ 6.18
2nd 6 months.....	$ 14.04	$ 6.57
4th year..		
1st 6 months.....	$ 14.29	$ 6.82
2nd 6 months.....	$ 14.50	$ 7.03

No.6-175

03/01/2005

Carpenter - Building

OSWEGO COUNTY: Entire County

WAGES: (per hour)	7/01/04	6/01/05
Building:		
Carpenter.....	$ 21.25	Addtl $1.30
Carpet Layer.....	21.25	
Dry-Wall Applicator.....	21.25	
Lather.....	21.25	
Hazardous waste work.....	22.75	
Piledriver (Bldg).....	21.25	
Diver Wet Day.....	53.75	
Diver Dry Day & Tenders	22.25	
Pile driver welder/Carpenter..	21.50	
Sawyer.....	21.50	

OVERTIME PAY: See (B,E,Q,E2) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:.... See (5, 6) on HOLIDAY PAGE

APPRENTICES : (1/2 year terms at the following percentage of Journeyman's wage.

INDENTURED .....PRIOR TO MAY 31, 2002

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

INDENTURED..... MAY 31, 2002 AND AFTER

1st	2nd	3rd	4th
50%	60%	70%	80%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman..... $ 11.39

INDENTURED .....PRIOR TO MAY 31, 2002

Appr 70% to Journeyman..... $ 11.39
Appr 60% to 65% 7.85
Appr 50% to 55 ..... 4.31

INDENTURED.....MAY 31, 2002 AND AFTER

Appr 80%..... $ 11.39
Appr 70%..... 11.39
Appr 60%..... 7.85
Appr 50%..... 4.31

MILLWRIGHTS: 7/01/2004 6/01/05

Journeyman.....	$ 21.50	ADDTL
Welder.....	22.75	$1.30
Hazardous Waste Work.....	22.75	

OVERTIME PAY: See (B,E,Q,E2) on overtime page

HOLIDAY:
Paid:..... See (1) ..on holiday page.
Overtime:.... See (5&6) on holiday page.

APPRENTICES: (1 year terms) at the following percentage of Journeyman's wage.

INDENTURED..... AFTER JULY 1, 2002

1st	2nd	3rd	4th
50%	60%	70%	80%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman ..... $ 11.39

INDENTURED .....AFTER JULY 1, 2002

Appr 50%..... $ 4.31
Appr 60%..... 7.85
Appr 70%..... 11.39

Appr 80%..... 11.39

No. 6-747.1b/1163

03/01/2005

Carpenter - Heavy Highway

OSWEGO COUNTY: Entire County

WAGES: (per hour)	7/01/2004	7/01/05
Heavy/Highway:		
Carpenter	$ 21.98	ADDTL
Piledriver (Heavy/Hwy).....	21.98	$1.35
Certified welder.....	23.48	
Hazardous waste.....	23.48	
Diver Wet.....	53.75	
Diver Dry / Tender.....	22.98	
Sawyer.....	22.38	

OVERTIME PAY: See (B, E, Q,) on OVERTIME PAGE

HOLIDAY:
Paid:.....See (2, 17) on HOLIDAY PAGE
Overtime: See (5 & 6) on HOLIDAY PAGE

APPRENTICES* : (1/2) year terms at the following percentage of journeyman's wage.

INDENTURED .....PRIOR TO MAY 31, 2002

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

INDENTURED ..... MAY 31, 2002 AND AFTER

1st	2nd	3rd	4th
50%	60%	70%	80%

*On project for removal and/or abatement of asbestos or any toxic or hazardous material and it is required by the employer or mandated by NYS or FEDERAL Regulation to wear protective equipment an addtl $1.50 per hr above their appropriate rate shall be paid to apprentices.

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman..... $ 11.39

INDENTURED PRIOR TO MAY 31, 2002

Appr 70% to Journeyman.....	$ 11.39
Appr 60% to 65%.....	7.85
Appr 50% to 55%.....	4.31

INDENTURED MAY 31, 2002 AND AFTER

Appr 80%.....	$ 11.39
Appr 70%.....	11.39
Appr 60%.....	7.85
Appr 50%.....	4.31

6-747.1h

03/01/2005

Electrician

CAYUGA COUNTY: Entire county except the Townships of Genoa.
CHENANGO COUNTY: Only the Townships of Columbus, New Berlin and Sherburne.
OTESGO COUNTY: Only the Townships of Plainfield, Richfield, Springfield, Cherry Hill, Roseboom, Middlefield, Otsego, Exeter, Edmeston, Burlington, Pittsfield and New Lebanon.
TOMPKINS COUNTY: Only the Township of Groton.
WAYNE COUNTY: Only the Townships of Huron, Wolcott, Rose and Butler.

CORTLAND COUNTY	Entire County
HERKIMER COUNTY	Entire County
MADISON COUNTY	Entire County
ONEIDA COUNTY	Entire County
ONONDAGA COUNTY	Entire County
OSWEGO COUNTY	Entire County

WAGES: (per hour)	7/01/04	6/01/05	6/01/06
Electrician.....	$ 25.75	$ 26.80	$ 28.10
Cable Splicer.....	28.32	29.48	30.91
Teladata.....	25.75	26.80	28.10

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS FOR AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1st shift.....7:00 AM to 3:30 PM
2nd shift.....3:30 PM to 12:00 Midnight
3rd shift....12:00 Midnight to 8:30 AM

	7/01/04	6/01/05	6/01/06
1st shift.....	$25.75	$26.80	$28.10
2nd shift.....	$30.20	$31.45	$32.95
3rd shift.....	$33.85	$35.20	$36.90

OVERTIME PAY: See (B,E*,Q) on OVERTIME PAGE
* Double Time after 10 hrs. on Saturday.

HOLIDAYS:
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

APPRENTICES: (at the following percentage of journeyman's wage)

1st Period (0-1000 hrs)	40%	4th Period (3501-5000 hrs)	60%
2nd Period (1001-2000 hrs)	45%	5th Period (5001-6500 hrs)	70%
3rd Period (2001-3500 hrs)	50%	6th Period (6501-8000 hrs)	80%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....,,,$	10.52 plus 3% of wage	$ 11.27 plus 3% of wage	$ 12.07 plus 3% of wage
Apprentices:			
1st period			
2nd period .....$	4.74 plus 3% of wage	$ 5.24 plus 3% of wage	$ 5.74 plus 3% of wage
3rd period .....$	9.42 plus	$ 10.17 plus	$ 10.97 plus

	3% of wage	3% of wage	3 of wage
4th period .....$	9.64 plus 3 of wage	$ 10.39 plus 3% of wage	$ 11.1% plus 3 of wage
5th period .....$	9.86 plus 3% of wage	$ 10.61 plus 3% of wage	$ 11.41 plus 3 of wage
6th period .....$	10.08 plus 3% of wage	$ 10.83 plus 3% of wage	$ 11.63 plus 3% of wage

No. 6-43

03/01/2005

Electrician Lineman

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
GREENE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	ULSTER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WARREN COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WASHINGTON COUNTY:	ENtire County
LIVINGSTON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MADISON COUNTY:	Entire County	WYOMING COUNTY:	Entire County
MONROE COUNTY:	Entire County	YATES COUNTY:	Entire County
MONTOMERY COUNTY:	Entire County		
NIAGARA COUNTY:	Entire County		

Includes Teledata Work within Ten feet of High
Voltage Transmission Lines

WAGES: (per hour)

	7/01/04	5/01/05	4/30/06
Lineman/Tech./Welder ..... $	35.19	36.60	38.00
Cable splicer	35.19	36.60	38.00
Digging Machine Operator.....	31.67	32.94	34.20
Tract Trailer Driver.....	29.91	31.11	32.30
Truck Driver/Groundman.....	28.15	29.28	30.40
Mechanic 1st Class.....	28.15	29.28	30.40
Flagman.....	21.11	21.96	22.80

*Additional 1.00 per hr.for entire crew when a helicopter is used.

**Above rates applicable on all overhead Transmission line work & Fiber Optic Cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction.

Lineman/Technician/Welder.....	$ 33.97	35.37	36.78
Digging Machine Operator.....	30.57	31.83	33.10
Tractor Trailer Driver.....	28.87	30.06	31.26
Truck Driver/Groundman.....	27.18	28.30	29.42
Mech. 1st Class.....	27.18	28.30	29.42
Flagman.....	20.38	21.22	22.07
Certified Welder.Pipe Type Cable.....	35.67	37.14	38.62
Cable Splicer.....	37.37	38.91	40.46

*Additional 1.00 per hour for entire crew when a helicopter job.

**Above rates apply on Switching Structures, Maintenance projects, Railroad Catenary install/maint, Third rail installation, Bonding of Rails and pipe type cable and installation of Fiber Optic Cable.

Lineman /Techician.....	$ 32.67	34.08	35.48
Welder/Cable Splicer.....	32.67	34.08	35.48
Digging Machine Operator.....	29.40	30.67	31.93
Tractor Trailer Driver.....	27.77	28.97	30.16
Truck Driver/Groundman.....	26.14	27.26	28.38
Mechanic 1st Class.....	26.14	27.26	28.38
Flagman.....	19.60	20.45	21.29

*Additional 1.00 per.hr.for entire crew when a helicopter is used.

**Above rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of Fiber Optic Cable where no other construction trades are or have been involved.

Lineman/Technician	$ 32.67	34.08	35.48
Cable Ssplicer.....	35.94	37.49	39.03
Certified Welder.....	34.30	35.78	37.25
Digging Machine Operator.....	29.40	30.67	31.93
Tractor Trailer Driver.....	27.77	28.97	30.16
Mechanic 1st Class.....	26.14	27.26	28.38
Truck Driver/Groundman.....	26.14	27.26	28.38
Flagman.....	19.60	20.45	21.29

*Additional $ 1.00 per hour for entire crew when a helicopter is used.

**Above rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work"

OVERTIME PAY: See (B, E, Q,) on OVERTIME PAGE. * Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1st. shift.....8:00 AM to 4:30 PM REGULAR RATE

2nd shift.....4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %

3rd shift.....12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

HOLIDAY:
Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Gov. Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Gov. Election Day.
SUPPLEMENTS for holidays paid at straight time.

The following APPRENTICE rates and the following SUPPLEMENTAL benefits apply to all classification categories of CONSTRUCTION, TRANSMISSION and DISTRIBUTION.

APPRENTICES: (1000) hr terms at the following percentage of Journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS: (per Hour worked including above listed holidays.

$9.50 plus 7% of wage	$10.50 plus 7% of wage	$11.50 plus 7% of wage

6-1249a

03/01/2005

Electrician Lineman Pole Treater

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
GREENE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	ULSTER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WARREN COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MADISON COUNTY:	Entire County	WYOMING COUNTY:	Entire County
MONROE COUNTY:	Entire County	YATES COUNTY:	Entire County
MONTOMERY COUNTY:	Entire County		
NIAGARA COUNTY:	Entire County		

WAGES: (per hour)

7/01/04

Pole treater 1st..... $ 12.96
(Minimum 1 year experience)

Pole treater 2nd..... 12.27
(Minimum 6 months experience)

Pole treater 3rd 11.60
(Minimum 3 months experience)

Inexperienced treater 10.92
(Less than 3 months)

OVERTIME PAY: See (B, H) on OVERTIME PAGE.

HOLIDAY
Paid:..... See (5, 6, 8, 10, 15) on HOLIDAY PAGE.
Overtime:.... See (5, 6, 8, 10, 15) on HOLIDAY PAGE.

SUPPLEMENTAL BENEFITS: (per hours worked including the above listed holidays)

$ 3.95
plus 3%
of wage

*NOTE.....ABOVE RATES APPLICABLE THROUGHOUT THE ENTIRE STATE EXCEPT THE FOLLOWING COUNTIES: BRONX, KINGS, NEW YORK COUNTY, QUEENS, RICHMOND, NASSAU, SUFFOLK and WESTCHESTER COUNTIES.

6-1249pole

03/01/2005

Electrician Lineman Teledata

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
GREENE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	ULSTER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WARREN COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MADISON COUNTY:	Entire County	WESTCHESTER COUNTY:	Entire County
MONROE COUNTY:	Entire County	WYOMING COUNTY:	Entire County
MONTGOMERY COUNTY:	Entire County	YATES COUNTY:	Entire County
NIAGARA COUNTY:	Entire County		

For work outside building property lines****

**** EXCLUDES - Teledata work within ten feet of High Voltage transmission lines, for this work please see LINEMAN.

WAGES: (per hour) 7/01/2004

Cable Splicer.....$ 23.07

Installer/Repairman..... 21.91
Teledata Lineman..... 21.91
Technician/Equip oper..... 21.91

Groundman..... 11.61

OVERTIME PAY: See (B,Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... NONE
Overtime:.... See (5,6,16) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS:
per hour worked .....$ 3.05
plus 3%
of wage

6-1249LT

03/01/2005

Electrician Lineman Traffic Signal Lighting

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
CLINTON COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ERIE COUNTY:	Entire County	SENECA COUNTY:	Entire County
ESSEX COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
FULTON COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
GENESEE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
GREENE COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	WARREN COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WYOMING COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	YATES COUNTY:	Entire County
MADISON COUNTY:	Entire County		
MONROE COUNTY:	Entire County		
MONTOMERY COUNTY:	Entire County		
NIAGARA COUNTY:	Entire County		

WAGES: (per hour)

	7/01/2004	5/01/05	4/30/06
Certified Welder... .....$	31.30	32.78	34.26
Lineman/Technician.....	29.81	31.22	32.63
Digging Mach.....	26.83	28.10	29.37
Tractor trailer driver.....	25.34	26.54	27.74
Truck Driver/groundman.....	23.85	24.98	26.10
Mechanic 1st Class.....	23.85	24.98	26.10
Flagman.....	17.89	18.73	19.58

Above rates applicable on ALL Lighting and Traffic Signal Systems with the installation, testing, operation, maintenance and repair of all traffic control and illumination projects, traffic monitoring systems, road weather information systems and the installation of Fiber Optic Cable.

OVERTIME PAY: See (B, E, Q,) on OVERTIME PAGE. NOTE* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT.....8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT.....4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT.....12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

HOLIDAY:
Paid:.... See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Gov Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Gov Election Day.
*Supplements paid at STRAIGHT TIME rate for holidays.
**Overtime: (5, 6, 8, 13, 25)

The following APPRENTICE Rates and the following SUPPLEMENTAL BENEFITS apply to all classifications.

APPRENTICES: (1000) hour terms at the following percentage of Journey's wage.

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS: per Hour Worked including above listed holidays.

$ 9.50	$10.50	$11.50
plus	plus	plus
6.5% of wage	6.5% of wage	6.5% of wage

NOTE: Additional $1.00 per hr. for entire crew when a helicopter is used.

6-1249a-LT

03/01/2005

Electrician Lineman Tree Trimmer

PUTNAM COUNTY: Entire county except Brewster Township.

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORLEANS COUNTY:	Entire County

CAYUGA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
CLINTON COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SENECA COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
ERIE COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	TIOGA COUNTY:	Entire County
FULTON COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
GENESEE COUNTY:	Entire County	ULSTER COUNTY:	Entire County
GREENE COUNTY:	Entire County	WARREN COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	WAYNE COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WYOMING COUNTY:	Entire County
LEWIS COUNTY:	Entire County	YATES COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County		
MADISON COUNTY:	Entire County		
MONROE COUNTY:	Entire County		
MONTGOMERY COUNTY:	Entire County		
NIAGARA COUNTY:	Entire County		

Applies to line clearance, tree work and right-of-way preparation on all new or existing overhead electrical, telephone and CATV lines.

WAGES: (per hour)

	7/01/04	1/01/05
Tree Trimmer:		
Treeman.....	18.92	19.73
" Equip. Operator.....	16.77	17.47
" Mechanic.....	16.77	17.47
" Truck Driver.....	14.25	14.84
" Inexperienced Grdsman..	11.80	12.28
" Flagman	8.54	8.88

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (5, 6, 8, 10, 15, 16) on HOLIDAY PAGE.
Overtime:... See (5, 6, 8, 10, 15, 16) on HOLIDAY PAGE.
*Supplements paid at STRAIGHT TIME rate for holidays.
**Overtime: (5, 6, 8, 10, 15, 16)

SUPPLEMENTAL BENEFITS: (per hour worked including above listed holidays.

$ 4.05 plus 3% of wage	$ 4.15 plus 3% of wage

6-1249TT

03/01/2005

Elevator Constructor

MADISON COUNTY: Only the towns of: Chittenango,Fenner,Cazenovia, Nelson,Eaton,Georgetown,Lenox, Deruyter,Lebenon and Sullivan.

DELAWARE COUNTY: Only the towns of: Tompkins,Walton,Masonville,Sidney,

		Franklin and Deposit.
ONEIDA COUNTY:	Only the towns of:	Florence,Camden and Viena.
BROOME COUNTY:	Entire County	
CAYUGA COUNTY:	Entire County	
CHENANGO COUNTY:	Entire County	
CORTLAND COUNTY:	Entire County	
JEFFERSON COUNTY:	Entire County	
LEWIS COUNTY:	Entire County	
ONONDAGA COUNTY:	Entire County	
OSWEGO COUNTY:	Entire County	
ST.LAWRENCE COUNTY:	Entire County	
TIOGA COUNTY:	Entire County	

WAGES: (per hour)

	7/01/2003	1/01/2004	1/01/2005	1/01/2006
Elevator Constructor.....	$ 28.09	ADDITL.	ADDITL.	ADDITL.
" Helper	$ 19.66	$3.00	$3.00	$3.00

OVERTIME PAY: See (D, O, T) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime:.... See (5, 6, 15, 16) on HOLIDAY PAGE

APPRENTICES: ( ) year terms at the following percentage of journeyman,s wage.

SUPPLEMENTAL BENEFITS: (per hour worked)

$ 9.395 plus
6 % of wage

No. 6-62.1

03/01/2005

Glazier

CAYUGA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEDIA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County

WAGES (per hour)

	7/01/2004	5/01/2005 Add
Glazier.....	$19.51	$1.00

Additional $.50 per hour for all swing stagework, belt work, open steel or scaffolding over 25' or more from ground, floor or roof levels.

OVERTIME PAY: See (B,E,E2,Q*) on OVERTIME PAGE.

*Note: Emergency work on Sunday is 1 1/2 times the hourly rate.

HOLIDAY:

Paid:..... See (1) on HOLIDAY PAGE.
Overtime:.... See (5, 6) on HOLIDAY PAGE.

APPRENTICES: 1000 hour terms at the following percentage of journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th	10th
40%	45%	50%	55%	60%	65%	70%	75%	80%	85%

*** $8.00 minimum ***

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman & All Apprentices $7.41

5-677.2-2

03/01/2005

Ironworker

CHENANGO COUNTY: Only the Townships of Lincklaen, Otselic, Pitcher, Pharsalia, German, McDonough, Preston, Norwich, Smithville, Oxford, Guilford, Greene, Coventry, Bainbridge and Afton.
JEFFERSON COUNTY: Only the Townships of Alexandria, Theresa, Clayton, Orleans Cape, Vincent, Lyme, Brownville, Pamelia, Leray, Hounsfield, Watertown, Rutland, Adams, Henderson, Rodman, Ellisburg, Lorraine and Worth.
MADISON COUNTY: Only the Townships of Sullivan, Lenox, Lincoln, Fenner, Smithfield, Cazenovia, Nelson, DeRuyter and Georgetown.
SCHUYLER COUNTY: Only the Townships of Cayuta, Catherine, Hector and Montour.
WAYNE COUNTY: Only the Townships of Galen, Savannah, Rose, Butler, Huron and Wolcott
BROOME COUNTY: Entire County
CAYUGA COUNTY: Entire County
CORTLAND COUNTY: Entire County
ONONDAGA COUNTY: Entire County
OSWEGO COUNTY: Entire County
SENECA COUNTY: Entire County
TIOGA COUNTY: Entire County
TOMPKINS COUNTY: Entire County

WAGES: (per hour)

	7/01/2004	5/01/2005
Structural/Reinf/Rebar.....	$ 22.00	ADDTL
Mach Mover & Rigger.....	22.00	$1.50
Ornamental & curtain wall/window wall	22.00	
Pre-glazed metal framed windows attached to steel or masonry/caulking	22.00	
Chain Link Fence/Securty	22.00	
Sheeter/Bridge rail.....	22.00	
Pre-Cast erector	22.00	
Stone Derrickman	22.00	
Pre-Engineered bldg. Erector	22.00	

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAYS:
Paid:..... See (1) on HOLIDAY PAGE

Overtime:.... See (5,6) on HOLIDAY PAGE

APPRENTICES: (1) year terms at the following rates.

1st	2nd	3rd	4th
60%	70%	80%	90%
$13.80	16.10	18.40	20.70

SUPPLEMENTAL BENEFITS: (Per hour worked)

Journeyman.....	$14.59
Apprentices:	
1st year.....	7.00
2nd year.....	10.85
3rd year.....	11.40
4th year.....	11.95

6-60

03/01/2005

Laborer - Building

OSWEGO COUNTY: Entire County

GROUP #A:Power plant,nuclear site or related work.

GROUP #B: Blaster,work in radiation areas, asbestos and hazardous waste removal.

The rates and supplements under Group "A" and Group "B" apply to all catagories listed below if the above discriptions are applicable to the work being performed regardless on total cost of the project.

WAGES: (per hour) 7/01/2004

Group # A.....	$ 20.03
Group # B.....	20.43

For projects over $ 20 million total cost of project.

Basic rate:.....	$ 20.23

OVERTIME PAY: See{B,E,Q,E2}on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:.... See (5, 6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour worked)

$ 8.87

WAGES (per hour)

Laborer(Bldg):(projects [illegible] $20 million total cost of project)

7/01/2004

All classifications.(D RATE).. $ 15.82

*(Except if work done as described in Group A or B,
see above explanation for
A & B work)

OVERTIME PAY: See (B,E,G,EE) on OVERTIME PAGE

HOLIDAYS:
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour worked)

$ 8.61

6-214 b

03/01/2005

Laborer - Heavy Highway

OSWEGO COUNTY: Entire County

GROUP # A: Basic, Drill Helper, Flagman, Outboard and Hand Boats.

GROUP # B: Bull Float, Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of all Steel Mesh, Small Generators for Laborers' Tools, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Tail or Screw Operator on Asphalt Paver, Water Pump Operators(1-1/2" Single Diaphragm), Nozzle (Asphalt, Gunite, Seeding and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, Oil and Air Tool Operators, Wrecking Laborer.

GROUP # C: All Rock or Drilling Machine Operators (Except Quarry Master and Similar type), Acetylene Torch Operators, Asphalt Raker and Powderman.

GROUP # D: Blasters, Form Setters, Stone or Granite Curb Setters.

GROUP # E: EPA or DEC Certified Toxic or Hazardous Waste
Work

WAGES: (per hour) 7/01/2004

Heavy/Highway Laborer:
GROUP # A..... $ 20.07
GROUP # B..... 20.27
GROUP # C..... 20.47
GROUP # D..... 20.67

GROUP # E..... $2.00/hr over above rates.

*NOTE: A single irregular work shift can start at any time between 5:00 PM and 1:00 AM. All employees who work a single irregular shift on governmental mandated night work shall be paid an additional $1.75 per hour.

OVERTIME PAY: See (B,E,Q,T) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5,6) on HOLIDAY PAGE
Overtime:... See (5,6) on HOLIDAY PAGE

APPRENTICES: (1000 hr) terms at the following percentage of journeyman GROUP #A Wage.

1st	2nd	3rd	4th
60%	70%	80%	90
0-1000	1001-2000	2001-3000	3001-4000 hours

SUPPLEMENTAL BENEFITS: (per hour worked)

$ 9.72

6-214 h

03/01/2005

Mason - Building

OSWEGO COUNTY: Entire County

WAGES: (per hour)

	7/01/2004	1/1/05 Addit. .25	7/1/05 Addit. 1.25	7/1/06 Addit. 1.30	7/1/07 Addit. 1.35

Bricklayer, Blocker, Stone Mason, Concrete Finisher, Plasterer, Refractor Pointer, Caulker, Cleaner, Fireproofer*, Snythetic Plastering, Gunite Nozzman, Cutting of Concrete, Grout Nozzman, Bush Hammering of All Concrete, Curing.

All of The Above ..... $ 24.67*
*Fireproofer on Structural only.

Additional $ .25 per hr for work in restricted radiation area of atomic plant.
Additional $5.00 per day for working on a two point suspension scaffold except Pointers Caulkers and Cleaners.

OVERTIME PAY:..... See (B, E, E2*, Q) on OVERTIME PAGE.
* Provided employee worked between 16 and 32 hours in that week.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE.
Overtime:..... See (5, 6) on HOLIDAY PAGE.

Apprentices: (750 hour) Terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
55%	60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$ 10.35
Apprentice 1st 500 hours...	6.26
All other Apprentices.....	10.35

6-2b.4

03/01/2005

Mason - Heavy Highway

ONONDAGA COUNTY: All classifications except Cement Masons.

ALBANY COUNTY:	Entire County	CAYUGA COUNTY:	Entire County
CLINTON COUNTY:	Entire County	COLUMBIA COUNTY:	Entire County
ESSEX COUNTY:	Entire County	FRANKLIN COUNTY:	Entire County
FULTON COUNTY:	Entire County	GREENE COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County	MONTGOMERY COUNTY:	Entire County
ONEIDA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
RENSSELAER COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
SCHENECTADY COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ST. LAWRENCE COUNTY:	Entire County	WARREN COUNTY:	Entire County
WASHINGTON COUNTY:	Entire County		

WAGES: (per hour)

	7/01/2004
Heavy/Highway:	
Mason/Bricklayer.....	$ 24.21

OVERTIME PAY:..... See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (5, 20) on HOLIDAY PAGE.
Overtime:..... See (5, 6,) on HOLIDAY PAGE.

APPRENTICE wage(750 HR. TERMS at % Journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.
55%	60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$ 10.39
Apprentice 1st 500 hours.	5.39
All other Apprenticess...	$ 10.39

1-2hh.1

03/01/2005

Mason - Tile Setters

MADISON COUNTY:	The townships of Sullivan and Cazenovia ONLY
CAYUGA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County

WAGES: (per hour)

	7/01/2004	6/1/05 Addit.	6/1/06 Addit.
Building:			
Tile,Terrazzo,Marble			
Setter:.....	$ 21.17	1.20	1.20
Finisher.....	18.52	1.00	1.00

OVERTIME PAY:..... See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:..... See (5, 6) on HOLIDAY PAGE

APPRENTICES:(Hour) terms at the following percentage of journeyman's wage.

Setter:

1st (500 hrs.)	2nd-5th (1000 hrs.ea.)	6th (1500 hrs.)
(60%)	(70%-80%-85%-90%)	(95%)

Finisher:

1st (500 hrs.)	2nd & 3rd (1000 hrs.ea.)	4th (1200 hrs.)
70%	(80%-90%)	(95%)

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman Setter:.....	$ 9.44
Apprentice 1st Term.....	6.46
All other Apprentices....	9.44
Journeyman Finisher:.....	9.29
Apprentice 1st Term.....	6.41
All other Apprentices....	9.29

6-2T.3

03/01/2005

Operating Engineer - Building

CAYUGA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST.LAWRENCE COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County

WAGE INFORMATION:

*** If a prime contract is let for site work only, meaning no buildings are involved in their site contract, the Heavy/Highway rates would be applicable for the operators classification only.

When a prime contract is let for site work and building excavation is part of that contract, the Building rates would be applicable for the Operators classification.

BUILDING:

CLASSIFICATION A	CLASSIFICATION B
Air Plako	"A"Frame Truck
Asphalt & Blacktop Roller	Back Dumps
Automated Concrete Spreader(CMI or Equiv.)	Blacktop Plant (Non-Automatic)
Auto.Fine Grade Machine(CMI)	Boring Machine
Backhoe	Bulldozer
Barrell Shredder	Cage-Hoist
Belt Placer	Central Mix Plant(Non-automatic)
Blacktop Spreader(such as Berber Greene & Blaw Knox)	Cherry Picker(15tons & under)
Blacktop Plant(automated)	Compressor, pump, generator or welding machine(when used in a battery of not more than five(5)
Blast or Rotary Drill(Truck or cat mounted)	Concrete Paver(single drum over 16S)
BoomTruck	

Burning Plant Operator
Cableway
Caisson Auger
Central Mix Plant (automated)
Cherry Picker--over 15 ton capacity
Concrete Pump
Crane
Crusher--Rock
Derrick
Dewatering Press
Diesal Power Unit
Dirt Filter Press Operation Equipment
Dragline
Dredge
Dual Drum Paver
Elevating Grader(self propelled or tow)
Elevator Hoist--Two Cage
Ecavator--all purpose hydraulically operated
Fork Lift (Loed/Lull and other terraine type)
Front End Loader(4c.y. and over)
Gradall
Gradall(Power)
Head Tower (Saurman or equal)
Hoist (2 or 3 Drum)
Hydroblaster (Laser Pump)
LCM's Work Boat Operator
Light Plants,Compressores and Generators
Locamotive
CLASSIFICATION A (CONTINUED)
Maintenance Engineer
Maintenance Welder
Mine Hoist
Mucking Machine or Mole
Overhead Crane-fixed permanent
Pile Driver
Quarry Master or Equivalent
Refrigeration Equipment for soil stabilization)
Scraper
Sea Mule
Shovel
Side Boom
Slip Form Paver
Straddle Buggy(Ross Carrier, lumber carrier)
Tractor Drawn Belt Type Loader (Euclid Loader)
Trenching Machine (digging capacity of over 4 ft. depth)
Truck Crane, Operator
Truck or Trailer Mounted Log Chipper (self-feeder)
Tug Operator (Manned,rented equip.excluded)
Tunnel Shovel
Vibro or Sonic Hammer Controls (when not mounted in proximity to Rig Operator)

Core Boring Machine
Drill Riggs-tractor mounted
Elevator--as material hoist
Farm Tractor (with or without accessories)
Fork Lift (with or without attachments) over 10 ton
Front End Loader(under 4 c.y.)
Gunite Machine
High Pressure Boiler(15 lbs & over)
Hoist (one drum)
Hydraulic Breaking Hammer(Drop Hammer)
Kolman Plant Loader(screening gravel)
Maintenance Grease Man
Mixer for stabilized base--self propelled (Seaman Mixer)
Monorail Machine
Parapet Concrete or Pavement Grinder
Parts Man
Post Driver (truck or tractor mounted)
Post Hole Digger(truck or tractor mounted)
Power Sweeper (Wayne or Similar)
Grout Pump
Pump--Crete or Squeeze Crete
Road Widener (front end of Grader or self propelled)
CLASSIFICATION B (CONTINUED)
Roller
Self Contained hydraulic bench drill.
Shell Winder (motorized)
Skid Steer Bobcat type Loader
Snorkel (overhead arms)
Snowblower control man
Tractor (with or without accessories)
Trenching Machine (digging capacity of 4 ft. or less)
Tugger Hoist
Vacuum Machine (self propelled or mounted)
Vibro Tamp
Well Drill Well Point System (submersible pumps when used in lieu of well-point system)
Winch (motor driven)
Winch Cat
Winch Truck

CLASSIFICATION C
Compressor (Up to 500 c.f.)
Concrete Paver or Mixer (under 16S)
Concrete Pavement Spreaders & Finishers (not automatic)
Conveyor (over 12 ft)

Electric Submersible Pump (4" and over)
Fine Grade Machine (non-auto)
Fireman For Lift ("with or without" attacments) 10 ton and under
Form Tamper
Generator (2500 watts & over)
Hydraulic Pump
Mechanical Heaters--More than two (2 mechanical heaters or any mechanical heater or heaters whose combined output exceeds 640,000 BTU per hour.(manufacturer s rating) plus one self contained heating unit, (i.e.Sundog or Air Heat type, New Holland Hay Dryer type excluded)
Mulching Machine
Oiler
Power Driven Welding Machine - 300 amp.and over (other than all electric). One Welding Machine under 300 amp. will not require an engineer unless in a battery.
Power Heaterman (hay dryer)
Pumps - water & trash
Revinus Widener (road widener)
Single Light Plant
Steam Cleaner or Jenny

WAGES: (per hour)	7/01/2004	6/01/2005	6/01/2006
Building:			
Master Mechanic.....	$ 25.19	$ 25.94	$ 26.94
Asst.Master Mechanic.....	24.25	25.00	26.00
Class # A.....	23.75	24.50	25.50
Class # B.....	22.23	22.98	23.98
Class # C.....	19.16	19.91	20.91
Pile Dr. w/Bm/Ld 100ft+..	25.00	25.75	26.75
Tower Crane	25.00	25.75	26.75
Crane/Derrick w/boom:			
" 150 ft and over.....	25.00	25.75	26.75
" 200 ft.....	26.00	26.75	27.75
" 300 ft.....	27.00	27.75	28.75

ALL LATTICE BOOM CRANES 65 TON CAPACITY & OVER - CLASS A RATE PLUS $1.25
ALL HYDRAULIC CRANES 65 TON TO 79 TON CAPACITY - CLASS A RATE PLUS $.60
ALL HYDRAULIC CRANES 80 TON TO 99 TON CAPACITY - CLASS A RATE PLUS $.75
ALL HYDRAULIC CRANES 100 TON CAPACITY AND OVER - CLASS A RATE PLUS $1.25

ADDITIONAL $2.00 per hr. if work requires Level A,B,C of Personal Protective Equipment listed in the Occup. Saf. & Health Guidance Manual for Hazardous Waste Site Activities. Paper dust masks are excluded from coverage in this section.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5,6) on Holiday page
Overtime:.... See (5,6) on Holiday page

APPRENTICES: (1000) HOUR TERMS AT THE FOLLOWING PERCENTAGE OF JOURNEYMAN'S WAGE.

1st	2nd	3rd	4th
60% of class A	65% of class A	70% of class A	80% of class A

SUPPLEMENTAL BENEFITS: (per hour paid)

Journeyman	$ 13.75	$ 14.65	$ 15.40

Appr 1st	6.60	7.60	8.35
Appr 2nd	8.30	9.30	10.05
Appr 3rd	8.70	9.70	10.45
Appr 4th	9.65	10.65	11.40

6-545b.s

03/01/2005

Operating Engineer - Heavy Highway

HERKIMER COUNTY: That portion of the county that lies west of a line drawn due north and due south through the railroad station in Little Falls, NY

CAYUGA COUNTY: Entire County
CORTLAND COUNTY: Entire County
JEFFERSON COUNTY: Entire County
LEWIS COUNTY: Entire County
MADISON COUNTY: Entire County
ONEIDA COUNTY: Entire County
ONONDAGA COUNTY: Entire County
OSWEGO COUNTY: Entire County
SENECA COUNTY: Entire County
ST.LAWRENCE COUNTY:Entire County
TOMPKINS COUNTY: Entire County

CLASS A: Asphalt Paver(fixed screed 10'width and over),Extend a-mat paver, Automated Concrete Spreader, Automatic Fine Grader, Backhoe (except tractor-mounted, Blacktop Plant (automated) Boom Truck*, Caisson Auger, Central Mix Conc. Plant(automated), Hydraulic crane (over 5 ton capacity), Concrete Curb Machine (Self-propelled, Slipform), Crane, Derricks, Dragline, Dredge, Excavator (all purpose-hydraulic-Gradall or similar), Front End Loader(4c.y.& over), Head Tower (Sauerman or equal), Hoist (two or three drum), Hydrodemolition Equip (self contained) Maint. Eng, Mine Hoist, Mucking Machine or Mole, Overhead Crane(Gantry or Straddle Type), Pavement Profiler over 300 H.P., Pile Driver, Power Grader, Road widener, Scraper, Shovel, Side Boom, Slip Form Paver (If a second man is needed, he shall be an Oiler), Truck Crane, Truck or Trailer mounted Chipper (self-feed Tug Operator,Tunnel Shovel, Welder.

CLASS B: Asphalt paver under 10 ft width, Automated slope paving machine, Backhoe (Tractor-Mounted) Blacktop Plant non-automated), Blast or Rotary Drill (Truck or Tractor Mounted), Boring Machine, Directional boring Machine & Locator,Bridge deck finishing machine, Cage Hoist, Central Mix Plant, (Non Automated), All Concrete Batching Plants, Concrete pump, Hydraulic crane (5 tons & under), Compressors (4 or less exceeding 2,000 c.f.m. combined capacity), Concrete Paver over 16S, Belt Placer, Cableway, Belt loader, Tractor Drawn Belt Type Loader, Core Drill (skid, trk mtd or track),Crusher, Diesel Pwr Unit,Drill rigs (Trk/Tractor mounted),Fork Lift,F.E.Loader(under 4 cy),Hi-Press Boiler(15 lbs & over), Hoist(One Drum), Hydro Axe, Kolman Plant Loader & similar type loaders (if employer requires another man, he shall be Oiler), L.C.M.Work Boat Oper, Locomotive, Lubrication Eng/Greaseman, Mixer (for stabilized base-self propelled), Pavement Profiler(under 300H.P.) Plant Engineer, Pump crete, Refrigeration Equipment (for soil stabilization),Roller(all above sub grade), Sea Mule, Skid Steer Bobcat Type Loader, Self-propelled rubbleizer, Stationary central compressed air plant (5000cfm and up), Tractor with Dozer and/or Pusher, Trencher, Tugger Hoist, Vermeer Saw (ride-on), Winch and Winch Cat,Log Skidr,Hydra-spiker(ride on),All ride-on Tie Extractors,Tie Handlers, Tie Inserters, Tie spacers and Track Liners, Drill Rig (Self Contained, Self Propelled or Hydr),Material Handling Knuckle Boom Trk 5 ton & over.

CLASS C: Aggregate Plant, A Frame Truck, Ballast Regulator (ride-on), Boiler(used in conjunction with production), Cement & Bin oper, Compressors (4 under 2,000 cfm combined capacity or 3 or less with more than 1200 cfm but not to exceed 2,000 c.f.m), Compressors (any size but subject to other provisions for compressors-Dust Collectors, Generators, Pumps, Welding Machines, Concr Paver or Mixer(16s & under), Conc Saw (self propelled), Concrete Pavement Spreaders and Finishers, Conveyor, Electric Pump Used in Conjunction with Well Point System, Span Saw (Ride on), Farm Tractor with accessories, Form Tamper, Grout Pump, Gunite Machine, Hammers(hydraulic-self propelled), Hydraulic Pump (jacking system), Light plants, Mulching Mach., Oiler, Parapet concrete or pavement grinder, Post Hole Digger & Post Driver, Power Sweeper, Power Heaterman, Roller(grade & fill), Scarifier(ride-on), Shell Winder, Steam cleaner Tamper(ride-on), Submersible Electric Pump (when used in lieu of well point system), Tractor, Vacuum machine (self propelled) Vibratory Compactor, Well point, Material Handling Knuckle Boom Truck (under 5 ton).

SINGLE IRREGULAR WORK SHIFT:

A single irregular work shift can start any time from 5:00 PM to 1:00 AM. All employees who work a single irregular work shift on governmental mandated night work shall be paid an addtl $2.00 per hour. Sect 10 will be effective for work bid on or after July 1, 2001.

WAGES (per hour)	7/01/2004
Heavy/Highway:	
Master Mechanic.....	$ 26.70
CLASS A*.....	25.35
CLASS B.....	24.47
CLASS C.....	21.19

PIPELINE: Master mechanic, Class A and Class B rates apply.
NOTE: NO CRANE PREMIUM ON PIPELINE WORK

*Addtl 2.00 per hr for crane with boom & jib and boom trk over 100 ft.
*Addtl 3.00 per hr for crane with boom & jib and boom trk 150 ft & over.
*Addtl 3.00 per hr for EPA or DEC classified toxic or hazardous waste work and employee is required by regulations to use or wear personal protection.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5, 6) on HOLIDAY PAGE
Overtime:.... See (5,6,) on HOLIDAY PAGE

APPRENTICES: (1000) hour terms at the following rate.

	1st	2nd	3rd	4th
2004	15.21	16.48	19.01	21.55

SUPPLEMENTAL BENEFITS: (per hour paid)

Journeyman/Appr Indentured before 4/01/98.....		$15.85
Apprentice indentured after 4/01/98.....	1st	7.25
	2nd	9.05

3rd	9.35
4th	9.80

6-545h

03/01/2005

Operating Engineer - Marine Construction

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SUFFOLK COUNTY:	Entire County
GREENE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	ULSTER COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WARREN COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
MADISON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MONROE COUNTY:	Entire County	WESTCHESTER COUNTY:	Entire County
MONTOMERY COUNTY:	Entire County	WYOMING COUNTY:	Entire County
NASSAU COUNTY:	Entire County	YATES COUNTY:	Entire County
NEW YORK CITY:	Entire County		
NIAGARA COUNTY:	Entire County		

WAGES: (per hour)

	7-01-04
DIPPER & CLAMSHELL DREDGES	
CLASS A:	
Operator	$ 28.07
CLASS B:	
Operator II	$ 23.04
Engineer	24.72
Boat Master	23.24
CLASS C:	
Maintenance Eng	$ 23.59
Mate	21.99
Drag Barge Operator	21.99
Welder	23.22
Boat Capt	22.15
Chief of Party	21.99
CLASS D:	
Oiler	$ 18.59
Scowman	17.88
Rodman	17.88
Tug Deckhand	18.13
Deckhand	18.13

7-01-04

HYDRAULIC DREDGES

CLASS A:

Leverman	$ 27.56

CLASS B:

Leverman II	$ 23.04
Engineer	24.17
Derrick Operator	24.17
Chief Mate	23.82
Chief Welder	24.48
Electrician	23.43
Fill Placer	23.82
Asst.Fill Placer	21.80
Boat master	23.23

CLASS C:

Maintenance Eng	$ 23.59
Mate	21.99
Drag Barge Operator	21.99
Welder Dredge	23.21
Spider Barge Operator	23.01
Boat Capt	22.15
Chief of Party	21.99

CLASS D:

Oiler	$ 18.59
Shoreman	17.90
Rodman	17.90
Deckhand	17.90
Tug Deckhand	18.13

OVERTIME: See (B, F, R) on OVERTIME PAGE.

HOLIDAY:
Paid: See (5, 6, 8, 15, 26) or HOLIDAY PAGE.
Overtime: See (5, 6, 8, 15, 26) or OVERTIME PAGE.

SUPPLEMENTAL BENEFITS: (per hour worked)

"The following SUPPLEMENTAL BENEFITS apply to ALL categories"

7-01-04

All Class A & B	$ 6.45 plus 7% of wage
(overtime hours add)	$ 1.25
All Class C	$ 5.85 plus 7% of wage
(overtime hours add)	$ 0.95
All Class D	$ 5.25 plus 7% of wage
(overtime hours add)	$ 0.65

4-25a

03/01/2005

Operating Engineer - Survey Crew - Building

CAYUGA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST.LAWRENCE COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County

SURVEY CLASSIFICATIONS:
Party Chief- One who directs a survey party.
Instrumentman- One who runs the instrument and assists the Party Chief.
Rodman- One who holds the rods and in general, assists the survey party.

WAGES: (per hour)	7/01/2004	6/01/2005	6/01/2006
Party Chief/Grade layout man..	$23.75	$24.50	$25.50
Inst. Man/Rodperson.....	20.26	21.01	22.01
Grade checker.....	20.26	21.01	22.01

Additional 2.00 per hr. if work requires Level A, B or C of Personal Protective Equipment listed in the Occup. Saf. & Health Guidance Manual for Hazardous waste site activities. Paper dust masks are excluded from coverage in this section.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (5, 6) on HOLIDAY PAGE.
Overtime:.... See (5, 6) on HOLIDAY PAGE.

APPRENTICES: (1000) hour terms at the following percentage of Journeyman's wage.

1st 1000 hours	$15.19	$15.75	$16.50
2nd 1000 hours	17.22	17.85	18.70
3rd 1000 hours	19.24	19.95	20.90

SUPPLEMENTAL BENEFITS: (per hour paid)

Journeymen	$13.75	$14.65	$15.40
Appr 1st	6.60	7.60	8.35
Appr 2nd	8.30	9.30	10.05
Appr 3rd	8.70	9.70	10.45

6-545bs

03/01/2005

Operating Engineer - Survey Crew - Consulting Engineer

DUTCHESS COUNTY: from the Northern boundary line of the City of Poughkeepsie North.

ALBANY COUNTY:	Entire County	NIAGARA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
CLINTON COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST.LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
GREENE COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	WARREN COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WYOMING COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	YATES COUNTY:	Entire County
MADISON COUNTY:	Entire County		
MONTGOMERY COUNTY:	Entire County		

Feasibility and preliminary design surveying, line and grade surveying for inspection or supervision of construction when performed under a consulting

ENGINEER AGREEMENT
SURVEY CLASSIFICATIONS:
Party Chief- One who directs a survey party.
Instrumentman- One who runs the instrument and assists the Party Chief.
Rodman- One who holds the rods and in general, assists the survey party.

WAGES: (per hour)	7/01/04	6/01/05
Survey Rates:		
Party Chief.....	$26.50	$28.00
Instrument/Rodperson.....	24.00	25.50

Additional 3.00 per hr. for work in a Tunnel.
Additional 2.50 per hr. for EPA or DEC certified toxic or hazardous waste work

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5, 6) on HOLIDAY PAGE
Overtime:.... See (5, 6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour worked)

	$13.10	13.60

6-545 DCE

03/01/2005

Operating Engineer - Survey Crew - Heavy Highway

DUTCHESS COUNTY: the northern portion of the county from the northern boundary line of the City of Poughkeepsie north to the Dutchess County line.

ALBANY COUNTY:	Entire County	NIAGARA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
CLINTON COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST.LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	TIOGA COUNTY:	Entire County
GREENE COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	WARREN COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WYOMING COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	YATE COUNTY:	Entire County
MADISON COUNTY:	Entire County		
MONROE COUNTY:	Entire County		
MONTGOMERY COUNTY:	Entire County		

SURVEY CLASSIFICATIONS: Party Chief- One who directs a survey party.
Instrumentman- One who runs the instrument and assists the Party Chief.
Rodman- One who holds the rods and in general, assists the survey party.

WAGES: (per hour)	7/01/2004	6/01/2005
Survey Rates:		
Party Chief.....	$26.50	$28.00
Instrument/Rodperson	24.00	25.50

Additional 3.00 per hr. for work in a Tunnel.
Additional 2.50 per hr. for EPA or DEC certified toxic or hazardous waste work

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5, 6) on HOLIDAY PAGE
Overtime:... See (5, 6) on HOLIDAY PAGE

APPRENTICES: (1 yr. or 1000 hrs.) terms at the following wage rates.

	1st.	2nd.	3rd.
6/01/2004	14.40	16.80	19.20
6/01/2005	15.30	17.85	20.40

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman and all apprentices.....	$13.10	$13.60

6-545 D.H.H.

03/01/2005

Operating Engineer - Tunnel

HERKIMER COUNTY: That portion of the county that lies west of a line drawn due north and due south through the railroad station in Little Falls, NY

CAYUGA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST.LAWRENCE COUNTY:	Entire County
TOMPKINS COUNTY:	Entire County

MASTER MECHANIC/CHIEF TUNNEL ENG.:

CLASS A: Automated Concrete Spreader(CMI Type), Automatic Fine Grader, Backhoe(except tractor-mounted,rubber tired), Belt Placer(CMI Type), Blacktop Plant(automated), Cableway, Caisson Auger, Central Mix Concrete Plant(automated), Cherry Picker(over 5 tons capacity), Concrete Pump(8" or over), Crane, Crane Shaft, Crane Underground, Crane & Derrick(Steel Erectn), Dragline, Dredge, Dual Drum Paver, Any Mechanical Shaft Drill, Excavator(all purpose-hydr-Gradall or Similar), Fork Lift(factory rated 15ft and over), Front End Loader(4c.y.& over), Head Tower(Sauerman or equal), Hoist Shaft, Hoist(two or three Drum), Mine Hoist, Holland Loader, Mucking Mach or Mole, Overhead Crane(Gantry or Straddle Type), Pile Driver,Power Grader, Quad 9, Quarry Master(or equivalent), Remote Controlled Mole or Tunnel Mach, Scraper, Shovel, Side Boom, Slip Form Paver(If a second man is needed, he shall be an Oiler), Tractor Drawn Belt Type Loader, Tripper/Maintenance Eng. (Shaft & Tunnel), Truck Crane, Truck or Trailer Mounted Chipper(self-feeding), Tug Operator(manned, rented equip. excluded) & Tunnel Shovel, Concrete Curb Mach(Self-Propelled slipform)

CLASS B: Backhoe (Trac-Mtd,Rubber Tired), Backhoe (topside) Bitum. Spred. & Mixer, Blacktop Plant (non-automated), Blast or Rotary Drill (Trk or Trac Mounted), Boring Machine, Cage Hoist, Central Mix Plant(Non Automated), All Conc Batching Plants, Cherry Picker(5 tons & under), Compressors(4 or less exceeding 2,000 c.f.m.combined capacity), Concrete Paver over 16S, Concrete Pump, Crane (Topside), Crusher, Diesel Power Unit, Drill Rigs (Tractor Mounted), Front End Loader(under 4 c.y.), Hi-Pressure Boiler (15 lbs.& over), Hoist(One Drum), Hoist 2 or 3 Drum (Topside), Kolman Plant Loader & sim. type loaders(if employer requires another man, he shall be Oiler), L.C.M.Work Boat Operator, Locomotive, Maint. Eng. (Topside), Grease Man, Welder, Mixer(for stabilized base-self propelled), Monorail Mach, Plant Eng, Personnel Hoist, Pump Crete, Ready Mix Concrete Plant, Refrigeration Equip (for soil stabilization), Road Widener, Roller(all above sub-grade), Sea Mule, Shotcrete Mach., Shovel (Topside), Tractor with Dozer and/or Pusher, Trencher, Tugger Hoist, Tunnel Locomotive, Winch and Winch Cat.

CLASS C: A Frame Truck, Ballast Regulator(ride-on), Compressors(4 under 2,000 cfm combined capacity; or 3 or less with more than 1200 cfm. but not to exceed 2,000 cfm), Compressors(any size but subject to other provisions for compressors-Dust Collectors, Generators, Pumps, Welding Machines, Light

Plants-4 of any type or combination), Conc. Pavement Spreaders and Finishers, Conveyor, Drill(core), Drill(well), Elec. Pump Used in Conjunction with Well Pt System, Farm Trac with Accessories, Fine Grade Mach, ForkLift(under 15ft.), Grout Pump (over (5) cu. ft., Gunite Machine, Hammers (hydr- self propl.),Hydra-Spiker-Ride on, Hydra-Blaster, Hydra Blaster (water) Motorized Form Carrier, Post Hole Digger & Post Driver,Power Sweeper, Roller(grade&fill), Scarifer(Ride on), Span-Saw(Ride-on), Submersible Elec Pump(when used in lieu of well point system), Tamper(Ride-on), Tie- Extractor, Handler, Inserter and Placer (Ride-on), Tractor(with towed accessories), Vibr Compactor, Vibro Tamp, Well Point

CLASS C: Aggregate Plant, Boiler(used with production), Cement & Bin Oper, Compressors(3 or less not to exceed 1,200 c.f.m.combined capacity), Compressors(any size, but subject to other provisions for compressors-Dust Collectors, Generators, Pumps, Welding Machines, Light Plants-3 or less-any type or combination), Concrete Paver or Mixer(16S & under), Concrete Saw(self propelled), Fireman, Form Tamper, Hydr Pump(jacking system), LightPlants, Mulching Mach, Oiler Parapet Concrete or Pavement Grinder, PowerBroome(towed), Power Heaterman, Revinius Widener, Shell Winder, Steam Cleaner and Tractor.

WAGES: (per hour) 7/01/2004

Tunnel:
Master Mechanic/Chief
Tunnel Engineer.....$ 31.94
CLASS A..... 29.94
CLASS B..... 28.80
CLASS C..... 26.18
CLASS D..... 23.36
For all DEC or EPA certified toxic or hazardous waste work the following rate additions apply.(Work bid after 4/01/90 an additional $5.00 per hr)

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5,6) on HOLIDAY PAGE
Overtime:.... See (5,6) on HOLIDAY PAGE

APPRENTICES: (1000) hours terms at the following percentage of Journeyman's wage.

1st.	2nd.	3rd.	4th.
60% of D rate	65% of C rate	70% of B rate	75% of A rate

SUPPLEMENTAL BENEFITS: (per hour worked)

$15.25

6-545tl

03/01/2005

Operating Engineer -Trenchless Pipeline Rehabilitation

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County

CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County
ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SUFFOLK COUNTY:	Entire County
GREENE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	ULSTER COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WARREN COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
MADISON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MONROE COUNTY:	Entire County	WESTCHESTER COUNTY:	Entire County
MONTOMERY COUNTY:	Entire County	WYOMING COUNTY:	Entire County
NASSAU COUNTY:	Entire County	YATES COUNTY:	Entire County
NEW YORK CITY:	Entire County		
NIAGARA COUNTY:	Entire County		

On Contracts for Inspection Only: These rates Do Not APPLY.

IMPORTANT NOTE: Rates apply to pipeline repair utilizing a Cured-In-Place Pipe (CIPP) lining system. For all other pipeline repair work, the traditional classification and corresponding wage rates apply.

OPERATING ENGINEER - Trenchless Pipeline Rehabilitation

7-01-04

Lead Tec TV Crew	$ 35.51
Wet Out Tec	$ 34.20
Technician	$ 32.89
Boiler Operator	$ 33.54
Yard rate	$ 28.96
Yard Mechanic	$ 33.54

NOTE: PREMIUM PAY 20% on straight time hours for NEW YORK STATE D.O.T. and other GOVERNMENTAL MANDATED off-shift work.

OVERTIME PAY: See (D, O) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE.**
** must work day before & day after or receive 2 hrs per intermittent day
Overtime:.... See (5, 6, 8, 9, 15, 25) on OVERTIME PAGE.**

APPRENTICE (1) year terms at the following rates;

1st yr.....	$ 19.01
2nd yr.....	19.78
3rd yr.....	20.39

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$ 23.29
Note: OVERTIME Journeyman.	20.60
Apprentice.....	14.64
Note: OVERTIME Apprentice	5.60

4-138

03/01/2005

Painter

OSWEGO COUNTY: Entire county except the Townships of Amboy, Constantia, Oneida Lake and Williamstown.

WAGES: (per hour)	7/01/2004	5/01/2005
Brush-Roller.....	$ 19.86	ADDTL $.60
Paperhanger, Taper.....	20.11	"
Repaint.....	19.86	"
Metalizing.....	20.43	"
Bridges Only:		ADDTL $2.00
Bridge Painting.....	28.77	"
Bridge Cleaning/Oiling.....	28.77	"
Bridge Sandblasting.....	28.77	"
**Flagging on Bridge Painting....		

**For Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

*Steel, hazardous work, working with picks, bosun chair, window jacks, swing stage, safety belts, spray painting, steam cleaning, sandblasting safe-way staging over fifteen 15) ft in height, any chemical or epoxy applications, hydro water blasting and steeplejack work two (2) component block filler and epoxy system block filler, encapsulation or abatement of lead or asbestos.

*Over $100,000 contracts

JOURNEYMAN .....$ 22.27

*Under 100,000 contracts

JOURNEYMAN .....$ 21.08

OVERTIME PAY: See (B,E2,F,R) on OVERTIME PAGE
*NOTE: Nuclear Power Plants (Double time on Sunday), if other trades are working and receive Double time.

HOLIDAY:
Paid: See (1) on HOLIDAY PAGE (applies only on contracts $100,000 and over.)
Overtime: See (5,6) on HOLIDAY PAGE

APPRENTICES:

Apprentices - Transportation Bridge: 1000 hour terms at the following percentage of journeyman's Transportation Bridge wage rate:

1st.	2nd.	3rd.	4th.	5th.	6th.
50%	55%	60%	65%	75%	85%

Apprentices - Painter/Decorator: 1000 hour terms at the following percentage of journeyman's Basic wage rate:

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices - Taper/Drywall Finisher with less than 2000 hours as of 7/29/04: 1000 hour terms at the following percentage of journeyman's Taper wage:

1st.	2nd.	3rd.	4th.	5th.	6th.
50%	55%	60%	65%	75%	85%

Apprentices - Taper/Drywall Finisher: with 2000 hours or more as of 7/29/04: 1000 hour terms at the following percentage of journeyman's Taper wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

NO APPRENTICE SHALL BE PAID LESS THAN $9.00 PER HOUR.

SUPPLEMENTAL BENEFITS: (Per hour worked)
*ON NUCLEAR POWER PLANTS (Per hour paid)

Journeyman:.....	$ 11.28
APPRENTICE.....	
Appr. 1st & 2nd Terms.....	$ 4.61
Appr. 3rd & 4th Terms.....	4.61
Appr. 5th & 6th Terms.....	5.55
Appr. 7th & 8th Terms.....	6.60

No.6-38.0

03/01/2005

Painter - Metal Polisher

ALBANY COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ALLEGANY COUNTY:	Entire County	ONONDAGA COUNTY:	Entire County
BROOME COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
CATTARAUGUS COUNTY:	Entire County	ORANGE COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	ORLEANS COUNTY:	Entire County
CHAUTAUQUA COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	OTSEGO COUNTY:	Entire County
CHENANGO COUNTY:	Entire County	PUTNAM COUNTY:	Entire County
CLINTON COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
COLUMBIA COUNTY:	Entire County	ROCKLAND COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	SARATOGA COUNTY:	Entire County
DELAWARE COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
DUTCHESS COUNTY:	Entire County	SCHOHARIE COUNTY:	Entire County

ERIE COUNTY:	Entire County	SCHUYLER COUNTY:	Entire County
ESSEX COUNTY:	Entire County	SENECA COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	STEUBEN COUNTY:	Entire County
FULTON COUNTY:	Entire County	ST. LAWRENCE COUNTY:	Entire County
GENESEE COUNTY:	Entire County	SUFFOLK COUNTY:	Entire County
GREENE COUNTY:	Entire County	SULLIVAN COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	TIOGA COUNTY:	Entire County
HERKIMER COUNTY:	Entire County	TOMPKINS COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	ULSTER COUNTY:	Entire County
LEWIS COUNTY:	Entire County	WARREN COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	WASHINGTON COUNTY:	Entire County
MADISON COUNTY:	Entire County	WAYNE COUNTY:	Entire County
MONROE COUNTY:	Entire County	WESTCHESTER COUNTY:	Entire County
MONTGOMERY COUNTY:	Entire County	WYOMING COUNTY:	Entire County
NASSAU COUNTY:	Entire County	YATES COUNTY:	Entire County
NEW YORK CITY:	Entire 5 Boroughs		
NIAGARA COUNTY:	Entire County		

WAGES: (per hour)

	7/01/04
Metal Polisher.....	$ 21.98

All workers shall be paid a premium in an amount equal to twenty (20%) per cent of their basic straight time rate of pay for all time worked on hanging scaffolds and on standing scaffolds while working more than 28 feet off the ground, such premium to be paid on top of their straight time or overtime, whichever is applicable.

OVERTIME:.... See (B, E, Q) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (5,6,9,11,15,16,25) on HOLIDAY PAGE.
Overtime:... See (5,6,9,11,15,16,25) on HOLIDAY PAGE

APPRENTICES: 55% of Basic Polisher Rate (*)

SUPPLEMENTAL BENEFITS: (% of Total Wages)

Journeymen & Apprentice - 55% of Wages

9 - 8A/28A

03/01/2005

Painter/Decorator/Wallcovering

LEWIS COUNTY: Only the Townships of High Market, Lewis, Leyden, Lyondale, Osceola, Turin and West Turin.
ONTARIO COUNTY: The City and Township of Geneva.
OSWEGO COUNTY: Only the Townships of Amboy, Constantia, Williamstown and Oneida Lake.

CAYUGA COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
SENECA COUNTY:	Entire County

WAGES: (per hour)

	7/01/2004	5/01/2005
Brush-Roller/Wallcovering ...	$ 18.00	
Sign painting	18.00	

Dry Wall Taper/Finisher.....	18.00	ADDTL.$.60
Parking Lot/Hwy Striping.....	18.00	
Lead base paint abatement....	18.00	
Spray.....	18.50	
Epoxy (Brush-Roller).....	18.50	
Epoxy (Spray).....	18.50	
Sandblasting (Oper).....	18.50	
Boatswain Chair.....	18.50	
Swing Scaffold.....	18.50	
Structural Steel.....	18.50	
Coal Tar epoxy.....	19.50	
Asbestos related work.....	20.20	
Bridges Only:		ADDTL.$2.00
Bridge cleaning/Oiling.....	30.95	
Bridge Sandblasting.....	30.95	
Bridge painting.....	30.95	

**Flagging on bridge painting

**For Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

*NOTE: FOR ANY SHIFT WHICH STARTS PRIOR TO 6:00 AM OR AFTER 12:00 NOON ALL EMPLOYEES WHO WORK A SINGLE IRREGULAR WORK SHIFT ON GOVERNMENTAL MANDATED WORK SHALL BE PAID AN ADDITIONAL $2.00 PER HOUR.

OVERTIME PAY: See (B,E2,F,R) on OVERTIME PAGE
*NOTE: Nuclear power plants (Double time applicable on Sunday if other trades working receive double time.)

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:... See (5,6) on HOLIDAY PAGE

APPRENTICES:

Apprentices - Transportation Bridge 1000 hour terms at the following percentage of journeyman's Transportation Bridge wage rate:

1st.	2nd.	3rd.	4th.	5th.	6th.
50%	55%	60%	65%	75%	85%

Apprentices - Painter/Decorator: 1000 hour terms at the following percentage of journeyman's Basic wage rate:

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.
50%	55%	60%	65%	70%	75%	80%	90%

Apprentices - Taper/Drywall Finisher with less than 2000 hours as of 7/29/04: 1000 hour terms at the following percentage of journeyman's Taper wage:

1st.	2nd.	3rd.	4th.	5th.	6th.
50%	55%	60%	65%	75%	85%

Apprentices - Taper/Drywall Finisher: with 2000 hours or more as of 7/29/04: 1000 hour terms at the following percentage of journeyman's Taper wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

NO APPRENTICE SHALL BE PAID LESS THAN $9.00 PER HOUR

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman	$ 9.11
Appr 1st thru 4th terms..	4.61
Appr 5th & 6th terms.....	5.55
Appr 7th & 8th terms.....	6.60

*NOTE: SUPPLEMENTAL BENEFITS ON BRIDGE PAINTING PROJECTS AN ADDITIONAL $.10 CENTS PER HOUR.

6-31

03/01/2005

Plumber

WAYNE COUNTY: Only the Townships of Butler, Savannah and Wolcott.

CAYUGA COUNTY: Entire County
OSWEGO COUNTY: Entire County

WAGES: (per hour)	7/01/2004	5/01/2005
Plumber/Welder.....	$ 25.38	ADDTL
Steamfitter.....	25.38	$1.00
On schools, hospitals & health related facilities.SEE NOTE..	22.22	
Under $750,000	22.22*	

NOTE: THIS RATE WILL TERMINATE ON 5/01/05. IT WILL BE THE SAME RATE AS PLUMBER.

*Only to be used where the total Plumbing, HVAC or refrigeration contract does not exceed $250,000 or the combination of all does not exceed $750,000. This includes servicing of same.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE.
Overtime:... See (5, 6) on HOLIDAY PAGE.

APPRENTICES: (1) year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th
50%	60%	70%	80%	90%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$ 9.88
Appr 1st yr.....	4.02 plus 50% of $4.71
Appr 2nd yr.....	4.02 plus 75% of $4.71
Appr 3rd yr.....	4.02 plus 90% of $4.71
Appr 4th & 5th yrs.....	9.88

6-73.1

03/01/2005

Roofer

CAYUGA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County
SENECA COUNTY:	Entire County
ST. LAWRENCE COUNTY:	Entire County

WAGES: (per hour)

	7/01/2004
Roofer, Waterproofer.....	$ 21 00

*Addtl $.75 per hr. for Pitch removal & application.
*Addtl $.75 per hr. for asbestos abatement.

NOTE: WHEN MANDATED BY THE OWNER OR AGENCY FOR HOURS WORKED AFTER 5:30 PM AND BEFORE 5:30 AM THERE WILL BE AN ADDITIONAL $3.00 PER HR PREMIUM.

OVERTIME PAY: See (B, E,*,Q) on OVERTIME PAGE
* Saturday may be paid at straight time if it is the 5th day worked, unless it was a previously scheduled work day. But if a holiday falls in that week and 32 hours were worked, Saturday will be pd at 1 1/2 times the rate.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:.... See (5, 6) on HOLIDAY PAGE

APPRENTICES: (1000) hour terms at the following percentage of journeyman's wage.

1st TERM 50%	2nd TERM 60%	3rd TERM 70%	4th TERM 80%
1st 1000 HRS	1000 to 2000 HRS	2000 to 3000 HRS	3000 to 4000
$10.50	$12.60	$14.70	$16.80

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$10.12
Appr 1st and 2nd terms...	6.92
Appr 3rd term.....	9.12
Appr 4th term.....	10.12

6-195

03/01/2005

Sheetmetal Worker

CAYUGA COUNTY:	Entire County
CHENANGO COUNTY:	Entire County
CORTLAND COUNTY:	Entire County
HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County
LEWIS COUNTY:	Entire County
MADISON COUNTY:	Entire County
ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County
OSWEGO COUNTY:	Entire County

ST. LAWRENCE COUNTY: Entire County

WAGES: (per hour)

	7/1/2004	5/01/2005
Sheetmetal Worker:		
TO INCLUDE METAL STANDING SEAM ROOFING AND FLASHING		
*(under $5 million)....	$ 23.75	Addtl
*(over $ 5 million)....	24.75	$1.20

*For total cost of Sheetmetal contract only.

OVERTIME PAY: See (B, E, Q*) on OVERTIME PAGE
*National Holidays Only.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:.... See (5, 6) on HOLIDAY PAGE

APPRENTICES: (1/2)year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
40%	45%	50%	55%	60%	65%	70%	75%	80%	85%
$9.50	10.69	11.88	13.06	14.25	15.44	16.63	17.81	19.00	20.19

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman..... $ 12.61

Apprentices:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$6.86	7.08	7.29	7.51	7.72	7.94	9.18	9.40	9.61	9.83

6-58

03/01/2005

Sprinkler Fitter

ALBANY COUNTY:	Entire County	ALLEGANY COUNTY:	Entire County
BROOME COUNTY:	Entire County	CATTARAUGUS COUNTY:	Entire County
CAYUGA COUNTY:	Entire County	CHAUTAUQUA COUNTY:	Entire County
CHEMUNG COUNTY:	Entire County	CHENANGO COUNTY:	Entire County
CLINTON COUNTY:	Entire County	COLUMBIA COUNTY:	Entire County
CORTLAND COUNTY:	Entire County	DELAWARE COUNTY:	Entire County
ERIE COUNTY:	Entire County	ESSEX COUNTY:	Entire County
FRANKLIN COUNTY:	Entire County	FULTON COUNTY:	Entire County
GENESEE COUNTY:	Entire County	GREENE COUNTY:	Entire County
HAMILTON COUNTY:	Entire County	HERKIMER COUNTY:	Entire County
JEFFERSON COUNTY:	Entire County	LEWIS COUNTY:	Entire County
LIVINGSTON COUNTY:	Entire County	MADISON COUNTY:	Entire County
MONROE COUNTY:	Entire County	MONTGOMERY COUNTY:	Entire County
NIAGARA COUNTY:	Entire County	ONEIDA COUNTY:	Entire County
ONONDAGA COUNTY:	Entire County	ONTARIO COUNTY:	Entire County
ORLEANS COUNTY:	Entire County	OSWEGO COUNTY:	Entire County
OTSEGO COUNTY:	Entire County	RENSSELAER COUNTY:	Entire County
SARATOGA COUNTY:	Entire County	SCHENECTADY COUNTY:	Entire County
SCHOHARIE COUNTY;	Entire County	SCHUYLER COUNTY:	Entire County
SENECA COUNTY:	Entire County	STEUBEN COUNTY:	Entire County

ST. LAWRENCE COUNTY: Entire County
TOMPKINS COUNTY: Entire County
WASHINGTON COUNTY: Entire County
WYOMING COUNTY: Entire County
TIOGA COUNTY: Entire County
WARREN COUNTY: Entire County
WAYNE COUNTY: Entire County
YATES COUNTY: Entire County

WAGES: (per hour)

	7/1/2004
Sprinkler Fitter.....	$ 25.15

OVERTIME PAY:..... See (B,E,Q,) on OVERTIME PAGE.

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE.
Overtime:..... See (5, 6) on HOLIDAY PAGE.

APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.
45%	50%	55%	60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS: (per hour worked)

Journeyman.....	$ 12.70
Apprs. 1st & 2nd terms...	5.61
Apprs. 3th & 4th terms	8.95
All other terms.....	12.70

1-669

03/01/2005

Teamster - Building

OSWEGO COUNTY: Entire County

MADISON COUNTY: Only the Townships of Cazenovia, De Ruyter, Fenner, Georgetown, Lenox, Nelson and Sullivan.

ONONDAGA COUNTY: Entire County

GROUP # A: Straight trucks, Mechanic Helper, Parts Chaser.
GROUP # B: Tractor trailer, Farm Tractor, Fuel Tank.
GROUP # C: Euclid.
GROUP # D: Mechanic-on-Site.

WAGES: (per hour)

	7/01/2004	6/01/2005
Building:(under $ 5 million)		
GROUP #A.....	$17.23	$17.63
GROUP #B.....	17.23	17.63
GROUP #C.....	17.23	17.63
GROUP #D.....	17.23	17.63

OVERTIME PAY: On Job site See (D,O) on OVERTIME PAGE
OVERTIME PAY: Over road See (B,H) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE
Overtime:.... See (5,6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour worked)

7/01/04	1/01/05	6/01/05	1/01/06
$8.75	$9.00	$9.40	$9.82

WAGES (per hour)	7/01/2004	6/01/05
Building:(over $ 5 million)		
GROUP #A.....	$ 18.28	$ 18.68
GROUP #B.....	18.38	18.78
GROUP #C.....	18.63	19.03
GROUP #D.....	18.43	18.83

OVERTIME PAY: On Job site See (D,O) on OVERTIME PAGE
OVERTIME PAY: Over road See (B,H) on OVERTIME PAGE

HOLIDAY:
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5,6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour worked)

7/01/04	1/01/05	6/01/05	1/01/06
$8.90	$9.15	$9.55	$9.97

6-317

03/01/2005

Teamster - Heavy Highway

OSWEGO COUNTY: Entire County

MADISON COUNTY: Only the Townships of Cazenovia, De Ruyter, Fenner, Georgetown, Lenox, Nelson and Sullivan.

ONONDAGA COUNTY: Entire County

GROUP 1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trks(straight jobs), Single Axle Dump Trks, Dumpsters, Material Checkers & Receivers, Greasers, Truck Tiremen, Mechanics Helpers and Parts Chasers. Tandems and Batch Trucks, Mechanics, Dispatcher, Semi-Trailers, Low-boy Trucks, Asphalt Distributor Trucks and Agitator, Mixer Trucks and dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.

GROUP 2:
Specialized Earth Moving Equip, Euclid type, or similar off- highway, where not self-loading, Straddle (Ross) Carrier and self-contained concrete mobile unit, Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

WAGES (per hour)

	7/01/04	6/01/2005	6/01/2006
Heavy/Highway:			
Group #1.....	$ 18.87	$ 19.24	$ 19.44
Group #2.....	19.07	19.44	19.64

*For all work bid on or after April 1,1988 there shall be a twelve month carryover of the rates in effect at the time of the bid.

Addtl $ 1.50 per hr on City, County or Federal/State designated hazardous waste site when personal protection is required, by regulation to be used or worn.

OVERTIME PAY: See (B, E, O) on OVERTIME PAGE

HOLIDAY:
Paid:..... See (5,6) on HOLIDAY PAGE
Overtime:... See (5,6) on HOLIDAY PAGE

SUPPLEMENTAL BENEFITS: (per hour paid)

	$ 10.30	$ 11.00	$ 11.80

6-317h

03/01/2005

Welder

STATEWIDE: Applies to all counites.

WAGES (per hour)

	7/01/2004
Welder..... (To be paid the rate of the mechanic performing the work)	

03/01/2005

STATE OF NEW YORK
DEPARTMENT OF LABOR
Bureau of Public Work
Room 130, Building 12
Harriman State Office Building Campus
Albany, New York 12240

IMPORTANT NOTICE REGARDING PREVAILING RATE UPDATES

The Department of Labor's Bureau of Public Work is no longer providing individually printed copies of the updated prevailing wage schedule. Instead, the schedule is available to you on our web site: www.labor.state.ny.us.

All the other requirements concerning the schedule remain in place. **Contracting agencies are still required to request a schedule from the Bureau prior to issuing a bid for a public work project and the schedule must be annexed to the bid document**. In addition, the Bureau must be notified who the contract has been awarded to.

Contractors are still required to post the schedule on the jobsite and provide copies of the schedule to all their contractors. The requirement that contractors obtain affidavits from the subcontractors that such schedules have been provided is also in effect.

In the event that you do not have web access or are unable to access the Department's website, please fax a written request for a printed copy of the schedule to the Central Office of the Bureau of Public Work at (518) 485-1870.

This change allows the Department to provide this important information on a timelier basis and make the information contained in it more widely available. If you have any questions about this change, please contact the Bureau of Public Work at (518) 457-5589.

06/01/03

STATE OF NEW YORK
DEPARTMENT OF LABOR
Bureau of Public Work
STATE OFFICE BUILDING CAMPUS
ALBANY, N.Y. 12240

- Notice to ALL Contracting Agencies –

Your attention is directed to the following Amendment to Article 8, Section 220 (3-a) of the NYS Labor Law:

.....

Assembly Bill Number 1839, entitled:
"AN ACT to amend the Labor Law, in relation to signs posted at public works projects"

APPROVED:

This bill amends Section 220 (3-a) of the Labor Law to set forth specific requirements for signs at public work locations listing all prevailing wages specified in the contract. The bill mandates that such signs "be written in plain English and titled, in lettering no smaller than two inches in height and two inches in width." with the phrase "Prevailing Rate of Wages." The bill further requires that the sign by weatherproof. The bill takes effect on March 6, 2000. Signed into law on September 7, 1999.

.....

Ensuring that workers receive the appropriate wage when working on public work projects is a core mission for the Department of Labor ("Department"). This bill will assist the Department in carrying out this mission by educating workers on public work projects as to the applicable wage and supplements for each project.

On the reverse, please find the complete text of the Bill, which contains various other aspects of the law, which affect contracting agencies, contractors and subcontractors working on public work projects.

Text of New York State Bill A01829

STATE OF NEW YORK

THE PEOPLE OF THE STATE OF NEW YORK, REPRESENTED IN SENATE AND ASSEMBLY, DO ENACT AS FOLLOWS:

Section 1 Paragraph a of subdivision 3-a of section 110 of the labor law as amended by chapter 565 of the law as of 1997, is amended to read as follows:

a. It shall be the duty of the department of jurisdiction as defined in this section to ascertain from the plans and specifications for classification of workmen, mechanics and laborers to be employed on such project. Such department shall file with the fiscal officer, as defined in this section, the classification of workmen, mechanics and laborers to be employed upon such public works project, together with a statement of the work to be performed by each such classification. From such statement it shall be the duty of the fiscal officer to make a proper classification of such workmen, mechanics and laborers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work or residential and to make a determination of the schedules of wages and supplements to be paid or provided, as the case may be, therefore. The contractor and every sub-contractor on public works contracts shall post in a prominent and accessible place on the site (of the work) **WHERE THE WORK IS PERFORMED** a legible statement of all wage rates and supplements as specified in the contract to be paid or provided, as the case may be, for the various classes of mechanics, workingmen, or laborers employed on the work **SUCH POSTED STATEMENT SHALL BE WRITTEN IN PLAIN ENGLISH AND TITLED, IN LETTERING NO SMALLER THAN TWO INCHES IN HEIGHT AND TWO INCHES IN WIDTH, WITH THE PHRASE 'PREVAILING RATE OF WAGES' SUCH POSTED STATEMENT SHALL BE CONSTRUCTED**

EXPLANATION: Matter in ITALICS (underscored) is new. Matter in brackets [ ] is old law to be omitted

LBD04:89-01-9

OF MATERIALS CAPABLE OF WITHSTANDING ADVERSE WEATHER CONDITIONS

The contractor and every sub-contractor shall keep original payrolls or transcripts thereof, subscribed and affirmed by him as true under the penalties of perjury, showing the hours and days worked by each workman, laborer or mechanic, the occupation at which he worked, the hourly wage rate paid and the supplements paid or provided, on the site of the work where the contractor or sub-contractor maintains no regular place of business in New York state and where the amount of the contract is in excess of twenty-five thousand dollars. All other contractors of sub-contractors shall produce within five days on the site of the work upon formal order of the commissioner or his designed representative such original payrolls or transcripts thereof, subscribed and affirmed by him as true under the penalties of perjury, as may be deemed necessary to adequately enforce the provisions of this article. Every contractor and sub-contractor shall submit to the department of jurisdiction within thirty days after issuance of its first payroll and every thirty days thereafter. A transcript of the original payroll record as provided by this article, subscribed and affirmed as true under the penalties of perjury. The department of jurisdiction, as herein referred to shall be the department of the state, board or officer in the state, or municipal corporation or commission or board appointed pursuant to law, whose duty it is to prepare or direct the preparation of the plans and specifications for a public work project.

BIDDING & CONTRACT REQUIREMENTS

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.01 BORINGS AND SUBSURFACE DATA

The Owner has obtained subsurface data at numerous sites through the project areas. Soil samples taken at the time of the borings were classified by the Boring Contractor and recorded in boring log form. Sample locations are shown on the Plans. The soil samples may be examined at the Town of Volney Town Office during normal working hours. The boring logs are included at the end of this Section. This additional information is not a part of the Contract Documents.

00160.02 PRE-CONSTRUCTION CONFERENCE

A pre-construction conference will be held after award of the Contract, but prior to commencement of construction, at the Town of Volney, Town Office, 1445 County Route 6, Fulton, New York, and the Contractor shall have an authorized representative of his firm present at this meeting.

00160.03 POWER OF ATTORNEY

Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated original copy of their power of attorney.

00160.04 LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

00160.05 NON-COLLUSIVE BIDDING CERTIFICATION

A Non-Collusive Bidding Certification form as bound in these documents must be executed and accompany the Bid.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.06 INSURANCE

Insurance shall provide that the policies shall not be changed or canceled until thirty (30) days after written notice has been given to the Owner.

In reference to Article 00752.03.C, the Owner's Protective Liability Insurance shall name the Owner, the Engineer, the County of Oswego, the Town of Volney, the Metropolitan Water Board (MWB), and NYSDOT (i.e., People of the State of New York).

00160.07 PERMITS

A. NYSDOT UTILITY WORK PERMIT

The Owner/Engineer had submitted the Contract Documents and Drawings to the New York State Department of Transportation (NYSDOT) for review and comment. All comments by NYSDOT have been addressed. The Contractor shall file a permit application with the New York State Department of Transportation (NYSDOT) for work within the NYS Route 3 highway right-of-way for the construction of the water main distribution system as identified in the Contract Documents. The Contractor shall perform all work in these areas in strict accordance with the permit provisions. The Contractor shall provide a Labor & Materials Payment Bond, in an amount to be determined by and in the name of the New York State Department of Transportation, prior to commencement of construction and include the associated cost in his bid. Upon completion and acceptance by NYSDOT, the bond will be returned. The Contractor shall provide the Engineer and the Owner a copy of the permit provisions and a copy of the Labor & Materials Payment Bond prior to commencing construction in those areas.

B. OSWEGO COUNTY DEPARTMENT OF PUBLIC WORKS WORK PERMIT

The Contractor shall file a permit application with the Oswego County Department of Public Works for work within the County Routes 176 and 6 highway rights-of-way, for the construction of the water main distribution system as identified in the Contract Documents. The Contractor shall perform all work in these areas in strict accordance with the permit provisions. The Contractor shall be responsible for all permit fees and include them in his bid. The Contractor shall provide the Engineer and Owner a copy of the permit provisions and proof of payment of permit fees prior to commencing construction in those areas.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.08 ESTIMATED QUANTITIES

In amplification of Article 00759.01, Bidders are advised that in the event of an overrun and/or underrun in the estimated unit price quantities contained in the Bid, the unit price for all respective items will be used for payment.

00160.09 SALES TAX EXEMPTION

In amplification of Article 00755.04, Bidders are advised of the following:

Purchases for the Town of Volney are not subject to any Federal, State or City sales tax. Exemption certificates will be executed upon request.

00160.10 TIE-IN TO EXISTING MWB WATER MAIN

All tie-ins/connections to the existing water mains must be coordinated with the Metropolitan Water Board (MWB), Ed Wilcox, 315-652-8656. The MWB shall be contacted at least two (2) weeks prior to the connection work, and shall approve the method and time of connection prior to the Contractor proceeding with the work.

00160.11 SEQUENCE OF CONSTRUCTION AND COORDINATION

The Contractor is hereby notified that all easements and/or property acquisitions may not be secured at the time the Contract is awarded. The Contractor shall not enter or perform work upon any property until access in the form of an easement has been obtained. The Contractor shall not be due additional compensation due to not having immediate access to properties. The Contractor shall adjust his construction schedule/sequencing accordingly to accommodate all non-acquired easements.

Water mains installed under this Contract will be connected to water mains installed as part of Contract No. 2 – 300,000 Gallon Water Storage Tank:

located on Howard Road adjacent to the tank site at the road right-of-way.

The Contractor of this Contract shall coordinate the final location of water mains with the Contractor of Contract No. 2 and the Engineer.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.11 SEQUENCE OF CONSTRUCTION AND COORDINATION - Continued

If the facilities of Contract No. 2 have not been installed at the desired time of connection, the Contractor shall install a removable cap or plug, backfill the trench and mark the physical location of the pipe termination with a 4" x 4" post extending aboveground. If the Contract No. 2 water main work has been completed prior to the time of connection, then the Contractor shall excavate the connection location, make the required connection and properly backfill the trench.

Prior to any backfilling or connection, the facilities constructed under this Contract shall be pressure tested and disinfected, as required, and shall be certified by the Engineer.

The cost for making the necessary connections or capping and marking installed facilities shall be included in the amount bid for the item to be connected. No separate payment shall be made for this work.

00160.12 WORK ADJACENT TO SILK ROAD LANDFILL

All work through the Silk Road Landfill site (from Howard Road to the private property north of the landfill) must be coordinated with the Engineer and the County. The landfill was a Federal Superfund site that has been remediated as required under United States Environmental Protection Agency (USEPA) requirements. The landfill facility is presently in an operation, maintenance and monitoring phase. The landfill is now closed, and the proposed water main alignment is intended to be located outside of any area previously used for disposal. The proposed construction limits are also intended to be located in an area where groundwater and soil contamination will not be a concern (based upon data available from existing groundwater monitoring wells); however, should any conditions be encountered that indicate the presence of possible groundwater or soil contamination, the Contractor should immediately cease work and contact the Engineer and Owner.

An easement has been acquired from the County as shown on the Plan, and all work is to be confined to the easement area shown. Access to the site is through a locked gate at Howard Road; contact the Engineer and the County Department of Public Works (Kurt Ospelt, Deputy Superintendent of Public Works, (315) 349-8331) regarding access at least 48 hours prior to any work on the site.

Excavated materials shall remain on the site, and any necessary coordination for disposal of soils will be addressed between the Contractor, Engineer and Oswego County Department of Public Works.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.12 WORK ADJACENT TO SILK ROAD LANDFILL - Continued

For additional information regarding the past and present use of the landfill site, please contact the County's Project Coordinator for the site: Andrew Barber, Barton & Loguidice, P.C., (518) 218-1801.

00160.13 ENGINEER'S FIELD OFFICE TRAILER

The Bidder's attention is called to Section 01590, "Engineer's Field Office Trailer". The provisions of Article 01590.02, "Facilities To Be Provided" shall be amended. The Contractor shall provide the Engineer with the following office furniture and equipment, which shall be furnished with the trailer:

1 8-foot flat top double desk with 2 sets of two-drawer metal file cabinet.
1 built-in drafting table 36" x 72" with double storage cabinets underneath.
2 swivel chairs.
2 drafting stools.
1 four drawer, fireproof legal size filing cabinet with lock.
1 plan rack equipped with 5 plan hangers.
4 wall coat hooks.
2 large metal waste baskets.
1 refrigerator, minimum 2 cubic feet.
1 automatic answering machine
1 touch-tone telephone
4 folding chairs, metal
1 plain paper FAX machine, including paper supply, as manufactured by Brother Intellifax, Panasonic KX-FP, Sharp UX, or equal. Fax machine shall have a separate direct telephone line.
1 plain paper, desk top copy machine, for 8-1/2" x 11", 8-1/2"x14", and 11"x17" paper size; including paper supply and spare toner as manufactured by Xerox, Canon, or equal.
1 completely set up IBM compatible personal computer (minimum 1.0 GHz processor) including Windows XP or later version, the latest version of Microsoft Word, and the latest version of Microsoft Excel for Windows. The computer shall have 56 kb/sec minimum internet access and be completely set up to send and receive e-mail. Also included will be a laser quality printer capable of printing the following letter sizes: 8 ½ x 11 and 8 ½ x 14.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.14 PROJECT SIGN

A USDA Rural Development sign is required on this project. The sign shall be constructed per the detail at the end of this Section and be erected per Section 01580.

00160.15 TOPSOIL & SEEDING

A. WITHIN NEW YORK STATE HIGHWAY RIGHT-OF-WAY

All disturbance of lawn areas within the New York State highway right-of-way shall be performed in accordance with NYSDOT standards. NYSDOT Specification Items 209.03 M and 610.0203 M, is attached at the end of the Additional Instructions, gives NYSDOT standards for materials and construction for restoration of lawn areas within New York State highway rights-of-way. In amplification of these requirements, temporary seeding or mulch shall be used within 24 hours on all disturbed areas where additional work is not scheduled within 5 days. Seeding (Temporary) shall comply with the work specified under Item 610.0203 M, Establishing Turf and meet the material requirements in the applicable subsections of Section 700 in the NYSDOT Standard Specifications. Once the final grade has been established, Established Turf shall be used. Should the area not require any further grading, Establishing Turf may be used in place of Temporary Seeding.

B. SEEDING IN EXCESSIVELY WET AREAS

The following modification shall be made to Section 02485 "Seeding", 2.2.5 – For excessively wet areas, annual rye grass shall be utilized.

00160.16 SPECIAL CONDITIONS

A. Before commencement of operations, the Contractor shall notify the following of his schedule of operations:

1. Dig Safely, New York (formerly UFPO)
2. Town of Volney Supervisor
3. Town of Volney Highway Superintendent
4. Oswego County Department of Public Works
5. New York State Department of Transportation
6. Barton & Loguidice, P.C.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.16 SPECIAL CONDITIONS - Continued

B. The location of existing underground facilities as shown on the Contract Drawings is approximate only, and the exact location shall be made in the field by the Contractor at no cost to the Owner.

C. No excavation will be classified as rock excavation.

D. When construction activities require the disturbance of mailboxes, signs or posts, the Contractor shall temporarily relocate the items in a position acceptable to the Engineer. Upon completion of construction, the Contractor shall replace each item in a location acceptable to the Engineer and in a condition equal to or better than their original condition. Payment for the above work shall be included in the "Clearing" item of the Bid.

E. All trees, shrubs, and the like at the construction site shall be preserved and protected by the Contractor, except those that are specifically indicated to be removed and replaced, at no additional cost to the Owner. Trees not scheduled for removal shall be carefully protected from damage by boxing. Whenever excavation is to be performed within the root zone of trees (normally about the spread of the limbs), the Contractor shall have a qualified nurseryman or forester on the job to supervise the excavation operation, to prune and paint all damaged roots or limbs over 1 inch diameter with approved tree wound paint, and to prune the tree to match the undamaged root of a tree (8 feet from trees 8-inches to 10 inches, 10 feet from trees 12 inches to 20 inches, and 12 feet from trees over 20 inches); the Contractor shall hand excavate or tunnel to avoid damaging the roots.

Tree Lost	Replacement
0-6" dbh	2" caliper
6-12" dbh	2-3" caliper
Over 12" dbh	3" or more caliper

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.17 NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS STANDARDS

All work of this Contract is to be performed in accordance with "Minimum Construction Standards For Water/Sewer Transmission Mains Located Wholly or Partially In An Agricultural District", attached at the end of the Additional Instructions. No part of these construction standards shall diminish or negate any other provisions of this Contract. Where the Agricultural District Construction Standards are in conflict with other provisions in the Contract the more stringent of the two shall apply.

00160.18 POLYETHYLENE ENCASEMENT

All buried metallic pipe, valves and fittings, greater than 2 inches in diameter, shall be encased in polyethylene. This includes new items as well as existing items which are exposed during construction. The Contractor shall provide polyethylene encasement in accordance with AWWA C105 as shown on the drawings or directed. The polyethylene film shall be 8 mil Class C tubes or sheets as required. The Bidder is directed to include the cost of polyethylene encasement in the price bid for the item to be encased. No separate payment shall be made for polyethylene encasement.

00160.19 PROMPT PAYMENT AND RETENTION OF FUNDS

The Owner agrees to make payment to the Contractor and to retain only such amounts as may be justified by specified circumstances and provisions of the Construction Contract.

00160.20 REPLACEMENT OF STORMWATER CULVERTS AND STORM DRAIN PIPING

Stormwater culvert and storm drain piping across roadways and driveways which must be disturbed for the installation of water main piping shall be restored to working condition immediately upon completion of the water main in that location. No extra payment will be made for replacement of culverts that are damaged during excavation. Culverts that are not suitable for reuse, as determined by Engineer shall be replaced in kind. The cost for culvert replacement shall be included in the bid price for furnish and install ductile iron pipe; no separate payment shall be made.

Replacement of stormwater culverts and storm drain piping shall be in accordance with Sections 02439 "Smooth Interior Corrugated Polyethylene Pipe and End Sections", and 02618 "Corrugated Metal Pipe & End Sections".

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.21 STREET AND PAVEMENT REPAIR WITHIN TRENCH LINE

In substitution of Articles 3.19.5, 3.19.6 and 3.19.7 of Section 02220 – "Excavation", the following Specification shall apply.

After due notice and within the time specified, the temporary street restoration shall be prepared for permanent restoration in accordance with Article 3.19.3 of Section 02220. The temporary trench resurfacing shall be removed to a depth of 16-inches below the existing pavement base. In addition, and as a minimum, the existing asphalt overlays and wearing surface shall be saw cut and removed one foot back of the top limit of the trench on each side to provide a smooth, clean edge to adjoin with the restored pavement. If new pavement limits are shown on the Contract Drawings, the Contractor shall saw cut and remove the existing asphalt overlays and wearing surface in those designated areas.

All streets, driveways, parking lots and similar surfaces where pavement has been removed, disturbed, settled or damaged by or on account of the work of the Contract shall be repaired and replaced by the Contractor, by a new pavement. The top surface shall conform with the grade of the existing pavement unless otherwise indicated on the Contract Drawings.

Trenching and pavement restoration and preparation of the subgrade surface shall be in accordance with the above paragraph, and the "Private Road Restoration" and "Driveway/Parking Lot Restoration" details found in the Contract Drawings. All trenching and excavation shall be completed prior to replacement of the final roadway pavement.

An amount of five dollars ($5.00) per linear foot will be withheld in the payment for trenching items until all surface areas, including permanent street and pavement repair, have been restored in accordance with Section 02220, Article 3.19.

00160.22 SPECIFICATIONS FOR CONTRACT

The Specifications covering work on this Contract are the General Requirements and Specifications enclosed herein and the New York State Department of Transportation, Standard Specifications, Construction Materials" of January 2, 2002, and any Addenda and herewith modified: Delete Sections 102 through 109 in their entirety, with the exception of Sections 102-10, 104-04, 104-05, 104-09, 105,10, 105-12 and 107-05.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.22 SPECIFICATIONS FOR CONTRACT - Continued

When references are made in these Specifications and on the Contract Drawings to the "New York State Standard Specifications" of January 2, 2002, and Addenda and terms in these Specifications refer to the State, Department, Commissioner, Executive Deputy Commissioner, Comptroller, Division, Bureau of Regional Director, or Chief Engineer, it shall be assumed that the Owner is implied; reference to the Engineer or Inspector shall mean that the Engineer representing the Owner is implied.

The Specifications, Plans and Contract Documents, provided by the Owner shall govern over those of other agencies; but where the method of work, requirement of materials, and method of payment are not included in the Contract Documents provided by the Owner, the "New York State Standard Specifications" of January 2, 2002, and any Addenda to these Specifications issued after that date shall govern.

00160.23 NEW YORK STATE AND OSWEGO COUNTY ROADWAY CROSSINGS

The Contractor may, at his/her discretion, install the roadway casing pipe by horizontal bore (steel pipe) or directional drill (HDPE pipe) method. Following award, and prior to construction, the Contractor shall provide to the Engineer a schedule of bore methods and a bore planner as applicable to the directional drill method.

The Contractor may choose either method as may be most cost-effective for each crossing location (i.e., the Contractor is not required to utilize the same installation method for all crossings). However, workspace is limited to that shown, and any additional workspace shall be the responsibility of the Contractor to secure. No additional costs shall be incurred by the Owner for workspace procured by the Contractor that is in addition to that shown on the Plans.

00160.24 EXTRA WORK ALLOWANCE

Contract 1B – Electrical Construction includes an "Extra Work Allowance" of $1,000. The Bidder is not to add this amount to his Bid for the work shown and specified. The allowance shall be applied toward additional work as may be authorized by the Owner in accordance with Section 00757. Any amounts not so authorized upon completion of the work will be deducted from the Contract amount.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.25 TOWN ROADWAY CROSSINGS

All town roadway crossings shall be preformed by "Open-Cut Method". The Contractor shall install a HDPE (DR-18) pipe as casing pipe for the length of road crossing. All costs associated with town road crossings (including casing pipe) are to be included in the cost of pipe unless specified otherwise.

00160.26 ALTERNATE BID ITEMS

Each Bidder is required to submit bids for all Alternate Bid Items.

The Base Bid for this Contract is for construction of ductile iron water mains with special Thickness Class 52 pipe. The Alternative Bid is for the installation of ductile iron water mains with Pressure Class 350 pipe.

00160.27 ONONDAGA COUNTY WATER AUTHORITY (OCWA) SUPPLIED EQUIPMENT

The telemetry equipment, pressure transmitters (for pre-packaged pump station) and the chlorination equipment will be furnished by OCWA to the successful Bidder of Contract 1A. Specifically, the following equipment will be provided by OCWA:

1. Bristol Babcock 3310 Distributed Process Controller (DPC)
   a. 386 Real Mode CPU with 2MB Memory
   b. 4 I/O boards to satisfy Discrete/Analog I/O requirements
2. 12/24 VDC supply with automatic AC fail detection
3. 120 AC convenience receptacle (GFI)
4. Termination block for power
5. Termination block for all I/O (fused)
6. MDS Radio Ready Package with polyphaser coax
7. MDS 9810 Spread Spectrum Radio
8. Chlorination Equipment – contamination pallet, chemical feed pumps and chlorination drums

The successful Bidder (Contract 1A) or their subcontractor shall install and wire the OCWA supplied equipment into the pre-packaged pump station. Any additional equipment (not furnished by OCWA) needed for proper functioning of the radio-telemetry system shall the responsibility of the successful Bidder (Contract 1A). All testing documentation shall be provided to the Engineer.

SECTION 00160

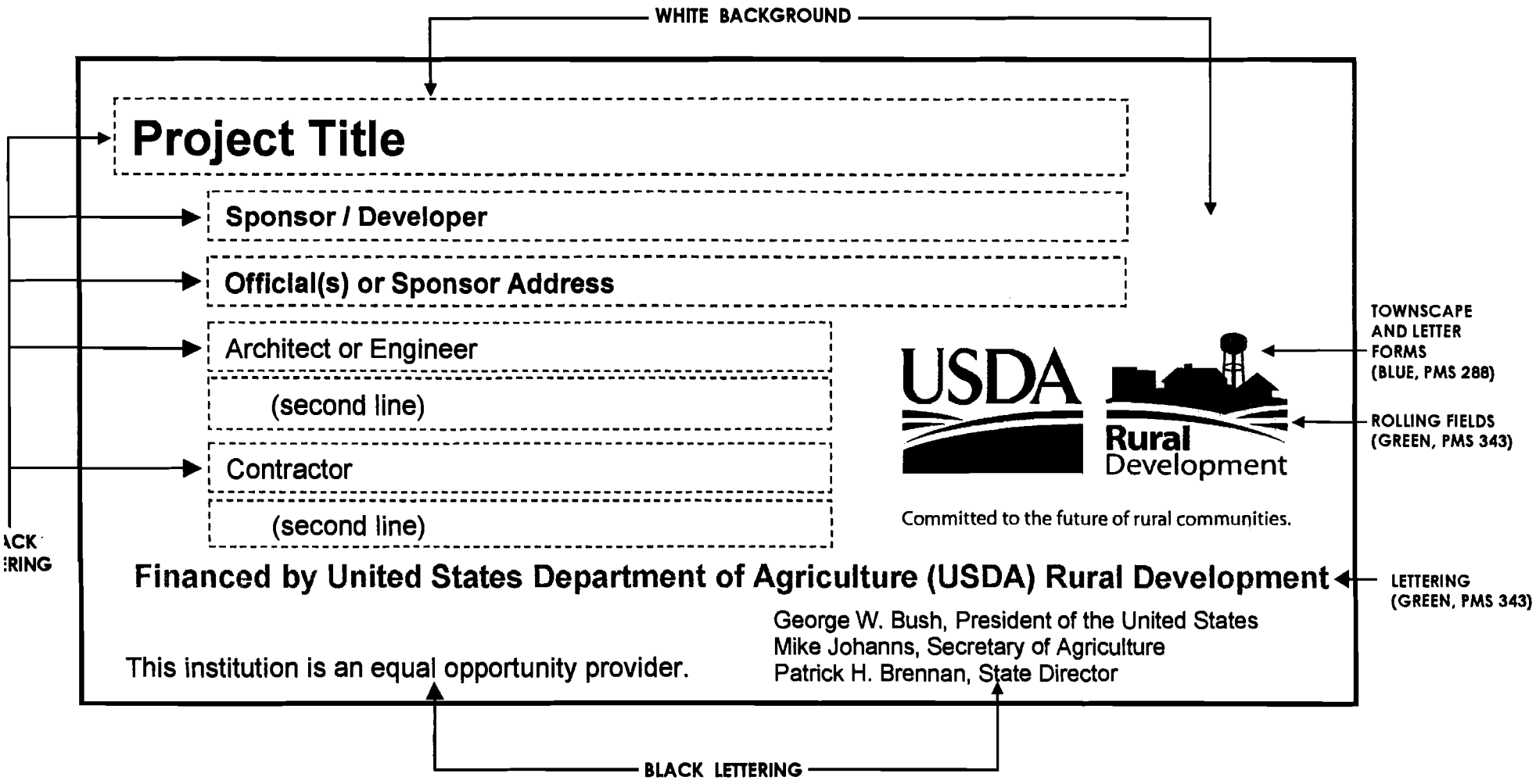
ADDITIONAL INSTRUCTIONS

00160.27 ONONDAGA COUNTY WATER AUTHORITY (OCWA) SUPPLIED EQUIPMENT - Continued

OCWA will also provide two (2) Microwave Data Systems 9810 Spread Spectrum Radios to the successful Bidder of Contract 1B. The successful Bidder (Contract 1B) shall install the supplied radios as shown on the Plans. Any additional equipment (not furnished by OCWA) needed for proper functioning of the radio-telemetry system shall be the responsibility of the successful Bidder (Contract 1B).

END OF SECTION

TEMPORARY CONSTRUCTION SIGN FOR NY RURAL DEVELOPMENT PROJECTS



SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x ¾")
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

The Department
Divisions
Programs
Funding Opportunities
Current Issues
Farm & Market Search
Licensing & Registration
Press & Publications
Fairs & Events
Related Links
Security Notice

Minimum Construction Standards for Water/Sewer Transmission Mains Located Wholly or Partially in an Agricultural District

For Pipelines of Eight Inches or Greater Outer - Diameter

The following standards apply to those portions of water/sewer transmission mains measuring eight (8) inches or more in outer-diameter, which are proposed for construction on agricultural land. The standards focus on measures that minimize or mitigate the impacts on farmland from such pipeline trenching/construction. The standards cover practical agricultural issues including: pipeline depth-of-cover, topsoil protection, waste stone/rock materials, soil rutting and compaction, existing and future farm drainage and other farm related facilities.

Pipeline Depth-of-Cover

Pipeline depth within the soil profile is important from the farming standpoint due to the permanence of a pipe's position in the soil profile. Inappropriate depth of a water/sewer line will diminish current and future farm operators' capacities to administer the scope of land-fitting practices required to meet specialized cropping needs. Such practices can range from deep tillage to the installation of subsurface tile drain lines.

From the pipeline operator's standpoint, appropriate depth-of-cover is essential for protection against puncture from surface disturbance and against bursting due to frost penetration and freeze up. A common minimum depth-of-cover employed in water/sewer pipelines is 4.5 feet.

Standard: In agricultural land, the minimum depth-of-cover from restored ground surface to top of the buried pipe will be 4.0 feet. (See "Existing and Future Farm Drainage" regarding depth adjustment.)

Topsoil Resource Protection

The topsoil layer of the soil profile is the fertile material needed for sustained crop productivity. Pipeline construction of this size range is generally ongoing through completion, regardless of soil moisture conditions, and can permanently alter the soil profile throughout the construction right-of-way.

The farm soils throughout New York State have only limited ability to recover from the concentrated disturbances of pipeline right-of-way construction activity, due to a thin topsoil layer, humid climate and correspondingly excessive soil moisture for most of the year. Farm soils must be protected against degradation through the exercise of soil protection standards.

Standard: The full-width topsoil stripping practice should be employed over the construction right-of-way:

The topsoil ("A" horizon) should be stripped down to the top of the subsoil zone for the contiguous width of the construction work/traffic area, trench zone and trench spoil storage area.

The stripped topsoil should be segregated from all other materials in a segregated stockpile on top of unstripped topsoil at the far edge of the construction right-of-way on the side opposite from the trench and spoil side.

Trench Backfill and Waste Rock

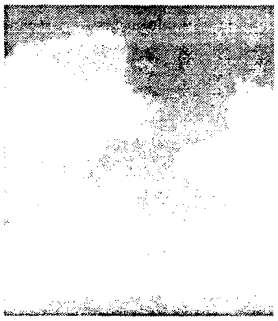
Trench excavation for pipelines can unearth substantial quantities of stone and rock spoil from the various subsoil layers. It is important to restore the original soil profile and prevent either large rocks or concentrations of stone material used as backfill from obstructing normal farm tillage operations and disabling farm machinery. Also, if the backfilling phase is completed while there is water in the pipeline trench, long stretches of right-of-way with prolonged soil saturation conditions can occur. Such saturated soil conditions can result in significant restoration difficulties and delays.

Standard: The pipeline trench should be thoroughly dewatered prior to backfilling. The trench should be backfilled with the excavated spoil material and compacted during backfilling to minimize trench settling.

Topsoil should not be used as trench-backfill and should remain in its segregated stockpile until all deep ripping and stone removal work is completed.

On agricultural land, blasted or excavated bedrock, boulders and concentrations of excavated stone or rock materials should not be returned to the trench any closer than 24 inches from the exposed work surface of the stripped portion of right-of-way. The remainder of the backfill should be limited to suitable subsoil material, backfilled up to the top of the exposed work surface. Excess waste rock/stone materials should be removed and disposed of safely.

Deep Ripping and Stone Removal



The dense compaction of the exposed subsoil (i.e., the spoil storage area, backfilled trench and construction work and traffic area) must be alleviated together with stone removal prior to the subsequent stages of topsoil replacement and final subsoil shattering.

Standard: During periods of relatively low to moderate subsoil moisture, the exposed right-of-way shall be returned to rough grade; deep ripped with heavy duty ripper; and, alternately deep chiseled and rock-picked until uplifted stone/rock materials of four inches and larger size are cleaned off the site and disposed of properly. In subsoils with excessive stony-rocky material in the upper layer, an alternate ripping/stone removal plan should be developed and submitted to the Department of Agruculture and Markets for review in advance of project construction.

Topsoil Replacement and Subsoil Shattering

Standard: After the initial subsoil ripping, chiseling and stone removal has been completed, the segregated topsoil materials should be uniformly spread across the stripped portion of right-of-way.

Topsoil spreading should be conducted only during periods of low to moderate soil moisture to avoid rutting, mixing and recompaction of the soil profile. Topsoil spreading should not be conducted during periods of saturation or frozen ground. Alternative plans should be prepared for suspension of topsoil spreading under such conditions, and soil restoration work should not resume until appropriate moisture conditions occur during the following season.

After topsoil replacement, final subsoil shattering using a deep 4-shank paratill with narrow leg spacing should be conducted throughout the disturbed right-of-way to a depth of 18 inches. Large, uplifted rock materials should be picked from the surface and disposed of properly.

Final subsoil shattering and rock removal should be conducted only during periods of low to moderate soil moisture and not during periods of saturation or frozen ground. Final subsoil shattering and rock picking should be suspended when saturated or frozen soil conditions occur. This final phase of restoration can be completed when appropriate moisture conditions return the following season.

Existing and Future Farm Drainage

Surface drainage ways for storm runoff and for the outletting of subsurface drain lines are afforded agricultural lands by natural creeks, swales, ditches, diversion terraces, etc. Subsurface drainage is managed through installed practices of random and pattern tile drain lines. Protection of existing surface and subsurface drainage is important for crop productivity as is the capacity to install future tile drain lines and maintain ditches.

Standard:

Existing Drainage

Surface drainage systems affected by the pipeline project should be protected and their function maintained by temporary fluming. Earthen berms of surface drainage systems (e.g. diversion terraces) should not be breached. Where breaching is unavoidable, the earthen berm should be fully restored by engineering methods and materials consistent with the specifications of the USDA Soil Conservation Service.

All severed tile drain lines should be repaired, maintaining original gradient, using methods and materials consistent with the standards of the NYS Department of Agriculture and Markets. All repairs and protective pipe sleeving or supportive channel iron should be shouldered firmly at least three feet beyond the limit of the water/sewer line excavation.

Future Drainage

During project planning and design, all operators of affected farmland should be inventoried for future locations of surface or subsurface drainage. All such locations should be noted in the design.

Depth and gradient for such future surface or subsurface drainage installation, consistent with USDA Soil Conservation Service engineering specifications, should be accommodated by appropriate engineering of the depth-of-pipeline.

Control of Water Piping, Soil Saturation and Seeps

Pipeline trench excavation in and immediately upgrade from agricultural areas can alter the natural stratification of soil horizons and natural soil drainage patterns.

Standard: The pipeline right-of-way should be monitored for at least one year following restoration for surface seeps and areas of prolonged soil saturation. Such measures as subsurface intercept drain lines should be used to prevent surface seeps and the seasonally prolonged saturation of the backfilled trench zone and adjacent areas. Intercept drain lines should be installed according to the specifications of the USDA Soil Conservation Service.

Revised: 10/16/02

ITEM 209.03 M, SEEDING (TEMPORARY)

-2.02 SEEDS 713-04

DETAIL SPECIFICATIONS FOR SEEDS

A- Min. Germination, B- Min. % Germination & Hard Seed, C- Grams Pure Live Seed/m^2

Temporary Seed Mix - Use 1 of the seed types below for Item 209.03 M, Seeding (Temporary)

Name	Variety	A	B	C
Annual or Perennial Ryegrass (Lolium multiflorum or perenne)	Commercial	90		3.5
Cereal rye (Secale cereale)				12.5
Winter Wheat (Triticum aestivum)				13.5

ITEM 610.0203 M, ESTABLISHING TURF (PERMANENT)

-2.02 SEEDS 713-04

DETAIL SPECIFICATIONS FOR SEEDS

A- Min. Germination, B- Min. % Germination & Hard Seed, C- Grams Pure Live Seed/m^2

SEED MIX

Name	Variety	A	B	C
Kentucky Bluegrass (Poa pratensis)	Commercial	75		1.6
Creeping Red Fescue (Festuca rubra)	Commercial	85		5.6
Perennial Ryegrass (Lolium perenne)	Commercial	90		7.1

Total grams of pure live seed per square meter

= 14.3

Continuation of Item 610.0203 M, Establishing Turf

-2.02 MATERIALS

Fertilizers:	713-03	Either type no.1, which shall be a 1-2-1 formulation, or type no.12, which shall be a combination of approved fertilizer compounds mixed in a proportion to provide a 1-2-1 nutrient ratio.
Mulch:	713-11 713-19	Wood Fiber with seasonal limitations or Hay or straw. Straw only in the repair of lawn areas.
Mulch Anchorage:	713-12	

-3.02 CONSTRUCTION

-3.02A Rates:	*Fertilizer* - 11.2 g of nitrogen per m^2 unless otherwise noted under the seed mix. *Mulch* - Wood fiber - Manufacturer's recommended rate. Hay or Straw - 500 to 700 g per m^2 to cover the ground to the satisfaction of the E.I.C. *Mulch Anchorage* - Manufacturer's recommended rate.
-3.02B Limitations:	Wood fiber permitted during the following seasons: April 1st to June 15th and August 15th to October 1st.
-3.02D Ground Preparation and Seeding:	Method number 1 shall apply except in the repair of lawn areas where method number 2 shall be used unless otherwise directed by the E.I.C.
-3.02E Mulching:	Mulch and mulch anchorage shall be applied separately from seeds. If wood fiber is used, seed shall be applied first. If seed is applied hydraulically a min. of .5 L of water per m^2 is required.
-3.02G Care During Construction:	Method number 1 shall apply.

DATA REPORT OF SUBSURFACE INVESTIGATION

VOLNEY AIRPORT WATER DISTRICT
TOWN OF VOLNEY, NEW YORK

BARTON & LOGUDICE, P.C.

PREPARED FOR: Barton & Logudice, P.C.
290 Elwood Davis Road
Box 3107
Syracuse, New York 13220

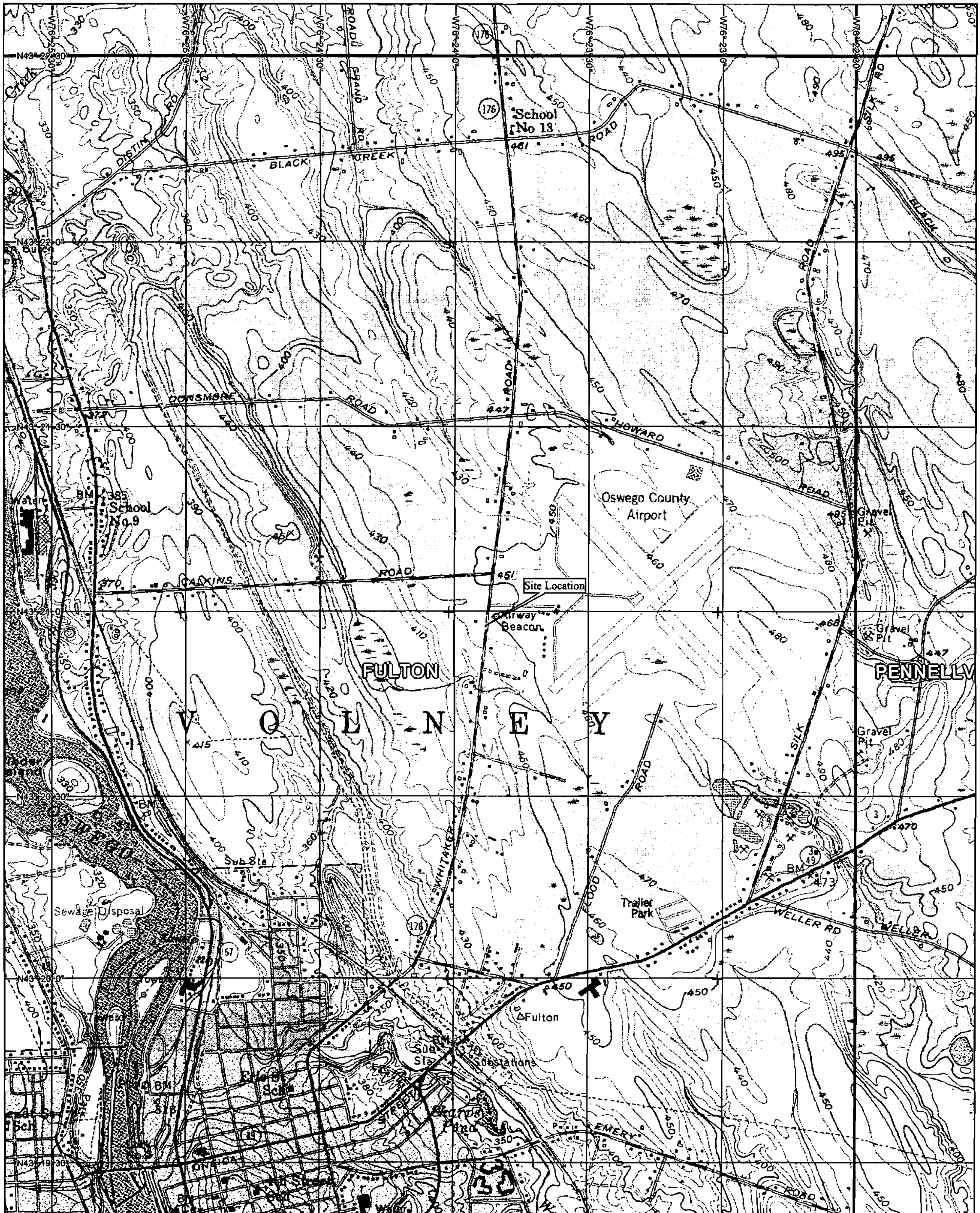
PREPARED BY: Atlantic Testing Laboratories, Limited
6431 U.S. Highway 11
P. O. Box 29
Canton, NY 13617

ATL Report No. CD2376-1-11-04

November 22, 2004

ATTACHMENT A

SITE LOCATION PLAN



 1000 ft Scale: 1 : 25,000 Detail: 13-0 Datum: NAD27

ATTACHMENT B

SUBSURFACE INVESTIGATION LOGS

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/20/2004 Finish Date: 10/20/2004

Boring No.: B-2 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/20/2004	5:50 PM	DRY	20
10/20/2004	6:20 PM	3.0	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advance By: 3-1/4" Auger

Borehole caved at 7.3 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%)	Recovery (Inches)
0	AUGER	1	0.0	2.0	SS	1 2 2 5	0.6	7" TOPSOIL & ORGANIC MATERIAL	19
1							2.0	Brown mf+ SAND; and SILT; trace f GRAVEL (wet, non-plastic)	
2		2	2.0	4.0	SS	3 5 5 5		▼ Brown CLAY; some SILT; trace f SAND (wet, plastic)	20
3									
4		3	4.0	6.0	SS	4 4 3 4		Similar Soils	18
5									
6		4	6.0	8.0	SS	4 4 4 4		Brown-Varved SILT; little CLAY; little f SAND (saturated, slighty plastic)	20
7							8.0		
8		5	8.0	10.0	SS	14 15 14 16		Reddish-Brown cmf+ SAND; little mf GRAVEL; little SILT (saturated, non-plastic)	17
9									
10		6	10.0	12.0	SS	10 10 6 6		Similar Soil; (saturated, non-plastic)	15
11							12.0		
12		7	12.0	12.7	SS	45 100/2"		Reddish-Brown mf SAND; some SILT; little cmf GRAVEL (saturated, non-plastic) GLACIAL TILL	6
13									
14									
15		8	15.0	15.9	SS	48 100/5"		Similar Soil (saturated, non-plastic) GLACIAL TILL	10
16									
17									
18									
19									
20		9	20.0	22.0	SS	27 75 73 70		Reddish-Grey cmf+ SAND; little mf GRAVEL; little SILT (wet, non-plastic) GLACIAL TILL	14
21							22.0		
22								Boring terminated at 22.0 feet.	
23									
24								Note: 1. Borehole backfilled upon completion with on-site soil.	
25									

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/21/2004 Finish Date: 10/21/2004

Boring No.: B-3 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/21/2004	8:30 AM	2.3	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advanced By:
2" Split Spoon

Borehole caved at 9.6 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL	Recovery (Inches)
								f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%	
1	AUGER	1	0.0	2.0	SS	5 9 6 5		Brown f SAND; and SILT (moist, non-plastic)	10
2									
3		2	2.0	4.0	SS	4 3 2 3		▼ Similar Soil	21
4									
5		3	4.0	6.0	SS	4 5 13 10	5.0	Similar Soil	19
6									
7		4	6.0	8.0	SS	6 6 5 5		Brown CLAY; and SILT; little f SAND (saturated, plastic)	23
8									
9		5	8.0	10.0	SS	4 6 11 14		Brown SILT; some f SAND (saturated, non-plastic)	19
10							10.0		
11								Boring terminated at 10.0 feet.	
12									
13								Note:	
14								1. Borehole backfilled upon completion with on-site soil.	
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/21/2004 Finish Date: 10/21/2004

Boring No.: B-13 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/21/2004	10:15 AM	5.3	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advance By: 2" Split Spoon

Borehole caved at 7.8 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL	Recovery (Inches)
								f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%	
1	AUGER	1	0.0	2.0	SS	4 7 5 4	0.3	3" TOPSOIL & ORGANIC MATERIAL	12
								Dark-Brown mf+ SAND; some SILT; little mf GRAVEL (moist, non-plastic)	
2		2	2.0	4.0	SS	3 2 6 5		Brown mf+ SAND; some SILT (saturated, non-plastic)	17
3									
4		3	4.0	6.0	SS	4 7 29 36	5.0	Similar Soil (wet, non-plastic)	20
5								▼ Reddish-Brown mf SAND; and mf GRAVEL; little SILT (moist,	
6		4	6.0	8.0	SS	33 60 82 86	6.5	non-plastic) GLACIAL TILL	12
7								Similar Soil	
8		5	8.0	8.3	SS	100/4"	8.3	Similar Soil (wet, non-plastic)	4
9								Boring terminated at 8.3 feet.	
10									
11								Note:	
12								1. Borehole backfilled upon completion with on-site soil.	
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/19/2004 Finish Date: 10/20/2004

Boring No.: B-22 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/19/2004	6:00 PM	DRY	10.0
10/20/2004	6:40 AM	8.6	10.0
10/20/2004	9:00 AM	19.0	20.0
10/20/2004	9:20 AM	6.0	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advanced By: 3-1/4" Auger

Borehole caved at 7.7 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%)	Recovery (Inches)
1	AUGER	1	0.0	2.0	SS	2 3 3 5	0.5	6" TOPSOIL & ORGANIC MATERIAL	13
2							2.0	Reddish-Orange mf SAND; little SILT; trace ORGANICS (moist, non-plastic)	
3		2	2.0	4.0	SS	4 5 8 9		Brown mf SAND; some mf GRAVEL; trace SILT (moist, non-plastic)	12
4		3	4.0	6.0	SS	11 10 10 10		Similar Soil	14
6		4	6.0	8.0	SS	11 7 6 4		Similar Soil	3
8		5	8.0	10.0	SS	4 15 25 14		Brown mf+ SAND; some SILT; little mf GRAVEL (wet, non-plastic) GLACIAL TILL	9
10		6	10.0	12.0	SS	10 10 7 25		Similar Soil	15
11							11.5		
12		7	12.0	14.0	SS	64 100/5"		Similar Soil	5
15		8	15.0	17.0	SS	26 42 46 63		Greyish-Brown mf+ SAND; little SILT; little mf+ GRAVEL (wet, non-plastic) GLACIAL TILL	19
20		9	20.0	20.7	SS	98 100/8"	20.8	Similar Soil	6
21								Boring terminated at 20.7 feet.	
								Note: 1. Borehole backfilled upon completion with on-site soil.	

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/23/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/19/2004 Finish Date: 10/20/2004

Boring No.: B-23 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/19/2004	3:30 PM	19.7	20
10/19/2004	4:00 PM	DRY	
10/20/2004	6:40 PM	DRY	

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advance By: 3-1/4" Auger

Borehole caved at 6.3 feet. A perched water table should be anticipated at about 7 feet below the surface

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%)	Recovery (Inches)
1	AUGER	1	0.0	2.0	SS	2 4 4 5		24" TOPSOIL & ORGANIC MATERIAL	7
2							2.0		
2		2	2.0	4.0	SS	9 16 20 20		Brown c-mf SAND; some mf GRAVEL; trace SILT (moist, non-plastic)	13
4		3	4.0	6.0	SS	32 19 15 14		Similar Soils	7
6		4	6.0	8.0	SS	13 10 6 8		Similar Soils (wet, non-plastic)	6
8		5	8.0	10.0	SS	8 16 10 6		Similar Soils	10
10		6	10.0	12.0	SS	2 5 8 15			9
11							11.5		
12		7	12.0	14.0	SS	15 17 82 100/4"		Greyish-Brown cmf SAND; and mf GRAVEL; trace SILT (saturated, non-plastic)	14
14		8	14.0	16.0	SS	99 94 100/4"		Reddish-Grey mf+ SAND; little SILT; little f GRAVEL (wet, non-plastic) GLACIAL TILL Similar Soil	
20		9	20.0	22.0	SS	71 60 56 53		▼ Reddish-Grey mf+ SAND; some mf GRAVEL; little SILT (saturated, non-plastic) GLACIAL TILL	7
22							22.0	Boring terminated at 22.0 feet.	
25								Note: 1. Borehole backfilled upon completion with on-site soil.	

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/23/04

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/20/2004 Finish Date: 10/20/2004

Boring No.: B-24 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/20/2004	1:00 PM	DRY	20.0
10/20/2004	1:30	5.5	

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advanced By: 3-1/4" Auger

Borehole caved at 5.8 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%)	Recovery (Inches)
1	AUGER	1	0.0	2.0	SS	3 5 11 20	0.3	4" TOPSOIL & ORGANIC MATERIAL	8
2							2.0	Dark-Brown mf+ SAND; some mf GRAVEL; some SILT (moist, non-plastic)	
2		2	2.0	4.0	SS	12 15 15 9		Similar Soils	14
4		3	4.0	6.0	SS	10 9 11 12		Similar Soils	16
6		4	6.0	8.0	SS	5 4 4 4		Similar Soils	10
8		5	8.0	10.0	SS	4 3 2 4		Similar Soils	3
10		6	10.0	12.0	SS	4 3 3 10		Similar Soils	5
12		7	12.0	14.0	SS	24 37 54 53	12.0	Greyish-Brown mf SAND; little SILT; little mf GRAVEL (wet, non-plastic) GLACIAL TILL	12
15		8	15.0	17.0	SS	12 15 27 38		Similar Soil	15
20		9	20.0	20.9	SS	48 100/5"	20.9	Similar Soil	11
21								Boring terminated at 20.9 feet.	

Note:
1. Borehole backfilled upon completion with on-site soil.

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/21/2004 Finish Date: 10/21/2004

Boring No.: B-33 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/21/2004	11:10 AM	3.3	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advance By:
2" Split Spoon

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL	Recovery (Inches)
								f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%	
1	AUGER	1	0.0	2.0	SS	3 5 6 9	0.3	3" TOPSOIL & ORGANIC MATERIAL	14
								Brown mf SAND; and SILT; little mf+ GRAVEL (wet, non-plastic)	
2		2	2.0	4.0	SS	5 3 3 3		Similar Soil	10
3								▼	
4		3	4.0	6.0	SS	2 8 8 11		Similar Soil	12
5									
6		4	6.0	8.0	SS	13 14 21 24	7.0		9
7								Reddish-Brown mf SAND; some SILT; little mf GRAVEL (moist, non-plastic) GLACIAL TILL	
8		5	8.0	10.0	SS	19 37 41 63		Similar Soil (wet, non-plastic)	10
9							10.0		
10								Boring terminated at 10.0 feet.	
11								Note:	
12								1. Borehole backfilled upon completion with on-site soil.	
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/21/2004 Finish Date: 10/21/2004

Boring No.: B-38 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/21/2004	12:30 PM	DRY	OUT

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advanced By: 2" Split Spoon

Borehole backfilled upon completion with on-site soil.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine; m - medium; c - coarse; and - 35-50%; some - 20-35%; little - 10-20%; trace - 0-10%)	Recovery (Inches)
0	AUGER	1	0.0	2.0	SS	5 9 17 12	0.3	3" TOPSOIL & ORGANIC MATERIAL	12
1								Reddish-Brown mf SAND; some SILT; little mf GRAVEL (moist, non-plastic)	
2		2	2.0	4.0	SS	8 8 12 27		Similar Soil; little SILT (moist, non-plastic)	13
3									
4		3	4.0	6.0	SS	26 24 8 7		Similar Soils	17
5									
6		4	6.0	8.0	SS	7 6 5 7		Greyish-Brown mf SAND; trace SILT (moist, non-plastic)	17
7									
8		5	8.0	10.0	SS	9 8 7 11		Similar Soil	15
9							10.0		
10								Boring terminated at 10.0 feet.	
11									
12								Note:	
13								1. Borehole backfilled upon completion with on-site soil.	
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation

Report No.: CD2376-10-04

Client: Barton & Loguidice, P.C.

Boring Location: As Staked

Project: Subsurface Investigation
Volney Airport Water Supply Project
Town of Volney, New York

Start Date: 10/21/2004 Finish Date: 10/21/2004

Boring No.: B-43 Sheet 1 of 1

Groundwater Observations

Date	Time	Depth	Casing at
10/21/2004	1:20 PM	7.3	

Casing Hammer
Weight: _____ lbs.
Fall: _____ in.

Sampler Hammer
Weight: 140 lbs.
Fall: 30 in.

Ground Elev.: _____

Boring Advance By: 2" Split Spoon

Borehole caved at 8.3 feet.

DEPTH	METHOD OF ADVANCE	SAMPLE NO.	DEPTH OF SAMPLE From	DEPTH OF SAMPLE To	SAMPLE TYPE	BLOWS ON SAMPLER PER 6" 2" O.D. SAMPLER	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL (f - fine, m - medium, c - coarse; and - 35-50%, some - 20-35%, little - 10-20%, trace - 0-10%)	Recovery (Inches)
1	AUGER	1	0.0	2.0	SS	2 3 4 3		Dark Brown f SAND; and SILT; trace ORGANIC MATERIAL (roots); (moist, non-plastic)	15
							2.0		
2		2	2.0	4.0	SS	6 7 9 9		Brown f SAND; some SILT (wet, non-plastic)	19
3									
4		3	4.0	6.0	SS	7 6 7 4		Similar Soils	17
5									
6		4	6.0	8.0	SS	2 3 5 6		Light-Brown SILT; some f SAND; little CLAY; trace f GRAVEL	19
7								▼ (saturated, slightly plastic)	
8		5	8.0	10.0	SS	9 5 9 14		Brown mf SAND; and cmf GRAVEL; some SILT (saturated, non-plastic)	14
9									
10							10.0	Boring terminated at 10.0 feet.	
11									
12								Note:	
13								1. Borehole backfilled uopn completion with on-site soil.	
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

SS Split Spoon Sample
NX Rock Core
SH Undisturbed Sample (Shelby Tube)
Estimated Groundwater

Drillers: Mark Childs; Joshua Perry

Inspector: _____

ATL-LOG1 CD2376.GPJ ATL-WELL.GDT 11/4/04

ATTACHMENT C

SOIL PROBE LOGS

Barton & Loguidice
Volney Airport Water Supply Project
Subsurface Investigation

Boring	Depth	Subsurface Conditions
1	5	Brown-Lt Brown SILT; some f SAND; trace CLAY; (w, vsp)
2	22	Refer to Boring Log
3	10	Refer to Boring Log
4	4	Dark Brown mf+ SAND; some SILT; little mf+ GRAVEL; trace organic roots; (m,np)
4	5	Brown mf SAND; some SILT; little mf GRAVEL; (m,np)
5	5	Brown mf+ SAND; some SILT; little mf+ GRAVEL; (m,np)
6	5	Brown mf+ SAND; some SILT; trace mf+ GRAVEL; (m, np)
7	4	Dark Brown mf+ SAND; some SILT; little mf+ GRAVEL; (m, np)
7	5	Brown mf+ SAND; some SILT; trace mf+ GRAVEL; (m, np)
8	4	Brown c-mf SAND; some mf GRAVEL; little SILT; (w, np)
8	8	Brown mf+ SAND; some SILT; little mf GRAVEL; (w, np)
9	8	Brown mf+ SAND; some mf GRAVEL; little SILT; (w, np)
10	4	Brown c-mf SAND; little mf GRAVEL; little SILT; (w, np)
10	5	Lt. Brown mf SAND; some mf GRAVEL; little SILT; (w, np)
11	5	Brown mf+ SAND; some mf+ GRAVEL; little SILT; (w, np)
12	5	Brown mf+ SAND; some mf+ GRAVEL; little SILT; (w, np)
13	8.3	Refer to Boring Log
14	5	Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
15	4	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
15	5	Brown mf+ SAND; some ROCK FRAGMENTS; little SILT; little mf GRAVEL (m, np)
16	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
17	5	Brown c-mf SAND; and cmf GRAVEL; some SILT; (w, np)
18	4	Brown mf SAND; some mf GRAVEL; little ROCK FRAGMENTS; little SILT; (m, np)
18	5	Reddish-Brown mf+ SAND; some mf GRAVEL; little SILT; (m, np)
19	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
20	4	Brown mf+ SAND; little mf GRAVEL; little SILT; trace organic roots (m, np)
20	5	Lt. Brown-Brown mf+ SAND; little SILT; trace mf+ GRAVEL (m, np)
21	5	Brown c-mf SAND; some mf GRAVEL; some SILT; (m, np)
22	20.7	Refer to Boring Log
23	22	Refer to Boring Log
24	20.9	Refer to Boring Log
25	5	Brown c-mf SAND; some mf GRAVEL; some SILT; (m, np)
26	5	Brown- Reddish Brown c-mf SAND; some ROCK FRAGMENTS; little mf GRAVEL; little SILT; (m, np)

27	4	Reddish Brown mf+ SAND; some mf GRAVEL; little SILT; (m, np)
27	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
28	5	Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
29	5	Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
30	5	Brown-Reddish Brown c-mf SAND; some mf+ GRAVEL; little SILT; little ROCK FRAGMENTS (m, np)
31	4	Brown c-mf SAND; and mf GRAVEL; little ROCK FRAGMENTS; little SILT; (m, np)
31	5	Lt. Brown mf+ SAND; little SILT; (m, np)
32	5	Brown mf SAND; some mf GRAVEL; little SILT; little ROCK FRAGMENTS; (m, np)
33	10	Refer to Boring Log
34	5	Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
35	4	Brown c-mf SAND; some mf GRAVEL; some ASPHALT FRAGMENTS; little SILT; (m, np)
35	5	Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
36	4	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
36	5	Lt.-Brown c-mf SAND; some mf GRAVEL; little SILT; (m, np)
37	4	Brown mf+ SAND; some mf GRAVEL; little SILT; little ROCK FRAGMENTS; (m, np)
37	5	ROCK FRAGMENTS;
38	10	Refer to Boring Log
39	5	Brown-Reddish Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
40	5	Reddish Brown mf+ SAND; some mf GRAVEL; little SILT; (m, np)
41	5	Brown mf+ SAND; some mf+ GRAVEL; little SILT; (m, np)
42	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
43	10	Refer to Boring Log
44	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
45	5	Brown mf SAND; some mf GRAVEL; little SILT; (m, np)
46	5	Lt. Brown mf SAND; little SILT; (m, np)
47	5	Brown mf+ SAND; some mf GRAVEL; little SILT; (m, np)
48	5	Brown mf+ SAND; some mf GRAVEL; little SILT; (m, np)

BIDDING & CONTRACT REQUIREMENTS

SECTION 00171

TOWN OF VOLNEY STATE REVOLVING LOAN FUND
AFFIRMATIVE ACTION AND MINORITY UTILIZATION PLAN

The Contractor agrees to make documented "good faith efforts" to utilize at least 6-percent Minority Business Enterprise(s) and at least 6-percent Women's Business Enterprise(s) for the combined Federal and State funded portions of the project. The established MBE/WBE-EEO goals shall be in conformance with NYS Executive Law, Article 15-A. Failure to attain these objectives or demonstrate positive good faith efforts to do so may lead to appropriate actions by the New York Drinking Water State Revolving Fund (DWSRF) loan recipient.

Within ten (10) working days of the award of a prime Contract, the Contractor shall submit to the DWSRF loan recipients an MBE/WBE-EEO Utilization Plan with a detailed description of each of the subcontract services to be provided by NYS Certified MBE's/WBE's as well as an estimated dollar amount of each subcontract. The MBE/WBE-EEO goals herein stated are the goals, which have been included in the DWSRF loan recipient's approved MBE/WBE Utilization Plan.

The DWSRF loan recipient's Minority Business Officer shall review and approve the Prime Contractor's Utilization Plan within ten working days after receipt of such plan if it clearly delineates methods to achieve the established MBE/WBE goals.

Failure by the Contractor to submit and receive approval from the DWSRF loan recipient of the MBE/WBE Utilization Plan prior to the first request for payment may result in the withholding of progress payments to the Contractor by the DWSRF loan recipient. Such withholding of progress payments shall not relieve the Contractor of any requirements of the Contract Documents including the completion of the project within the specified Contract time and any construction sequence requirements of the Contract.

Within thirty days of approval of the Contractor MBE/WBE Utilization Plan by the DWSRF loan recipient, the Contractor shall submit copies of legally signed MBE/WBE subcontracts and/or legally signed purchase orders to the DWSRF loan recipient's Minority Business Officer. These subcontracts and/or purchase orders must include the following information:

1. Actual dollar amount;
2. Job description;
3. Signatures of both parties (Prime and MBE/WBE); and
4. Date of execution

SECTION 00171

TOWN OF VOLNEY STATE REVOLVING LOAN FUND
AFFIRMATIVE ACTION AND MINORITY UTILIZATION PLAN

Note: Purchase orders must be accompanied by copies of both sides of legally signed and cancelled checks.

The Contractor is advised that failure to submit the referenced MBE/WBE support documentation within the time stipulated may be grounds for the withholding of progress payment by the DWSRF loan recipient. Such withholding of progress payments shall not relieve the Contractor of any requirements of the Contract Documents including the completion of the project within the specified Contract time and any construction sequence requirement of the Contract.

If MBE/WBE suppliers are used for MBE/WBE goal crediting purposes, credit will be applied as follows:

- For MBE/WBE suppliers who are manufacturers or manufacturers' official representatives warehousing such goods, 100-percent of the MBE/WBE objective may be credited.

- But, for nonmanufacturer suppliers, only 25-percent of the MBE/WBE objective may be credited.

Only NYS Certified Minority/Women Business Enterprises may be utilized for MBE/WBE Program crediting purposes. Contractors must ensure that firms proposed for MBE/WBE participation are NYS Certified.

EQUAL EMPLOYMENT OPPORTUNITY
The Contractor agrees to take affirmative action to utilize at least 10-percent minority employees and at least 10-percent female employees in the workforce(s) associated with the Construction Contract. The established EEO goals shall be attained in conformance with NYS Executive Law, Article 15-A.

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00301

BIDDER'S CHECKLIST

(All pages of this color to be completed by
Bidder PRIOR to Bid Submission)

Bid Prices, Page 00370-1 to 00370-25: All blanks appropriately filled in ink with both words and figures. ☐

State and Federal Requirements: Each of the following forms must be executed:

NON-COLLUSIVE BIDDING CERTIFICATION, Page 00480-1: Requires Bidder's signature. ☐

STATEMENT OF SURETY'S INTENT, Page 00481-1: Requires completion and signature by Surety's Representative. ☐

STATEMENT OF CONTRACTOR'S QUALIFICATIONS, Page 00482-1 to 00482-2: Requires completion and signature by Bidder. ☐

COMPLIANCE STATEMENT, Pages 00483-1 and –2: Requires completion and signature by Bidder. ☐

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION, Pages 00484-1 and –2: Requires completion and signature by Bidder. ☐

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS, Page 00485-1: Requires completion and signature by Bidder. ☐

BID SECURITY, Pages 00499-1 thru 00499-3: Attach Bid Security to page labeled "BID SECURITY" (ATTACH HERE - CERTIFIED CHECK, CASH OR BID BOND). ☐

NOTE: To Bid all Contracts, the Bidder must fill in all pages this color.

END OF SECTION

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(BASE BID)

Proposal of _____
(hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as_____*.
To the Town of Volney (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for Town of Volney Airport Water District - Water Mains and Pump Station Contract 1A - General Construction in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within 180 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of $ 300 for each consecutive calendar day thereafter as provided in Section 15 of the General Conditions.

If written notice of the acceptance of this Bid is mailed, telegraphed or delivered to the undersigned within forty-five (45) days after the date of opening of the Bids, or any time thereafter before this Bid is withdrawn, the undersigned will, within five (5) days after the date of such mailing, telegraphing, or delivering of such notice, execute and deliver a contract in the form of Contract attached hereto.

The undersigned hereby designates as his office to which such notice of acceptance may be mailed, telegraphed or delivered:

_____

_____

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the Contract Documents.

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(BASE BID)

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

Accompanying this Bid, is a Bid security in the form of a bid bond for the sum of _____($_____) Dollars. In case this Bid is accepted by the Owner, and the undersigned shall fail to execute a contract with and give the required bonds to the Owner within five (5) days after the date of a written notice by the Owner to the undersigned so to do, this Bid security shall be forfeited and will be retained by the Owner as liquidated damages.

BIDDER acknowledges receipt of the following ADDENDUM:

_____

_____

_____

* Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

BID SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

Item

Signature	Address
Title	Date
License number (if applicable)	

SEAL - (if BID is by a corporation)

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(ALTERNATE BID)

Proposal of _____
(hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as_____*.
To the Town of Volney (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for Town of Volney Airport Water District - Water Mains and Pump Station Contract 1A - General Construction in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within 180 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of $ 300 for each consecutive calendar day thereafter as provided in Section 15 of the General Conditions.

If written notice of the acceptance of this Bid is mailed, telegraphed or delivered to the undersigned within forty-five (45) days after the date of opening of the Bids, or any time thereafter before this Bid is withdrawn, the undersigned will, within five (5) days after the date of such mailing, telegraphing, or delivering of such notice, execute and deliver a contract in the form of Contract attached hereto.

The undersigned hereby designates as his office to which such notice of acceptance may be mailed, telegraphed or delivered:

_____

_____

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the Contract Documents.

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1A - GENERAL CONSTRUCTION
(ALTERNATE BID)

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

Accompanying this Bid, is a Bid security in the form of a bid bond for the sum of _____($_____) Dollars. In case this Bid is accepted by the Owner, and the undersigned shall fail to execute a contract with and give the required bonds to the Owner within five (5) days after the date of a written notice by the Owner to the undersigned so to do, this Bid security shall be forfeited and will be retained by the Owner as liquidated damages.

BIDDER acknowledges receipt of the following ADDENDUM:

_____

_____

_____

* Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

BID SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

Item

Signature	Address
Title	Date
License number (if applicable)	

SEAL - (if BID is by a corporation)

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
1	Nec.	Clearing **FOR** _____ _____ **PER** L.S.				
2	2,835	Furnish and Install 4-Inch Ductile Iron Water Main (Class 52) and Appurtenances **FOR** _____ _____ **PER** L.F.				
3	22,775	Furnish and Install 8-Inch Ductile Iron Water Main (Class 52) and Appurtenances **FOR** _____ _____ **PER** L.F.				
4	27,357	Furnish and Install 10-Inch Ductile Iron Water Main (Class 52) and Appurtenances **FOR** _____ _____ **PER** L.F.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
5	8	Furnish and Install 4-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
6	22	Furnish and Install 8-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
7	43	Furnish and Install 10-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
8	80	Furnish and Install Hydrant Assembly Complete **FOR** _____ _____ **PER** EA.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
9	5	Furnish and Install 1-Inch Blowoff Assembly Complete **FOR** _____ _____ **PER** EA.				
10	129	Furnish and Install ¾-Inch Water Service (Near Side) **FOR** _____ _____ **PER** EA.				
11	131	Furnish and Install ¾-Inch Water Service (Far Side) **FOR** _____ _____ **PER** EA.				
12	2	Furnish and Install 1-Inch Water Service (Near Side) **FOR** _____ _____ **PER** EA.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
13	2	Furnish and Install 1-Inch Water Service (Far Side) **FOR** _____ _____ **PER** EA.				
14	8,250	Furnish and Install 3/4-Inch Type K Copper Tubing **FOR** _____ _____ **PER** EA.				
15	165	Furnish and Install 1-Inch Type K Copper Tubing **FOR** _____ _____ **PER** L.F.				
16	2,800	Excavation Below Subgrade **FOR** _____ _____ **PER** C.Y.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
17	7,035	Lining **FOR** _____ _____ **PER** C.Y.				
18	4,506	Special Backfill **FOR** _____ _____ **PER** C.Y.				
19	Nec.	Maintenance and Protection of Traffic **FOR** _____ _____ **PER** L.S.				
20	Nec.	Furnish and Install County Route 176 Highway Crossing No. 1 **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
21	Nec.	Furnish and Install County Route 176 Highway Crossing No. 2 **FOR** _____ _____ **PER** L.S.				
22	Nec.	Furnish and Install County Route 176 Highway Crossing No. 3 **FOR** _____ _____ **PER** L.S.				
23	Nec.	Furnish and Install County Route 176 Highway Crossing No. 4 **FOR** _____ _____ **PER** L.S.				
24	Nec.	Furnish and Install New York State Route 3 Highway Crossing No. 1 **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a

BROUGHT FORWARD _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
25	Nec.	Furnish and Install New York State Route 3 Highway Crossing No. 2 **FOR** _____ _____ **PER** L.S.				
26	Nec.	Furnish and Install County Route 6 Highway Crossing **FOR** _____ _____ **PER** L.S.				
27	Nec.	Furnish and Install County Route 176 Packaged Booster Pumping Station **FOR** _____ _____ **PER** L.S.				
28	Nec.	Connection to Existing 54-Inch Water Main **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
BASE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
TOTAL OR GROSS BASE BID WRITTEN IN WORDS - Town of Volney Airport Water District Water Mains and Pump Station, Contract No. 1A – General Construction:			$ _____		$ _____	

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
1a	Nec.	Clearing **FOR** _____ _____ **PER** L.S.				
2a	2,835	Furnish and Install 4-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances **FOR** _____ _____ **PER** L.F.				
3a	22,775	Furnish and Install 8-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances **FOR** _____ _____ **PER** L.F.				
4a	27,357	Furnish and Install 10-Inch Ductile Iron Water Main (Pressure Class 350) and Appurtenances **FOR** _____ _____ **PER** L.F.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
5a	8	Furnish and Install 4-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
6a	22	Furnish and Install 8-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
7a	43	Furnish and Install 10-Inch Gate Valves with Valve Boxes **FOR** _____ _____ **PER** EA.				
8a	80	Furnish and Install Hydrant Assembly Complete **FOR** _____ _____ **PER** EA.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
9a	5	Furnish and Install 1-Inch Blowoff Assembly Complete **FOR** _____ _____ **PER** EA.				
10a	129	Furnish and Install ¾-Inch Water Service (Near Side) **FOR** _____ _____ **PER** EA.				
11a	131	Furnish and Install ¾-Inch Water Service (Far Side) **FOR** _____ _____ **PER** EA.				
12a	2	Furnish and Install 1-Inch Water Service (Near Side) **FOR** _____ _____ **PER** EA.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
13a	2	Furnish and Install 1-Inch Water Service (Far Side) **FOR** _____ _____ **PER** EA.				
14a	8,250	Furnish and Install 3/4-Inch Type K Copper Tubing **FOR** _____ _____ **PER** EA.				
15a	165	Furnish and Install 1-Inch Type K Copper Tubing **FOR** _____ _____ **PER** L.F.				
16a	2,800	Excavation Below Subgrade **FOR** _____ _____ **PER** C.Y.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
17a	7,035	Lining **FOR** _____ _____ **PER** C.Y.				
18a	4,506	Special Backfill **FOR** _____ _____ **PER** C.Y.				
19a	Nec.	Maintenance and Protection of Traffic **FOR** _____ _____ **PER** L.S.				
20a	Nec.	Furnish and Install County Route 176 Highway Crossing No. 1 **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
21a	Nec.	Furnish and Install County Route 176 Highway Crossing No. 2 **FOR** _____ _____ **PER** L.S.				
22a	Nec.	Furnish and Install County Route 176 Highway Crossing No. 3 **FOR** _____ _____ **PER** L.S.				
23a	Nec.	Furnish and Install County Route 176 Highway Crossing No. 4 **FOR** _____ _____ **PER** L.S.				
24a	Nec.	Furnish and Install New York State Route 3 Highway Crossing No. 1 **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
25a	Nec.	Furnish and Install New York State Route 3 Highway Crossing No. 2 **FOR** _____ _____ **PER** L.S.				
26a	Nec.	Furnish and Install County Route 6 Highway Crossing **FOR** _____ _____ **PER** L.S.				
27a	Nec.	Furnish and Install County Route 176 Packaged Booster Pumping Station **FOR** _____ _____ **PER** L.S.				
28a	Nec.	Connection to Existing 54-Inch Water Main **FOR** _____ _____ **PER** L.S.				

CARRY FORWARD _____

SECTION 00370
TOWN OF VOLNEY AIRPORT WATER DISTRICT
WATER MAINS AND PUMP STATION
CONTRACT NO. 1A – GENERAL CONSTRUCTION
ALTERNATE BID

JOB NO. 323.004a **BROUGHT FORWARD** _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
TOTAL OR GROSS ALTERNATE BID WRITTEN IN WORDS - Town of Volney Airport Water District Water Mains and Pump Station, Contract No. 1A – General Construction:			$ _____		$ _____	

CARRY FORWARD _____

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1B - ELECTRICAL CONSTRUCTION

Proposal of _____
(hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as_____*.
To the Town of Volney (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for Town of Volney Airport Water District - Water Mains and Pump Station Contract 1B - Electrical Construction, in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within 180 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of $ 200 for each consecutive calendar day thereafter as provided in Section 15 of the General Conditions.

If written notice of the acceptance of this Bid is mailed, telegraphed or delivered to the undersigned within forty-five (45) days after the date of opening of the Bids, or any time thereafter before this Bid is withdrawn, the undersigned will, within five (5) days after the date of such mailing, telegraphing, or delivering of such notice, execute and deliver a contract in the form of Contract attached hereto.

The undersigned hereby designates as his office to which such notice of acceptance may be mailed, telegraphed or delivered:

_____

_____

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the Contract Documents.

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1B - ELECTRICAL CONSTRUCTION

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

Accompanying this Bid, is a Bid security in the form of a bid bond for the sum of _____($_____) Dollars. In case this Bid is accepted by the Owner, and the undersigned shall fail to execute a contract with and give the required bonds to the Owner within five (5) days after the date of a written notice by the Owner to the undersigned so to do, this Bid security shall be forfeited and will be retained by the Owner as liquidated damages.

BIDDER acknowledges receipt of the following ADDENDUM:

_____

_____

_____

* Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

BID SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

Item			
1.	Lump Sum Contract No. 1B – Electrical Construction:		
	_____	_____ Dollars	_____ Cents
	(Price Written in Words)	(Price Written in Figures)	

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1B - ELECTRICAL CONSTRUCTION

2. Additional Work Allowance:

One Thousand Dollars	$1,000	00
	Dollars	Cents

(Price Written in Words) (Price Written in Figures)

Signature

Address

Title

Date

License number (if applicable)

SEAL - (if BID is by a corporation)

BIDDING & CONTRACT REQUIREMENTS

SECTION 00480

NON-COLLUSIVE BIDDING CERTIFICATION

(a) By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

1. The prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly, disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(b) A bid shall not be considered for award nor shall any award be made where (a) 1., 2., and 3., above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (a) 1., 2., and 3., above have not been complied with the bid shall not be considered for award nor shall any award to be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee determines that such disclosure was not made for the purpose of restricting competition.

(c) The fact that a bidder (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of paragraph (a) of this certification.

(d) Any bid hereafter made to any political subdivision of the State or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certification referred to in subdivision one of the section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

FIRM: _____

By: _____

Title: _____

(CORPORATE SEAL IF ANY)

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00481

STATEMENT OF SURETY'S INTENT

To:

We have reviewed the Bid of _____
(Contractor)

of _____
(Address)

for _____

_____
(Project)

Bids for which will be received on _____
(Bid Opening Date)

and wish to advise that should this Bid of the Contractor be accepted and the Contract awarded to him, it is our present intention to become surety on the Performance Bond and Labor and Materials Payment Bond required by the Contract.

Any arrangement for the bonds required by the Contract is a matter between the Contractor and ourselves, and we assume no liability to you or third parties if for any reason we do not execute the requisite bonds.

We are duly authorized to transact business in the State of New York, and we appear on the U.S. Treasury Department's most current list (Circular 570 as amended).

Attest:

_____ _____

_____
Surety's Authorized Signature(s)

Attach Power of Attorney

(Corporate seal if any. If no seal, write "No Seal" across this place and sign.)

END OF SECTION

Guide A
Attachment A to New York AN No. 655 (1942)

TO BE SUBMITTED WITH BID PROPOSAL

STATEMENT OF CONTRACTOR'S QUALIFICATIONS

This statement must be submitted by the Contractor with his proposal. All questions must be answered and the data given must be clear and comprehensive.

1. Name of Bidder _____

_____ Phone no. _____

2. Permanent main office address _____

_____

3. When organized or began business _____

4. If a corporation, where incorporated _____

5. How many years have you been engaged in the contracting business under your present firm name? _____

6. Have you ever failed to complete any work awarded to you?_____

If so, where and why _____

7. Will you, upon request, submit a detailed financial statement and furnish the following information that may be required by the Owner? _____

- Contracts on hand (Indicate location, client, gross amount of each contract, approximate anticipated dates of completion, A/E name, address, and contact person).
- List of contracts of similar nature performed within the past two years with location, client, gross amount, date of completion, A/E name, address, and contact person.
- List of major equipment owned and available within 10 days of award of this contract.
- Background and experience of the principal members of your personnel, including the officers.

- Credit available (written evidence).
- Such statements, if required, shall be notarized and delivered to the Owner within three (3) days of written or verbal request.

  (Contractor may, at his discretion, elect to submit information as delineated under No. 7 with his Bid Proposal.)

8. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner in certification of the recitals comprising this Statement of Contractor's Qualifications.

Dated at _____, this _____ day of _____, 20_____.

_____
NAME OF CONTRACTOR

BY _____

TITLE _____

END OF SECTION

USDA
Form RD 400-6
(Rev. 4-00)

Form Approved
OMB No. 0575-0018

COMPLIANCE STATEMENT

This statement relates to a proposed contract with _____

_____
(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. ☐ I have ☐ have not, participated in a previous contract or subcontract subject to Executive 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. ☐ I have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____ _____

(Signature of Bidder or Prospective Contractor)

_____

Address (including Zip Code)

END OF SECTION

U.S. DEPARTMENT OF AGRICULTURE

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION - LOWER TIER COVERED TRANSACTIONS

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it not its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name | PR/Award Number or Project Name

Name(s) and Title(s) of Authorized Representative(s)

Signature(s) | Date

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later than determined that the prospective lower tier participant knowingly
rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transactions," debarred," "suspended," "ineligible,", "lower tier covered transactions," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Form AD-1048

END OF SECTION

RD Instruction 1940-Q
Exhibit A-1

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____ _____

(name) (date)

_____

(title)

(08-21-91) PN 171

END OF SECTION

RUS Bulletin 1780-13
Attachment 4

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,_____ _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto _____ as OWNER in the penal sum of_____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.
Signed, this _____ day of _____, 19_____. The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the _____

_____

_____

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (Properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

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

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

_____(L.S.)
Principal

_____
Surety

By:_____

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

oOo

BIDDING & CONTRACT REQUIREMENTS

SECTION 00499

BID SECURITY

(ATTACHED HERE - CERTIFIED CHECK, CASH OR BID BOND)

END OF SECTION

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, ____, by and between _____, hereinafter called "OWNER"
(name of Owner), (an Individual)
and _____ doing business as (an individual,) or (a partnership,) or (a corporation) hereinafter called "CONTRACTOR". WITNESSETH: That for and in consideration of the payments and agreements herein after mentioned:

1. The CONTRACTOR will commence and complete the construction of _____

2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within _____ calendar days after the date of the NOTICE TO PROCEED and will complete the same within _____ calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of $_____ or as shown in the BID schedule.

5. The term "CONTRACT DOCUMENTS" MEANS and includes the following:

(A) Advertisement For BIDS

(B) Information For BIDDERS

(C) BID

(D) BID BOND

(E) Agreement

(F) General Conditions

(G) SUPPLEMENTAL GENERAL CONDITIONS

(H) Payment BOND

(I) Performance BOND

(J) NOTICE OF AWARD

(K) NOTICE TO PROCEED

(1) CHANGE ORDER

(M) DRAWINGS prepared by_____

numbered _____ through _____, and dated_____,

(N) SPECIFICATIONS prepared or issued by_____

_____,

dated _____, 19_____

(O) ADDENDA:

No._____, dated _____, 19 _____

_____, _____, _____

_____, _____, _____

_____, _____, _____

_____, _____, _____

_____, _____, _____

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized official, this Agreement in (_____) copies each of which shall be deemed an original on the date first above written.
(Number of Copies)

OWNER:

_____

BY_____

Name_____
(Please Type)

Title_____
(SEAL)

ATTEST:

_____

Name _____
(Please Type)

Title _____

CONTRACTOR:

_____

BY _____

Name _____
(Please Type)

Address _____

_____

Employer Identification
Number _____

(SEAL)

ATTEST:

_____

Name _____
(Please Type)

_____

END OF SECTION

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

_____
(Name of Surety)

_____
(Address of Surety)
hereinafter called Surety, are held and firmly bound unto

_____
(Name of Owner)

_____
(Address of Owner)

hereinafter called OWNER in the total aggregate penal sum of_____

_____ Dollars ($_____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____ 19___, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER with or without notice to the SURETY and during the one year guaranty period and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND, and whether referring to this BOND, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the PRINCIPAL shall abridge the right of the other beneficiary hereunder, whose claim may be unsatisfied. The OWNER is the only beneficiaries hereunder.

IN WITNESS WHEREOF, this instrument is executed in _____ (Number) counterparts, each one of which shall be deemed an original, this the _____ day of _____ .

ATTEST:

_____
(Principal) Secretary

_____
Principle

By _____(s)

(SEAL)

_____
(Address)

_____
Witness as to Principle

_____
(Address)

_____

ATTEST:

_____
Surety

_____
Witness as to Surety

By _____
Attorney-in-Fact

_____
(Address)

_____
(Address)

_____

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is partnership, all partners should execute BOND.
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

BIDDING & CONTRACT DOCUMENTS

SECTION 00610

PERFORMANCE BOND

(ATTACH PERFORMANCE BOND HERE)

END OF SECTION

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____ hereinafter called PRINCIPAL and
(Corporation, Partnership or Individual)

_____
(Name of Surety)

hereinafter called SURETY, are held and firmly bound unto _____

_____
(Name of Owner)

_____
(Address of Owner)

hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns in the total aggregate penal sum of _____Dollars ($_____)in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain contract with the OWNER, dated the _____ day of _____19___, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and for all labor cost incurred in such WORK including that by a SUBCONTRACTOR, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED, FURTHER, that the said SURETY for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the WORK or to the SPECIFICATIONS.

PROVIDE, FURTHER, that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration of one (1) year following the date of which PRINCIPAL ceased work on said CONTRACT, is being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

WITNESS WHEREOF, this instrument is executed in _____ (Number) counterparts, each of which shall be deemed an original, this the _____ day of _____.

ATTEST:

_____
(Principal) Secretary

_____
Principle

By _____(s)

(SEAL)

_____
(Address)

_____
Witness as to Principle

_____
(Address)

_____

ATTEST:

_____
Surety

_____
Witness as to Surety

By _____
Attorney-in-Fact

_____
(Address)

_____
(Address)

_____

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR Is partnership, all partners should execute BOND.

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

BIDDING & CONTRACT REQUIREMENTS

SECTION 00620

PAYMENT BOND

(ATTACH PAYMENT BOND HERE)

END OF SECTION

BIDDING & CONTRACT REQUIREMENTS

SECTION 00650

CERTIFICATE OF INSURANCE

(ATTACH INSURANCE CERTIFICATES HERE)

GENERAL CONDITIONS (OWNER)

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS

Wherever the following words, or corresponding pronouns are used in this Contract, they shall have the meaning given herein:

CONTRACT, OR CONTRACT DOCUMENTS: each of the various documents referred to in the Agreement, both severally and as a whole, including all additions, deletions, modifications and interpretations incorporated therein or appended thereto by or with approval of the Owner prior to the execution of the Contract.

OWNER: the party of the first part to this Contract, or any duly authorized agents or officers empowered to act therefor.

CONTRACTOR: the party of the second part to this Contract, or the legal representatives or agents appointed by said party for the performance of the work.

ENGINEER: the firm of Barton & Loguidice, P.C., Consulting Engineers, engaged by the Owner to provide Engineering services in connection with the work of this Contract, or its representatives duly authorized in writing to act therefor.

SURETY: the person, persons, firm or corporation who executes the Contractor's Performance Bond and Labor & Materials Payment Bond.

SUBCONTRACTOR: any person, other than employee of the Contractor, or any firm or corporation who contracts to act for or in behalf of the Contractor in performing any part of the work in connection with the Contract, exclusive of one who furnishes only materials or equipment.

PROJECT: the entire facility or improvement to which the Contract relates.

SITE: the area or areas bounded by the property lines shown on the Plans, and other areas that may be similarly designated.

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS - Continued

THE WORK: all labor, equipment and materials required, either expressly or by implication, to be furnished by the Contractor under this Contract or in connection with Change Orders or Supplemental Agreements thereto.

SUPPLEMENTAL AGREEMENT: For this Contract, supplemental agreements are not permitted. Alterations are modifications must be authorized by an approved change order only. Where the words "Supplemental Agreement" appear in these Contract Documents, they shall be construed to mean "Change Order".

CHANGE ORDER: a written order from the Owner to the Contractor directing an alteration or modification of the nature, scope or type of the work.

BOND OR PERFORMANCE BOND: the guarantee signed by the Surety, that the Contractor will complete all the work as required by the Contract.

LABOR & MATERIALS PAYMENT BOND: the guarantee, signed by the Surety, that the Contractor will pay for all Labor and Material required by the Contract.

SPECIFICATIONS: also referred to as DETAIL SPECIFICATIONS or TECHNICAL SPECIFICATIONS. The written directions, requirements, descriptions of materials, equipment, construction systems, standards and workmanship as applied to the work and specifically including Division 1 - Division 16 of the Contract Documents.

PLANS, DRAWINGS OR CONTRACT DRAWINGS: only those drawings listed as such in the Contract Documents with all Addenda thereto.

SHOP DRAWINGS, SETTING DRAWINGS, WORKING DRAWINGS, CONSTRUCTION DRAWINGS: drawings prepared, or caused to be prepared, by the Contractor, Sub-contractors, or by their equipment or material suppliers in their behalf, including standard or stock equipment drawings, necessary to the performance of the work in addition to the Contract Drawings, or as may be required by the Engineer to be submitted for review.

ADDITIONAL DRAWINGS, SUPPLEMENTARY DRAWINGS: drawings, in addition to the Contract Drawings, which may be prepared and issued by the Engineer as part of the instructions to or requests of the Contractor in connection with the work of the Contract or appertaining to changes in the work.

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS - Continued

ADDENDUM, ADDENDA: additional Contract provisions, deletions or changes issued by the Owner prior to the receipt of bids.

WRITTEN NOTICE: all written and authoritatively signed communications required in the normal conduct of the work or required to obtain compliance with the Contract provisions or preserve the rights of any party to the Contract. Written notice shall be considered as served when either delivered in person or deposited in a post-paid wrapper in a regularly maintained U.S. Mailbox and addressed to the person, firm or corporation intended to receive such notice, or to his appropriate agent, to the last business address of such known to the server. If mailed, the period of notice shall run from the time of the postal cancellation. It shall be incumbent upon each party to the Contract, and the Engineer, to advise the other parties to the Contract, and the Engineer, of any change in his business address until completion of the Contract and the expiration of all guarantee periods connected therewith.

DIRECTED, ORDERED, REQUIRED, DESIGNATED, PERMITTED, GRANTED, INSTRUCTED, CONSIDERED NECESSARY, APPROVED, SATISFACTORY, ACCEPTABLE: words referring to action or satisfaction of the Engineer, unless another meaning is specifically stated. The same shall apply to words of like import.

AS SHOWN, AS SHOWN ON THE PLANS: words referring to lines, numbers, or statements, or combinations thereof, on the Contract Drawings, unless another meaning is specifically stated.

ELEVATION: or any abbreviation of the word "elevation", followed by figures, shall refer to the distance in feet above the datum established by the Engineer for the Project.

ACT OF GOD: an earthquake, flood, excessive wind or other unusual natural occurrence. Rain, snow, wind, flood, lightning or other natural phenomenon of normal intensity for the locality shall not be included in the meaning of the term.

APPROVED EQUAL, EQUAL: in the Contract Documents or Contract Drawings wherever brand names are specified and followed by the phrase "or approved equal", this phrase shall be modified to read "or equal".

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.02 REFERENCES TO OTHER SPECIFICATIONS AND CODES

References in these Specifications to published specifications and codes of private and governmental technical societies and agencies shall mean the latest specification for the item or operation involved. Abbreviations of these organizations used in these Specifications may include the following:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AGA	American Gas Association
AGCA	Associated General Contractors of America
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AMCA	American Mechanical Contractors Association
ANSI	American National Standards Institute
APWA	American Public Works Association
ARI	American Refrigeration Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CEMA	Conveyor Equipment Manufacturers Association
CIPRA	Cast-Iron Pipe Research Association
FM	Factory Mutual System
HEI	Heat Exchange Institute
HI	Hydraulics Institute
IEEE	Institute of Electrical and Electronics Engineer
IPCEA	Insulated Powers Cable Electric Association
NAFM	National Association of Fan Manufacturers

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.02 REFERENCES TO OTHER SPECIFICATIONS AND CODES - Continued

NBC	National Building Code
NBFPU	National Board of Fire Protection Underwriters
NBCA	National Bituminous Concrete Association
NCPI	National Clay Pipe Institute
NEC	National Electrical Code
NELA	National Electrical Lamp Association
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NSWMA	National Solid Wastes Management Association
NYSDOT	New York State Department of Transportation, Standard Specifications (Construction and Materials)
NYSECC	New York State Energy Conservation Code
OSHA	Occupational, Safety and Health Act
PCA	Portland Cement Association
SAE	Society of Automotive Engineers
SMACNA	Sheet Metal & Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
UL	Underwriter Laboratories', Inc.
USEPA	United States Environmental Protection Agency

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.01 RESPONSIBILITY OF THE ENGINEER

The Engineer shall decide questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Drawings and Specifications and all questions as to the acceptable fulfillment of the Agreement on the part of the Contractor. The duties and responsibilities of the Engineer as set forth herein shall not be extended except through written consent of the Engineer and the Owner.

A. Observation of the Work: The Engineer will make periodic visits to the site to observe the progress and the quality of the executed work. All materials and each part or detail of the work shall be subject at all times to observation by the Engineer and the Owner, and the Contractor will be held strictly to the intent of the Contract Documents in regard to quality of materials, workmanship, and the diligent execution of the Contract. Observations may be made at the site or at the source of material supply, whether mill, plant or shop. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make his observations and construction review.

B. Acceptability of Work: The Engineer's decision as to the acceptability or adequacy of the work shall be final and binding upon the Contractor. The Contractor agrees to abide by the Engineer's decision relative to the acceptability of the work.

C. Engineer's Decisions: All claims of the Owner or the Contractor shall be presented to the Engineer for decision which shall be final except in cases where time and/or financial considerations are involved.

D. The Engineer shall not be responsible for the Contractors or any Sub-contractor's construction means, methods, controls, techniques, sequences, procedures or construction safety or his failure to complete the work in accordance with the Contract Documents.

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.01 RESPONSIBILITY OF THE ENGINEER - Continued

E. Oral Agreements: No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceedings of any other waiver or modification.

00751.02 INSPECTION OF WORK

Inspection services, performed by the Engineer pursuant to this Contract, whether of material or work, and whether performed prior to, during or after completion of construction, are performed solely for the purpose of determining general conformity of the work with the Contract Plans and Specifications.

Nothing contained herein shall create, or be deemed to create:

A) any duty upon the Engineer to supervise the construction procedures and safety procedures followed by any Contractor or Sub-contractor or their respective employees or by any other persons at the job site, or

B) any liability whatsoever by the Engineer to any employees or any Contractor or Sub-contractor or to any other person.

00751.03 NO WAIVER OF RIGHTS

No inspection or approval by the Owner, the Engineer, or any of their employees, nor any order, measurement or certification by the Engineer, nor payment for, nor acceptance of the whole or any part of the work by the Owner or the Engineer, nor any order of the Owner for payment of money, nor any possession taken by the Owner, nor any extension of time shall operate as a waiver of any provision of the Contract, or of any right to damage herein provided or of any power herein reserved. Neither shall a waiver of any breach of the Contract be construed to be a waiver of any other or subsequent breach. All remedies in the Contract shall be construed

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.03 NO WAIVER OF RIGHTS - Continued

as being cumulative, in addition to each and every other remedy herein contained. The Owner shall have any and all legal and equitable remedies and recourse which he would in any case have.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.01 GUARANTEES, PERFORMANCE BONDS, PAYMENT BONDS AND GUARANTEES

The Contractor shall furnish Performance and Payment Bonds each in an amount not less than the full amount of the accepted bid. The Performance Bond shall guarantee faithful performance of the work in compliance with all Contract Documents. The Payment Bonds shall guarantee the payment of all persons performing labor or furnishing materials in connection therewith. The Bonds shall be in a form approved by the Owner and dated the same as the executed Agreement. The Surety company or companies shall be designated by the Contractor and shall be authorized to transact business in New York State, and if this is a Federally aided project, shall appear on the U.S. Treasury Department's most current list (Circular 570 as amended). The premium for these Bonds shall be paid by the Contractor and shall be included as a part of his Bid. An Attorney-in-fact who signs Performance or Payment Bonds shall file with each Bond or copy thereof a certified copy of his Power-Of-Attorney to sign such Bonds.

The Owner reserves the right to order or approve additions to, omissions from, or changes in the work without notice to the Surety.

The Contractor guarantees all the work, materials and equipment called for in the Contract against defects in materials or workmanship for a period of twelve months following the date of the Notice of Substantial Completion. Under this guarantee, the Contractor shall make good, at his own expense and without delay, any failure of any part due to poor or faulty materials, construction or installation, or to the failure of any equipment to satisfactorily perform the work required of it by the Specifications. The Contractor shall also make good any damage to any part of the Project, the environment or other property of the Owner caused by such failure.

Any work replaced or rebuilt during the above-mentioned guarantee period shall be similarly guaranteed for a 12-month period starting from the date of acceptance of the repair, reconstruction or replacement.

The Contractor's Performance and Payment Bonds specified in the above paragraph shall fully cover all guarantees specified and shall remain in effect for the entire guarantee period.

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.02 ADDITIONAL SECURITY

At any time the Owner may become dissatisfied with the Surety or Sureties who furnished the Performance Bond and the Payment Bonds, or if for other reasons the Bond(s) shall, in the opinion of the Owner, cease to be adequate security to the Owner, the Contractor shall, within five days after notice from the Owner, substitute a new Bond(s) acceptable to the Owner in form, amount and Surety. The premium on such Bond(s) shall be paid by the Contractor. No payments on any Monthly Estimate shall become due and none shall be made until the new Surety shall have been approved and the Bond(s) executed and accepted.

00752.03 CONTRACTOR'S INSURANCE

The Contractor, at his own expense, shall procure and maintain until one year after the date of the Notice of Certificate of Substantial Completion or one year after the Contractor or any Subcontractor last performs any work under the Contract, even if the Project is abandoned or deferred, insurance for liability for damages required by law of the kinds and in the amounts stated herein and as may be modified by provisions in the Additional Instructions, through insurance companies authorized to operate in New York State. The insurance shall cover all operations necessary to complete the work, whether performed by the Contractor or Subcontractors. Before starting work, the Contractor shall furnish the Owner one duplicate original policy and five certificates of insurance for each and every type of insurance required.

All liability insurance required by this Contract shall be maintained in force during the term of this Contract and until one year after the date of the Notice of Substantial Completion or one year after the Contractor or any Subcontractor last performs any work under the Contract, even if the Project is abandoned or deferred.

1. Commercial General Liability Insurance Bodily Injury & Property Damage	$1,000,000 Occurrence $2,000,000 Aggregate
2. Automobile Liability Bodily Injury & Property Damage	$1,000,000 Combined Single Limit

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.03 CONTRACTOR'S INSURANCE - Continued

3. Umbrella Liability	$4,000,000 Occurrence $4,000,000 Aggregate
4. Workers Compensation & Employers Liability	Statutory

A. Additional Insured – Contractor shall name Contractor, Owner, the Engineers and any other entity required by contract as additional insured on all liability policies except Workers Compensation and Owners, Contractors Protective Liability with respect to all operations under the Contract by the Contractor, Subcontractor, including suspension and omissions of the Owner. The additional insured status shall be on a primary and non contributing basis over all other valid and collectible insurance, with respect to this Contract.

B. Additional Conditions

Waiver of Subrogation: The Contractor and Subcontractors waive all rights against (1) each other and any of their subcontractors, agents and employees, each of the other, and (2) the Owner, the Engineer, the Engineer's consultants, separate contractors, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by bodily injury, property damage, fire or other causes of loss to the extent covered by insurance provided under the Contract or other insurance applicable to the work, except such rights as they may have to proceeds of such insurance held by the Owner as a fiduciary. The Subcontractor shall require of the Subcontractor's sub-subcontractors, agents and employees, by appropriate agreements, written where legally required for validity, similar waivers in favor of the parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

2. Commercial General Liability (CGL):
   a. Coverage with limits of Insurance of not less than $1,000,000 each occurrence and $2,000,000 Annual Aggregate.
   b. If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project/location.

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.03 CONTRACTOR'S INSURANCE - Continued

c. CGL coverage shall be written on ISO Occurrence Form CG 00 01 1093 or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, products-completed operations, and personal and advertising injury and contractual liability.
d. Contractor, Owner and all other parties required of the Contractor, shall be included as additional insureds on the CGL. Coverage for the additional insureds shall apply as Primary and noncontributing Insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insureds.
e. Contractor and Subcontractor shall maintain CGL coverage for itself and all additional insureds for the duration of the project and maintain Completed Operations coverage for itself and each additional insured for at least one year after Contractor or Subcontractor last performs any work under the Contract.

3. Auto Liability:
   a. Business Auto Liability with a combined single limit of at least $1,000,000 each accident.
   b. Business Auto coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.
   c. General Contractor, Owner, Engineers and all other parties required of the General Contractor, shall be included as additional insureds on the auto policy.

4. Umbrella Insurance:
   a. Umbrella limits must be at $4,000,000 each occurrence and $4,000,000 aggregate. Umbrella coverage for such additional insureds shall apply as primary before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured other than the CGL, Auto Liability and Employers Liability coverages maintained by Contractor.

5. Workers Compensation and Employers Liability:
   Statutory for New York State. All other states Employers Liability/Insurance limits of at least $500,000 each accident for bodily injury by accident and $500,000 each employee for injury by disease.

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.03 CONTRACTOR'S INSURANCE - Continued

6. Property Insurance (Builders Risk):
The Contractor shall provide and maintain, at his own expense, such property insurance as required by Contract. Policy(s) shall provide cover for fire, extended cover including open (special) perils and theft to insure all work and materials of the Contract against loss or damage. The value of the insurance shall at all times be equal to or greater than the full value of the Contract. Insurance policies shall be in the name of the Owner and payable to the Owner. Any proceeds there to shall be retained by the Owner as security for the performance by the Contractor in making good any loss, damage or injury. Upon such satisfactory performance by the Contractor, the proceeds shall be paid by the Owner to the Contractor.

C. Owners, Contractors Protective Liability Insurance
Owners Protective Liability Insurance at the limits stated in the Additional Instructions issued in the name of the Owner to and covering the liability for damages imposed by law upon the Owner with respect to all operations under the Contract by the Contractor or his Subcontractor, including supervisory acts and omissions of the Owner. Unless otherwise stated in the Additional Instructions, a minimum of $1,000,000 per occurrence / $2,000,000 aggregate is required.

D. Insurance Certificates
Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Commercial General Liability Policy. These certificates and the insurance policies required shall contain a provision that coverage afforded under the policies will not be cancelled or allowed to expire until at least 30 days prior written notice has been given to the Contractor/Owner.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00753

STATUS OF CONTRACTOR

00753.01 REPRESENTATIONS OF CONTRACTOR

The Contractor warrants and represents that:

A. He is familiar with all Federal, State, County and Municipal laws, ordinances, regulations and codes pertinent to the work and those employed in connection therewith, including any special acts relating to the work or the Project.

B. He has carefully examined all the Contract Documents and the Site and has, thereby satisfied himself as to: the location and nature of the work; the quantity, quality and nature of both surface and subsurface structures and materials apt to be encountered; the quantity, quality and types of plant, equipment and other facilities necessary for the performance of the work; the general and local conditions; and all other matters which may in any way affect the work or his performance under the Contract.

C. Such work, both temporary and permanent, required under the Contract can be satisfactorily constructed and used for its intended purpose, without injury to any person or damage to any property.

D. He is financially solvent and experienced in and competent to perform the work of the Contract.

E. If a corporation foreign to the State of New York, he is aware of the provisions of Article 13 of the General Corporation Law, with specific reference to the requirements in Section 210 that certain corporations may not do business in this State without first obtaining a certificate of authority from the Secretary of State.

F. If a corporation, he is aware of the provisions of Article 145 of the Education Law, with specific reference to the requirements and prohibitions of Section 7209 relating to the practice of professional engineering, or the use of the word "engineer" or "engineering" in a corporate name.

SECTION 00753

STATUS OF CONTRACTOR

00753.02 ADDRESS OF CONTRACTOR

Both the address given in the bid and the Contractor's office at or near the Site, if such is established, are designated as places to either of which letter, notices, or other communications to the Contractor may be mailed or delivered. The delivery at either place, or the depositing, in a post-paid wrapper addressed to either place, in any regularly maintained U.S. Post Office Box, of any letter, notice, or other communication shall be deemed sufficient service thereof upon the Contract. If at any time during the life of the Contract, it is necessary to change either address, the Contractor shall give written notice to the Owner, the Surety and the Engineer.

Nothing herein shall act to prevent or invalidate the personal delivery in hand of any letter, notice or other communication to the Contractor.

00753.03 PATENTS

The Contractor shall pay, as part of this Contract, all costs and fees required to obtain the legal right to use patented equipment, designs, or procedures to be used, as part of the work on this Contract.

The Contractor shall defend, indemnify, keep and save harmless the Owner from all costs, damages, liabilities, judgments and expenses, including reasonable attorney fees which may in any way arise against the Owner because of the use of any patented material, equipment or process furnished or used in the performance of the work or because of the use of patented designs supplied by the Contractor and accepted by the Owner.

If any claim, suit or action at law or inequity of any kind involving any such patent is brought against the Owner, the Owner may retain from any moneys due or to become due to the Contractor an amount considered sufficient by the Owner to protect itself against loss until such action is settled and satisfactory evidence to that effect has been supplied to the Owner.

00753.04 CONTRACTOR'S OBLIGATIONS

The Contractor shall furnish all the plant, machinery, labor, equipment, material, tools, appliances, shoring, bracing and scaffolding necessary to the proper and safe completion of the work in the manner specified, shown and directed within the time specified. He shall suitably cover the work whenever necessary, and otherwise protect it from damage from any cause whatsoever.

SECTION 00753

STATUS OF CONTRACTOR

00753.04 CONTRACTOR'S OBLIGATIONS - Continued

If in the opinion of the Engineer the Contractor's procedures or appliances appear at any time, either before or during progress of the work, to be inadequate or insufficient to provide the quality of the work, or the rate of progress specified, he may order the Contractor to improve their character and increase their sufficiency, and the Contractor shall comply therewith. However, failure of the Engineer to issue such an order shall not relieve the Contractor of his obligations to secure the safety, quality or progress of the work, and the Contractor alone shall be responsible for the safety, adequacy and efficiency of his methods, plant and appliances.

00753.05 LIABILITY FOR INJURIES OR DAMAGE

The Contractor shall be solely responsible and liable for the safety and protection of all persons, including but not limited to the Owner, Engineer, Contractor and Subcontractor and their employees, suppliers and visitors, and shall be solely responsible and liable for the safety and protection of property, including but not limited to the Site and its appurtenances and equipment, and he shall be solely responsible for all physical injuries, including death, to any such persons and for all damage to any such property and its appurtenances, which occurs on account of the work, or because of any negligence, fault or default of the Contractor, a Subcontractor or any of their officers, employees or agents.

The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. He shall have the duty and authority to stop and/or correct all unsafe and unhealthy conditions.

00753.06 GENERAL INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Engineer, Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Contractor's Work under this Contract, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, the Contractor's Subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part

SECTION 00753

STATUS OF CONTRACTOR

00753.06 GENERAL INDEMNIFICATION - Continued

by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph

00753.07 CONTRACTOR'S CLAIM FOR DISPUTED WORK

If the Contractor believes he or his Subcontractor or anyone directly or indirectly employed by any of them has sustained damage for disputed work, for which he claims he should be compensated, he shall give written notice to the Engineer, describing the nature and circumstances of the disputed work, within seven days after sustaining such damage. The Contractor shall also file with the Engineer, within 30 days of the date on which the alleged damage occurred, an itemized statement of the character and amounts of such damage. Unless both statements shall be filed as so required, the claim for compensation shall be considered invalid and the Contractor shall not be entitled to any payment therefor.

The Contractor shall proceed diligently with performance of the disputed work pending final resolution of his claim for damages.

During the progress of such disputed work, the Contractor shall provide to the Engineer daily records and make reports of all labor, material and equipment used in connection with such work and the cost thereof as specified in Section 00757.03.

If the Owner determines that the work in question is Contract work and not a Changed condition, he shall direct the Contractor to continue the disputed work, and the Contractor must promptly comply.

If the Owner determines that the work in question is not Contract work and is a Changed condition, he shall have prepared a Change Order in accordance with Section 00757.03.

SECTION 00753

STATUS OF CONTRACTOR

00753.08 NO CLAIMS AGAINST INDIVIDUALS

No claim shall be made by the Contractor or his Subcontractor or anyone directly or indirectly employed by any of them against any officer, employee or agent of the Owner and the Engineer for, or because of, anything done or failure to be done in connection with the work.

00753.09 CONTRACTOR'S TITLE TO MATERIALS

Neither the Contractor nor any Subcontractor shall purchase any materials, equipment or supplies for work subject to any chattel mortgage or under a conditional sale agreement or other agreement by which an interest is retained by the seller. The Contractor shall obtain and maintain good and clear title to all materials and supplies used by him in the work until attachment to or incorporation in the work.

Nothing in the Contract shall be construed as vesting in the Contractor any property right in materials or equipment specified after they shall have been attached to or incorporated in the work or the ground, nor in materials and equipment for which partial payments have been made. All such materials and equipment shall become the property of the Owner upon such attachment or incorporation.

00753.10 TITLE TO OLD MATERIALS

All materials removed from existing structures or construction, and all materials or articles of intrinsic or historic value found in excavations or on the Site shall be brought to the attention of the Engineer, and if he shall so order, shall become or remain the property of the Owner, and shall be carefully preserved for future use. If not claimed by the Owner, such materials or articles shall be removed from the Site and disposed of by the Contractor at his own expense.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00754

CONTRACTOR'S ORGANIZATION & STAFF

00754.01 SUPERINTENDENTS, FOREMEN & AGENTS

The Contractor shall at all times, except during periods of shut-down or work suspension that have been approved or directed, have a competent superintendent, foreman or other representative on the Site, who shall see that the work is performed in accordance with the Contract Documents and directions of the Engineer given thereunder, and who shall have authority to act for the Contractor and to receive and carry out orders from the Engineer, and who shall receive materials and equipment shipped to the Contractor. The Contractor shall be responsible for the acts of his superintendents, foremen, agents and employees during the life of the Contract.

00754.02 COMPETENCY & CHARACTER OF EMPLOYEES

The Contractor shall employ only competent and skillful persons to perform the work. This provision shall apply equally to common laborers and skilled craftsmen or tradesmen.

Whenever the Engineer informs the Contractor that any person on the work is, in the Engineer's opinion, incompetent, intemperate, unfaithful, insufficiently skillful, or disorderly, or refuses to carry out the provisions of the Contract, or to stop doing unsatisfactory work when so ordered, or who uses threatening or abusive language to the Owner, the Engineer, or any authorized representative(s) thereof, such person shall be discharged from the work by the Contractor and shall not again be employed without written consent of the Engineer.

00754.03 CONTRACTOR'S FIELD OFFICE

Unless waived by provisions within Additional Instructions, the Contractor shall provide, furnish and maintain for his own use a field office, with telephone, on the Site during the entire period of construction. The Contractor shall obtain approval of the Engineer of the type, size and location of such office, shanties or other temporary structures on the Site, prior to their erection.

SECTION 00754

CONTRACTOR'S ORGANIZATION & STAFF

00754.03 CONTRACTOR'S FIELD OFFICE - Continued

The Contractor will receive no direct payment for providing, maintaining or removing the Contractor's Field Office specified above, and compensation for same shall be included, as part of his overhead, in the prices to be paid for the various items in this Contract.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00755

PERMITS, TAXES, ACCESS, OTHER CONTRACTS

00755.01 LAWS, REGULATIONS & PERMITS

The Contractor shall procure at his own expense all necessary permits from the Federal, State, County, Town, municipal or other public agencies that may be involved in the work or the Project or have jurisdiction thereover, and shall serve all notices required by law or ordinance and pay all fees and charges incidental thereto. He shall at all times keep himself fully informed of all laws, ordinances and regulations which in any way affect the work, the materials, methods and equipment used in the work, the conduct of the work, and persons engaged or employed on the work, and of all orders, instructions and decrees of bodies, agencies or tribunals having any authority or jurisdiction over the work or the Project.

If the Contractor should discover any discrepancy or inconsistency in any Contract Documents relating to any permit, law, ordinance, regulation, code, order, decree or instruction, he shall immediately report the same in writing to the Engineer.

The Contractor shall at all times observe and comply with all such existing and all laws which come into existence during the execution of the Contract, as well as permits, codes, decrees, ordinances, regulations, orders and instructions, and shall cause his superintendents, foremen, employees and agents to do likewise.

00755.02 REQUIRED LEGAL PROVISIONS DEEMED INCLUDED

All clauses and provisions of law required by law to be included in the Contract shall be deemed to be included herein, and the Contract shall be interpreted, administered and enforced as though they were included. If, through oversight or otherwise, any such clause or provision is not included, or is not correctly included, the Contract shall immediately be physically amended or corrected, at the request of either party, to provide the necessary compliance.

The inclusion in the Contract Documents of any portion of any law or ordinance or code, regulation, decree, order, permit, instruction or interpretation emanating from a public body or agency, shall not be construed to mean that all such laws or legal requirements deemed necessary, in effect, or applicable to all or any portion of the work or the Contract have been included.

SECTION 00755

PERMITS, TAXES, ACCESS, OTHER CONTRACTS

00755.03 UNLAWFUL REQUIREMENTS DEEMED EXCLUDED

If the Contract Documents contain any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making of the Contract by the parties thereto, such provision shall be construed to be of no effect and shall, upon written notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder on both parties.

00755.04 TAXES

The Contractor shall pay all sales, use, excise, transportation and other taxes and fees for which he is liable under the Contract. The cost of such taxes and fees shall be included in the price, or total of several prices, given in the Bid on which the Agreement is based, and no separate payment will be made therefor.

00755.05 ACCESS TO WORK AND CONTRACTOR'S RECORDS

The Owner and the Engineer, and their employees, agents and representatives, shall have access to the work, the Site, and the premises used by the Contractor, and the Contractor shall provide and maintain safe and suitable facilities therefor. Subcontractors, and any other parties who may contract with the Owner to do work on the Site shall, for all purposes which may be required by their contracts, have the same privileges and facilities.

Whenever requested, the Contractor shall give the Engineer access to invoices, bills of lading, trip tickets, lists of employees, survey notes and other such data connected with the work.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00756

TIME ELEMENTS

00756.01 COMMENCEMENT & COMPLETION

The Contractor shall begin performance of the work within the time specified in the Information for Bidders, and shall substantially complete the work within the time specified in the Information for Bidders.

00756.02 TIME OF ESSENCE

Since the provisions of this Contract relating to the commencement and completion of the work are to enable the Owner to construct and place in use an improvement or facility in accordance with a pre-determined program, such provisions are of the essence of this Contract. It is agreed that the Owner will suffer damages if the work is not completed in the time specified.

00756.03 PROGRESS

The rate of progress shall be as uniform as practicable and such that all the work will be completed within the time specified, or within any time extensions that may be granted by the Owner.

The Engineer will notify the Contractor in writing if, at any time, he is of the opinion the work is unnecessarily delayed and will not be completed on time. The Contractor shall, within 10 days after receipt of such notice, take such action as will, in the opinion of the Engineer, improve the rate of progress to an extent that will insure completion of the work within the time specified. If the Contractor shall fail or refuse to take such steps within 10 days, the Owner may notify the Contractor to stop work or terminate the Contract in accordance with the provisions of Article 00760.01, OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT.

00756.04 APPROVED WORK SCHEDULES

Unless waived by provision in the Information for Bidders, within two weeks after award of the Contract, the Contractor shall submit to the Engineer for approval three copies of his proposed work schedule. The schedule shall show the Contractor's proposed relative order

SECTION 00756

TIME ELEMENTS

00756.04 APPROVED WORK SCHEDULES - Continued

and sequence of commencement and completion of all salient portions of the work, including the delivery and installation of equipment, and shall give the estimated dates of commencement and completion of the various portions of the work.

If more than one Contract is to be awarded on the same phase of the project, the General Contractor shall provide the Engineer with additional copies of his work schedule after the schedule shall have been approved. The Engineer will transmit these to the other Contractors for reference in the preparation of their proposed work schedules and submittal of same for approval. In such case each Contractor other than the General Contractor shall submit his proposed schedule for approval within two weeks after receipt of a copy of the General Contractor's approved schedule.

Each Contractor shall adhere to the approved schedule for his Contract. If a Contractor causes one or more other Contractors to be damaged by failing to adhere to his schedule, he shall save harmless the Owner and the Engineer from any and all actions and charges of the other Contractors against the Owner or the Engineer as the result of such failure.

See also Article 01012.01, COLLATERAL WORK.

00756.05 WORK SUSPENSION

When, in the opinion of the Engineer, good cause of suspension of the work exists, the Contractor shall suspend the work or any portion thereof, upon written order of the Engineer, for such period of time as the Engineer may direct. If the reason for suspension is beyond the control of the Contractor, the time within which the work is required to be completed shall be extended by the number of calendar days the work is suspended.

00756.06 TIME EXTENSIONS

Should the work be obstructed or delayed through the neglect, delay or default of any other Contractor on the Project, or by an Act of God, or by a general strike, or by delay on the part of the Owner in performing any work or furnishing any material or equipment stated in the Contract to be furnished by the Owner, or by any Supplementary Agreement or Change Order issued by the Owner, the Contractor shall have no claim for damages against the Owner or the Engineer, other than the price or prices agreed upon under Supplemental Agreement, or Change

SECTION 00756

TIME ELEMENTS

00756.06 TIME EXTENSIONS - Continued

Order, but shall be entitled to such an extension of time for completion of the work as the Engineer certifies is equitable because of such obstruction, delay, Supplemental Agreement, or Change Order, provided that claim for a time extension is made by the Contractor, in writing within seven days from the end of the time when the alleged cause therefore shall have occurred. Time extensions shall be provided only by an approved Change Order. Time necessary for Shop Drawing review, for changes to meet actual conditions, and delays incurred by seasonal and weather limitations for the locality should be normally anticipated and are neither compensatory nor eligible for extensions of time. See also ARTICLE 01012.01, COLLATERAL WORK, and 00757.03, CHANGE ORDERS AND PAYMENT OR CREDIT THEREFOR.

00756.07 ENGINEERING AND INSPECTION CHARGES

When the work embraced in the Contract is not substantially completed on or before the date specified therein, or within any time extensions granted by the Owner, engineering and inspection expenses incurred by the Owner in connection with the work from the specified or extended date of substantial completion until the date of actual Substantial Completion shall be charged to the Contractor. The date of actual substantial completion shall be determined as the date of issuance of the Notice of Substantial Completion.

Supplementary Agreements or Change Orders added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner prior to assessing engineering and inspection charges against the Contractor.

In addition, should the Contractor apply for and receive dispensation to work more than eight hours per day or forty hours per week by the Industrial Commissioner, the Contractor will be charged the associated overtime premium rate for the Engineer's on-site inspection representative(s).

Should the remaining minor punch list items not be completed within sixty (60) days of the Notice of Substantial Completion or within any time extensions granted by the Owner, the Contractor shall pay the Owner for any engineering and inspection expenses incurred by the Owner from the specified or extended date of minor punch list completion until when such punch list items are fully complete.

SECTION 00756

TIME ELEMENTS

00756.07 ENGINEERING AND INSPECTION CHARGES - Continued

These additional engineering and inspection charges shall be in the form of agreed-upon damages to the Owner and shall be deducted from moneys due or to become due the Contractor.

00756.08 NOT USED

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00757

CHANGES IN THE WORK

00757.01 RIGHT TO ALTER CONTRACT

The Owner may at any time alter or modify the Contract Documents, and the Contractor shall conform to such alterations or modifications after the Owner and the Contractor shall have entered into a Supplementary Agreement in writing therefor. The Contractor shall perform no work and furnish no material in connection with the alterations or modifications, nor shall he receive any additional payment therefor, unless and until such a Supplementary Agreement has been executed, as required by law. The Owner and the Contractor agree that alterations and modifications thus made shall in no way compromise the validity or coverage of the original Contract or Bond, or the liability of the signers thereof. All work performed under any such Supplementary Agreement shall be subject to all the provisions of the original Contract not expressly altered or modified.

00757.02 MINOR CHANGES

When ordered by the Engineer, the Contractor shall make minor changes in the location of the work, installation of equipment, and other things called for in the Contract, at no additional cost to the Owner. Such minor changes shall be limited to matters that do not alter the character, quantity or cost of the work as a whole. The Engineer shall be the sole judge of what constitutes a minor change.

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR

The Owner, without invalidating the Contract, may make changes by altering, adding to or deducting from the work the contract sum being adjusted accordingly. All such work shall be executed in conformity with the terms and conditions of the original Contract, unless otherwise provided in the order for same. Any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

No instructions, either written or verbal, shall be construed as an order for changes unless it be in the form of a Change Order, bearing the signed approvals of the Owner Engineer and USDA RD, and the signed acceptance of the Contractor, except in the case of disagreement as to value of changes, when the Contractor's signature to the order will not be mandatory. Change Order shall describe or enumerate the work to be performed and state the price, if any, to be

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR - Continued

added to or deducted from the Contract sum. If the nature of the work is such that a Change Order, as above, cannot be issued until the work has been advanced sufficiently to obtain exact quantities, a Change Order will be issued using estimated costs, with the accompanying statement that final costs will be applied by the end of the work.

Except as provided in the above paragraph, no change shall be made, unless in pursuance of a Change Order, and no claim for an addition to the Contract sum shall be valid unless so ordered. If the Contractor believes that any instructions, by drawing or otherwise, involves extra cost under his Contract, he shall give the Owner and the Engineer written notice and then proceed as indicated in Article 00753.07, Contractor's Claim for Disputed Work.

The value of any Change Order shall be determined by one or more of the following methods and in the following order:

A. By prices specifically named in the specifications or proposals.

B. By acceptance of agreed unit prices based on estimated cost plus overhead and profit as applicable.

C. By estimate of the actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.

D. By actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.

E. By estimate of the value as deducible from the approved detailed estimate.

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR - Continued

Overhead shall be defined as an allowance to compensate for all costs, charges and expenses, direct or indirect, except for the actual cost of labor and material as defined by the following paragraph. Overhead shall be considered to include, but not be limited to insurance (other than as mentioned in the following paragraph) bond or bonds, field and office supervisors and assistants above the level of foreman, use of small tools and minor equipment, incidental job burdens, general office expense, etc.

Actual cost of labor and material shall be defined as the amount paid for the following items, to the extent determined reasonable and necessary.

1. Cost of materials delivered to the job site for incorporation into the Contract work.

2. Wage paid to workmen and foremen and wage supplements paid to labor organizations in accordance with current labor agreements.

3. Premiums or taxes paid by the Contractor for Worker's Compensation Insurance, unemployment insurance, FICA tax and other payroll taxes as required by law, net of actual and anticipated refunds and rebates.

4. Sales tax paid as required by law.

5. Allowance for use of construction equipment (exclusive of hand tools and minor equipment), as approved for use by the Engineer. The rate on self-owned equipment used for periods of under one week will be the Associated Equipment Distributor's published monthly rate divided by 22 days to establish a daily rate and divided again by eight hours to establish an hourly rate. Equipment used for periods of 5 days or more will be billed at a rate equal to 45% of the published monthly rate. In the alternative, the Engineer may approve for reimbursement a rate representing the allocable costs of ownership. Self-owned equipment is defined to include equipment rented from controlled or affiliated companies. Rented equipment will be paid for at the actual rental cost.

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR - Continued

Gasoline, oil and grease required for operation and maintenance will be paid for at the actual cost. When, in the opinion of the Contractor, and as approved by the Engineer, suitable equipment is not available on the Site, the moving of said equipment to and from the Site will be paid for at actual cost.

6. When the material furnished under item (1) is used material, its value shall be pro-rated to the value of new material, but should be no more than its cost. When, in the opinion of the Engineer, the salvage value of salvageable material furnished under item (1) exceeds the cost of salvage, a suitable credit shall be given the Owner.

Regardless of the method used to determine the value of any change, the Contractor will be required to submit evidence satisfactory to the Engineer to substantiate each and every item that constitutes his proposal of the value of the change. The amounts allowed for overhead and profit shall not exceed the applicable percentages as established in the two following paragraphs.

If the work is done directly by the Contractor, overhead in an amount of 10% may be added if method B, C or D is used, and to the cost of the labor and materials plus overhead there may be added 10% for profit. The percentages for overhead and profit may vary according to the nature, extent and complexity of the work involved, but in no case shall exceed the percentages set forth in this paragraph and in the following paragraph. No percentages for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay.

If the work is done by a Sub-contractor, Sub-contractor's overhead in the amount of 5% may be added to cost of labor and materials if method B, C or D is used and to the cost of labor and materials plus overhead there may be added 10% for the Sub-contractor's profit. To this amount there may be added 10% for the Contractor's combined overhead and profit. No percentage for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay. However, to the extent that the aggregate dollar value of changes under a contract exceeds $75,000, the 10% overhead applied to total costs of labor and materials incurred by the prime Contractor shall be reduced to 5%, and the combined overhead and profit of 10% applied to sub-contract billings shall be reduced to 5%. In addition, on all individual Change Orders in excess of $75,000, the overhead shall be no more than 5% of the total actual cost of labor and materials incurred by the prime Contractor, and the combined prime Contractor's overhead and profit allowance applied to Sub-contract billings shall be no more than 5%.

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR - Continued

The Owner shall determine by which of the foregoing methods the value of any changes shall be computed.

00757.04 CORRECTION OF WORK

Any materials, plant or equipment delivered to the Site for use in the work which may be disapproved by the Engineer as unsuitable or not in keeping with the Specifications shall be immediately removed by the Contractor from the Site.

If any portion of the work is damaged in any way, or if defects or faults develop before the Inspection at Substantial Completion and issuance of a Certificate of Substantial Completion, or before the expiration of the 12-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defects to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.

Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from his obligations to repair, replace or otherwise make good the work at his own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made therefor.

00757.05 EMERGENCY POWERS UNIMPAIRED

The provisions of this Section 00757 shall not detract from the authority of the Contractor or the Engineer to act in case of emergency, as provided elsewhere in the Contract Documents.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00758

ASSIGNMENT & SUBCONTRACTS

00758.01 SUBCONTRACTS

Should the Contractor desire to subcontract any portion of the work, he shall first submit to the Engineer a statement outlining the nature and amount of the work proposed to be subcontracted and the name of the person, firm or corporation he proposes as Subcontractor. If requested by the Engineer, the Contractor shall also provide a statement as to the proposed Subcontractor's experience, financial ability, insurance certificates, or other qualifications for the nature and scope of the work proposed to be undertaken.

The proposed Subcontractor shall not enter upon the Site nor perform any work, either on or off the Site, until written approval of the Subcontractor has been granted by the Engineer and the Surety.

Subcontracts shall in no way, directly or indirectly, release, compromise or modify the responsibility of the Contractor or the Surety for the satisfactory and full completion of the work. The Owner shall not be liable to any Subcontractor for any lien on structures to be constructed as part of the work or claim on moneys due the Contractor or any other lien, claim or damages whatsoever. The approval of the Engineer and the Surety of a Subcontractor shall in no way create a contractual obligation between the Owner and the Subcontractor.

In the event a Subcontractor shall disregard the directions of the Engineer, or fail in any other way to abide by all conditions of the Contract, the Contractor shall, upon written order of the Engineer, require the Subcontractor to discontinue work under the Contract.

The Contractor shall be responsible for the coordination of all of his Subcontractors engaged upon the work, both in connection with his own work and the work of other contractors, if any, working collaterally on the Project.

The divisions or sections of the various Contract Documents and Bid Items are not intended to define portions of the work to be divided among Subcontractors, nor to influence the Contractor to award Subcontracts, nor to limit or enlarge the work performed by any trade, unless a Subcontractor experienced in providing a certain specialized type of work is specifically required in the Contract.

SECTION 00758

ASSIGNMENT & SUBCONTRACTS

00758.02 LIMIT OF SUBCONTRACTS VALUE

The Owner reserves the right to limit the total value of all Subcontracts to fifty (50) percent of the total Contract price.

00758.03 ASSIGNMENT

In accordance with the provisions of Section 109 of the General Municipal Law of the State of New York, the Contractor shall not assign, convey, transfer, sublet or otherwise dispose of this Contract, or of his right, title or interest therein, or his power to execute such Contract, to any other person or corporation without the prior written consent of the Owner.

If the Contractor shall, without such consent of the Owner, assign, convey, transfer, sublet or otherwise dispose of this Contract to any other person or corporation, the Owner may revoke and annul the Contract, in which instance the Owner shall be relieved and discharged from any and all liability and obligations to the Contractor arising from the Contract, and to the persons or corporation to which the Contract shall have been assigned, conveyed, transferred, sublet or otherwise disposed of, and the Contractor and his assignees, conveyees, transferees or sublessees shall forfeit and lose all moneys theretofore earned under such Contract, except so much as they may be required to pay his employees.

Nothing herein shall prevent an assignment by the Contractor for the benefit of his creditors made pursuant to the laws of the State of New York.

00758.04 PAYMENT

Payment to Subcontractors and/or materialmen, shall be in accordance with Section 106b of the General Municipal Law of the State of New York.

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00759

PAYMENTS

00759.01 ESTIMATED QUANTITIES

The Contractor agrees that the estimated quantities given in the Bid are only for the purpose of comparing bids and that he is satisfied with and will at no time dispute the said estimates as a means of comparing the aforesaid bids, that he will make no claim for loss of profits or anticipated profits because of any difference between the said estimated quantities and the quantities of the various classes of work actually furnished or performed, that the Owner shall not be held responsible if any of the said estimated quantities should be found to not even approximate those actually measured during performance of the work, and that the Engineer may direct an increase, decrease or omission of the quantities of any class or part of the work as may be deemed necessary or desirable.

00759.02 PRICES ALL-INCLUSIVE

The price or prices herein agreed to shall be for the work complete, and shall include the furnishings of all labor, tools, plant, equipment and materials therefor, whether required directly or indirectly, unless otherwise specified.

00759.03 LUMP SUM PRICES

A lump sum price stated in the Bid for an item shall be for the work complete as described in the Specifications for the corresponding item and shall include the cost of all labor, tools, plant, equipment and materials, specified or implied, incidental to the work of the item complete and ready for the service intended.

Within three weeks after execution of the Contract, the Contractor shall submit to the Engineer for approval three copies of a detailed schedule showing the breakdown of all lump sum bid prices in the Contract. The schedule shall indicate the quantities and amount estimated for each part of the work. The schedule shall be apportioned by the Contractor for labor and for materials, if so requested by the Engineer. The Contractor shall revise the schedule until it is satisfactory to the Engineer. The approved breakdown will be used in the preparation of monthly estimates and payments to the Contractor.

SECTION 00759

PAYMENTS

00759.04 UNIT PRICES

A unit price stated in the Bid for an item of the work specified to be measured for payment by units of volume, weight, area, length or number shall be paid for each unit of the net amount of the work of the item actually performed or furnished and incorporated in the finished work in accordance with the Specifications, Plans and as directed, as measured along the payment lines specified or shown, local custom to the contrary notwithstanding. It is agreed that the planimeter shall be considered an instrument of precision for the measurement on drawings and plans of areas in connection with the estimation of quantities in cases where geometric methods would be comparatively laborious.

00759.05 MONTHLY ESTIMATES AND PAYMENTS

Unless otherwise noted in the Additional Instructions or the Specifications once each month, on a day of the month selected by him, the Engineer will make an estimate of the value of the work done during the previous month, provided such value exceeds one thousand dollars. The Engineer shall submit this Monthly Estimate to the Owner, Contractor and USDA RD for approval for payment. Once approved by all parties, the Owner will pay the Contractor each month, within 30 days of the date of the Monthly Estimate, a sum equal to ninety-five (95) percent of the Monthly Estimate, retaining five (5) percent of each estimate until the work or major portions thereof is substantially completed.

The work will be considered Substantially Complete when the work of the Contract including all alterations or modifications (see Section 00757 - CHANGES IN THE WORK) is at least ninety-nine (99) percent complete and the estimated value of minor items to be completed is equal to or less than one (1) percent.

The Engineer will include in the Monthly Estimates the delivered cost of equipment and non-perishable materials on site and off site which have been tested or inspected by the Engineer and approved by him for incorporation in the work. Only equipment and materials for which the Contractor furnishes the Engineer receipted invoices as evidence that he has unconditional title thereto will be included. Such invoices shall be furnished the Engineer at least ten days in advance of the established date of preparation of Monthly Estimates.

SECTION 00759

PAYMENTS

00759.05 MONTHLY ESTIMATES AND PAYMENTS - Continued

The Contractor shall provide and maintain insurance for the said equipment and materials (on site and off site) as specified in 00752.03.

Payments made for materials and equipment delivered will in no way affect the Contractor's responsibilities regarding the same.

00759.06 WITHDRAWAL OF RETAINED PERCENTAGE

Pursuant to C.F.R. 1780.75(j) and 1780.15, applicable due to the USDA RD funding used on this project, withdrawal of the retained percentage will not be allowed under this Contract.

00759.07 OWNER'S RIGHT TO WITHHOLD PAYMENTS

The Owner may withhold from the Contractor such portions of any approved payments due him as the Owner may judge necessary to:

A. Protect the Owner from loss due to defective work not remedied;

B. Assure the payment of just claims then due and unpaid for labor or materials;

C. Protect the Owner from loss due to injury to persons or damage to the work or property of other Contractors, Sub-contractors, or others caused by acts of neglect of the Contractor or his Sub-contractors. The Owner shall have the right as agent for the Contractor to apply moneys so withheld as the Owner may deem proper to secure such protection or satisfy such claims, and such payments shall be deemed made for the account of the Contractor.

00759.08 INSPECTION AT SUBSTANTIAL COMPLETION

The Engineer and Funding Agency will make an Inspection of the work as soon as possible after the Contractor gives written notice that the work is substantially complete. The Contractor shall assist the Engineer, as may be required, in making the Inspection. Cost to the Contractor, if any, to assist the Engineer in making the Inspection shall be included in the

SECTION 00759

PAYMENTS

00759.07 OWNER'S RIGHT TO WITHHOLD PAYMENTS - Continued

appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for his work. After making the Inspection, the Engineer will notify the Contractor in writing of the results, including particulars regarding any part of the work which, in his opinion, is incomplete or requires correction or additional cleaning. The Contractor shall make good any incomplete or defective work before again asking for another Inspection. If in the opinion of the Engineer the work is substantially complete, the Engineer shall issue in writing a Notice of Substantial Completion on EJCDC Form No 1910-8-D following this section. Said Notice will list those minor items requiring completion before Final Payment. (See also ARTICLE 00757.04, CORRECTION OF WORK.)

00759.09 CERTIFICATE OF SUBSTANTIAL COMPLETION

Upon issuance of the Notice of Substantial Completion by the Engineer, and the submission by the Contractor of a written statement from Surety that the Performance Bond and the Payment Bond in the amount of one hundred (100) percent of the value of the Contract is in force for a period of one year following the date of Notice of Substantial Completion, the Engineer will file a Certificate of Substantial Completion with the Owner and the Contractor, certifying that the work is substantially complete and setting forth the amount of work performed and compensation earned by the Contractor. All prior estimates of the amount and value of work performed shall be subject to correction in this certification.

00759.10 PAYMENT AT SUBSTANTIAL COMPLETION

Within 30 days after the filing of the Certificate of Substantial Completion the Owner will pay the Contractor one hundred (100) percent of the full value of the work certified therein, less twice the value of any minor work remaining to be completed and all prior payments and advances to or for the account of the Contractor, and the amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been discharged.

SECTION 00759

PAYMENTS

00759.11 FINAL PAYMENT

The Contractor shall fully complete the remaining minor items within sixty (60) days of the issuance of the Notice of Substantial Completion.

Upon certification by the Engineer that the remaining items of the Contract including all corrections, alterations and/or modifications have been completed and that no repairs, renewals or replacements are required of the Contractor, or that, if required, such remedies have been effected, the Engineer shall prepare a Final Payment request recommending to the Owner payment to the Contractor of the amount retained at the time of substantial completion less any amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been discharged.

Within 30 days after the receipt from the Contractor of acceptable affidavits, certificates or waivers as evidence that no right to any claim or lien exists, the Owner will pay the remainder of the Contract as indicated in the Final Payment.

See also Article 00150.06, VERIFICATION OF AMOUNTS DUE FOR WAGES AND SUPPLEMENTS.

00759.12 ACCEPTANCE OF FINAL PAYMENT

Acceptance by the Contractor of the Final Payment shall serve as a release to the Owner of all claims and of all liability to the Contractor for all things done or furnished in connection with the work, and for any and all acts of neglect of the Owner or others relating to or because of the work, except the Contractor's claim for interest upon the Final Payment, if this payment is unduly delayed. No payment whatsoever shall operate to release the Contractor or the Surety from their obligations under the Contract or Bond.

00759.13 GUARANTEE INSPECTION

On or about one year from and after the date of the Notice of Substantial Completion, the Engineer will again inspect the work. The Contractor shall assist the Engineer, as may be required, to make the one year inspection. Cost to the Contractor, if any, to assist the Engineer in making the one year inspection shall be included in the appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for this work. The Contractor shall provide any and all repairs, renewals or replacements which may be revealed as

necessary in this Guarantee Inspection and which, in the opinion of the Engineer, are the responsibility of the Contractor. Should the Contractor fail to comply with written instructions of the Engineer regarding these remedies, the Owner will cause the remedies to be made by others and will pay the cost which will be reimbursed by the Contractor and/or his Surety.

The Contractor and his Surety agree that the Contractor's Performance Bond and Payment Bonds shall cover fully all guarantees as specified herein and in ARTICLE 00752.01.

00759.14 ACCEPTANCE OF PORTIONS OF THE WORK

The Owner reserves the right to accept for his service and use any portion of the work at any time during the life of the Contract without prejudice to the Owner in enforcing any provisions of the Contract.

The Owner may accept the portion or portions of the work which is substantially complete under the following agreed procedures:

A. The Contractor will be notified by the Engineer in advance as to what portion or portions of the work the Owner intends to accept for his use and service.

B. The retained percentage for the Substantially Completed portion or portions of work shall be released in accordance with ARTICLE 00759.09.

C. The guarantee period applicable to that portion or portions of the work shall start from the date of acceptance.

D. The remaining minor items of the portion or portions of substantially completed work shall be finished or corrected to the satisfaction of the Engineer.

E. The Owner will assume responsibility for maintenance, heat, utilities and insurance on accepted portion or portions of the work.

F. All applicable provisions specified in this Section for work deemed substantially complete shall apply.

SECTION 00759

PAYMENTS

00759.15 REPAIR OR REPLACEMENT OF DAMAGED, DEFECTIVE OR FAULTY WORK

If any portion of the work is damaged in any way, or if defects or faults develop before the inspection at Substantial Completion, or before the expiration of the 12-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defect to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.

Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from his obligations to repair, replace or otherwise make good the work at his own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made therefor.

00759.16 PAYMENT TO SUB-CONTRACTORS BY CONTRACTOR

Within fifteen calendar days of the receipt of the payment from the Owner, the Contractor shall pay the Sub-contractors, and/or material men a sum equal to the value of the work performed less any amount necessary to satisfy claims, liens or judgments that have been discharged less any amount retained as hereafter described.

A. The retained amount shall not exceed more than 5% on each payment except that 10% of each payment may be retained, if the Sub-contractor(s) and/or material men failed to provide a Performance Bond and Payment Bond in the full amount of the Sub-contract.

B. The Contractor shall not retain any money from Sub-contractor(s) and/or material men, after receipt of the Certificate of Substantial Completion payment.

Within fifteen calendar days of the receipt of the payment from the Contractor, the Sub-contractor(s) and/or material men shall pay each of his Sub-contractors and/or material men in same manner as the Contractor has paid the Sub-contractor(s) and/or material man.

The Owner shall not be under any obligation to see that the Contractor makes any payment to a Sub-contractor and/or material men.

END OF SECTION

CERTIFICATE OF SUBSTANTIAL COMPLETION

DATE OF ISSUANCE _____

OWNER _____

CONTRACTOR _____

Contract _____

Project _____

OWNER'S Contract No. _____ ENGINEER'S Project No. _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To _____
OWNER

And To _____
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that WORK is hereby declared to be substantially complete in accordance with the Contract Documents on

_____
DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of the CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within _____days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees shall be as follows:

OWNER _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

[For items to be attached see definition of Substantial Completion as supplemented and other specifically noted conditions precedent to achieving Substantial Completion as required by Contract Documents.]

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR'S obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____
Date

_____
ENGINEER

_____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on _____
Date

_____
CONTRACTOR

_____
(Authorized Signature)

OWNER accepts this Certificate of Substantial Completion on _____
Date

_____
OWNER

_____
(Authorized Signature)

GENERAL CONDITIONS (OWNER)

SECTION 00760

CONTRACT TERMINATION

00760.01 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

The Owner, by seven days written notice to the Contractor and without prejudice to any other rights or remedies it may have, may terminate the employment of the Contractor and his right to proceed, either as to the entire work or any portion thereof on which delay shall have occurred, and may take possession of and complete the work by contract or otherwise, as the Owner may deem expedient, in the event of any of the following:

A. If the Contractor shall refuse or fail, after being warned by the Engineer, to supply enough competent workmen, equipment or proper materials, or

B. If the Contractor shall refuse or fail to perform the work or any part thereof with sufficient diligence to insure its completion within the time specified, or shall fail to complete the work within said period, or

C. If the Contractor shall fail to promptly pay persons supplying labor or materials for the work, or

D. If the Contractor shall fail or refuse to regard laws, ordinances, permits or orders from the Engineer or otherwise substantially violate any provision of this Contract, or

E. If the Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors, or

F. If a receiver or liquidator shall be appointed for the Contractor or for any of his property and shall not be dismissed within 20 days after such appointment, or the proceedings in connection therewith shall not be stayed on appeal within the said 20 days.

If the Owner so terminates or stops the Contractor, the Contractor shall not be entitled to receive any further payment until the work is completed. If the unpaid balance of moneys to be paid the Contractor hereunder shall exceed the cost of completing the work, including the cost of

SECTION 00760

CONTRACT TERMINATION

00760.01 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT - Continued

additional administrative, managerial, engineering, and inspection services and or delay, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and the Surety shall be liable to the Owner for the excess.

If the right of the Contractor to proceed is terminated as provided herein, the Owner may take possession of and use in completing the work such materials, plant, equipment, supplies and appliances as may be on the Site and necessary to the work, provided that the termination was not made pursuant to paragraphs "E" or "F" above.

00760.02 CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

In the event the work shall be halted by order of a Court or any other public authority having jurisdiction for a period of 90 days or more without act or fault of the Contractor or any Sub-contractor, the Contractor, upon 10 days written notice to the Owner, may terminate the Contract or discontinue performance of the work. In either case the liability of the Owner to the Contractor shall be determined as provided in ARTICLE 00760.01, except that the Contractor shall not be obligated to pay to the Owner any excess of the cost of completing the work over the unpaid balance of the payments to be made to the Contractor hereunder.

00760.03 OTHER TERMINATION PROVISIONS

In addition to the provisions set forth in this Section 00760, specific references relating to termination or cancellation of the Contract are contained elsewhere herein. These include but are not limited to:

00150.03	NON-DISCRIMINATION AND LABOR PRACTICES
00752.03.A	WORKER'S COMPENSATION INSURANCE
00756.03	PROGRESS
00758.03	ASSIGNMENT

END OF SECTION

GENERAL CONDITIONS (OWNER)

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.01 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Plans, Specifications and other Contract Documents is to provide for the work outlined and delineated therein, complete in every detail for the purpose designated. The Contractor agrees to furnish everything necessary for the work as intended, any omission in the Plans or Specifications notwithstanding.

The Contractor shall furnish all materials, tools, plant equipment and labor, except those specifically set forth herein as to be furnished by the Owner, required to construct and place in complete and satisfactory working order the work contemplated by the Contract Documents. The mention in any part of the Specifications of any specific liability, duty or responsibility of the Contractor will not be construed as a restriction, limitation or waiver of any general liability, duty or responsibility of the Contractor, such mention being merely for explanatory purposes. The Contractor shall be solely responsible for the adequacy of his plant, tools and equipment, approval of the Engineer notwithstanding.

The Contractor shall do the work in a manner judged to best promote rapid construction consistent with due regard for the safety of life and the preservation of property, the satisfaction of the Engineer, and the intent of the Contract Documents.

The Contractor shall:

a) make all necessary excavations or embankments.
b) do all clearing and grubbing.
c) place all sheeting, shoring, bracing and supports.
d) furnish all underdrains.
e) provide draining, pumping bailing, ditching and diking for surface or below ground water.
f) provide all things necessary to protect, support and maintain structures, utilities, drains, conduits, culverts, trees, fences, poles, walls, earth banks, shrubbery, sidewalks, railways, roadways and drives.
g) repair all damage done to items in (f) above.
h) do all fencing, lighting and watching.
i) drive all piles and construct all foundations.

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.01 INTENT OF PLANS AND SPECIFICATIONS - Continued

j) construct all concrete, brick, stone, tile and timber work.
k) place all iron and steel work and reinforcement.
l) lay all water pipes, sewers, drains and conduits and make all connections to or between such.
m) resurface and repave all streets, sidewalks, roads or drives open cut or damaged.
n) refill all trenches and excavations.
o) provide all fences, bridges, fills, detours and signs for maintenance of travel in public ways.
p) make all connections to or between existing structures and utilities.
q) construct all buildings and structures.
r) furnish and install equipment.
s) clean up and dispose of all rubbish and surplus materials.

00761.02 INTERPRETATION OF PLANS & SPECIFICATIONS

The Engineer shall interpret the Plans and Specifications, and any Change Orders or Supplemental Agreements. Anything shown on the Plans but not included in the Specifications, or mentioned in the Specifications but not shown on the Plans, shall have the same effect as if set forth in both. In the event of a conflict between the Plans and Specifications, the Specifications shall govern. The attention of the Engineer shall be called to any discrepancies, as required by ARTICLE 01340.06.

00761.03 CONTRACT DRAWINGS

The location, nature and many details of the work are shown on the Contract Drawings. The work shall be constructed as shown on these Plans and such other drawings as may be issued during the life of the Contract by the Engineer, or furnished by the Contractor and approved by the Engineer.

The purpose of the Contract Drawings together with other Contract Documents, is to provide Bidders with sufficient information to prepare adequate and equitable Bids and to provide an adequate and equitable basis for the Agreement. The Contract Drawings may or may not provide sufficient detail for the actual construction of all segments of the work as shown and

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.03 CONTRACT DRAWINGS - Continued

specified. The Contractor shall furnish Construction Drawings or other drawings, as specified or requested, or, as may be required to adequately delineate for his workmen all details necessary for the work.

The Contract Drawings were prepared on 24" x 36" tracings. Reduced-size prints may have been prepared for the convenience of Bidders and others. During construction, the Contractor shall obtain data and information from full-size prints in preference to reduced-size prints.

Unless otherwise stated in the Information For Bidders, the Contractor will be furnished, free of charge, three copies of the Contract Documents, including three sets of Contract Drawings. Any other copies of the Contract Documents which the Contractor may desire can be obtained by him from the Engineer at the cost of duplication thereof.

The Contractor shall keep at least one set of Specifications and one full-size set of Plans on the Site, and shall at all times give the Engineer and the Owner access thereto.

00761.04 ADDITIONAL OR SUPPLEMENTAL DRAWINGS

The Engineer may prepare Additional Drawings or Supplemental Drawings during the course of the work, in connection with minor changes, Change Orders, Supplemental Agreements, or to augment or amplify the Contract Drawings or other drawings, or as part of orders or instructions, and the Contractor shall abide by such drawings in the same manner as specified for the Contract Drawings.

Drawings required by the Contractor are discussed in Article 01340.01.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01012

COLLATERAL WORK

01012.01 COLLATERAL WORK

The Owner may award other contracts in connection with the Project, the work under which may proceed concurrently with the work of this Contract. In this event the Contractor shall coordinate his operations with those of the other contractors, and shall cooperate with them in the arrangement for the storage of materials and performance of the work.

The Contractor and his Sub-contractors shall keep themselves informed of the progress of the work of other contractors and sub-contractors and shall notify the Engineer immediately of defective workmanship or insufficient progress on the part of others, where such will interfere with his own operations. Either failure of the Contractor to keep himself informed of the progress of work under other contracts on the Site, or failure of the Contractor to give proper notice of same, shall be deemed as acceptance by him of the status of the work under other contracts as it may affect his own work.

See also ARTICLE 00756.04, APPROVED WORK SCHEDULES, and ARTICLE 00756.06, TIME EXTENSIONS.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01015

CONTRACTOR USE OF PREMISES

01015.01 AREA AVAILABLE FOR CONTRACTOR'S USE

The Contractor shall confine his operations to those portions of the Owner's property, and to the right-of-ways or easements, temporary or permanent, acquired or designated for the work of the Contract as shown on the Drawings. Private property adjacent the Site shall not be entered upon or used by the Contractor for any purpose without the written consent of the Owner thereof. A copy of such consent shall be filed with the Engineer.

When required, the Contractor shall provide and maintain fences at his own expense, along the roadways and around the grounds occupied by him for the protection of adjoining property and all persons lawfully using same. Fences shall be of materials and construction suitable in the opinion of the Engineer for their intended purpose.

All work within or abutting private property shall be performed in such ways as to create the minimum of inconvenience and disturbance to the private property and its users. Excavated materials or supplies of any kind shall not be stored on off-site public or private property without written consent of the Owner thereof, and all walks and drives shall be kept open to uninterrupted passage. A copy of each such written consent shall be filed with the Engineer.

Materials delivered upon public streets shall be neatly stored between the sidewalk and the curb or ditch line, and at least 10 feet from any fire hydrant. A passageway of at least three feet shall be preserved on the sidewalk line.

01015.02 TRAVEL NOT OBSTRUCTED

The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.

SECTION 01015

CONTRACTOR USE OF PREMISES

01015.02 TRAVEL NOT OBSTRUCTED - Continued

Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the owner of each traveled way before interfering therewith.

01015.03 CLEANING UP

The Contractor shall remove from the Site and dispose of, at his own expense, all rubbish, refuse and unused materials, as the work progresses. If such work is neglected, the Engineer will give written notice thereof to the Contractor. If the work is not performed within five days thereafter, the Owner will employ other persons to do such work, and the expense thereof shall be deducted from any monies due or to become due the Contractor.

The Contractor shall clean and leave free from obstruction all pipes, buildings, manholes and other structures. This work shall be coordinated with the Engineer's Inspection at Substantial Completion, or as directed. All rubbish, refuse, unused materials, plant and equipment shall be removed from the Site, and the entire Site shall be left in a neat condition. All equipment installed in the work by the Contractor shall be cleaned and left in a bright and new-appearing condition.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01019

SITE CONDITIONS

01019.01 PRE-BID INSPECTION & EXAMINATION

The Contractor warrants and represents that he visited the Site prior to submitting his Bid, and that he has satisfied himself as to the location and nature of the work and the quantity, quality, type and nature of both surface and subsurface structures and materials apt to be encountered.

See also 00753.01.B.

01019.02 BORINGS

Any data on subsurface conditions that may have been obtained by the Owner prior to the advertisement for bids, through test borings, test pits, seismic explorations, or other means, was obtained by the Owner for his sole use and only for his own purposes. Any such data, known or recalled as of the date of advertisement for bids, are shown on separate drawings or in separate schedules and reports which are not any part of the Contract Documents. All such data are made available to Bidders, the Contractor and other interested parties only as a convenience and without express or implied representation, assurance or guarantee that any of the information is complete, correct, or adequate or representative of a true or typical picture of subsurface conditions on the Site.

The Contractor, both during his status as Bidder and after execution of the Contract, shall satisfy himself as to the nature, character, quality and quantity of above ground and below ground conditions apt to be encountered. Any reliance on data made available by the Owner shall be at the Contractor's sole risk.

No claim whatsoever shall be made by the Contractor against the Owner or Engineer for or on account of such data available, or neglected to be made available, by the Owner or Engineer.

SECTION 01019

SITE CONDITIONS

01019.02 BORINGS - Continued

The Contractor at any time, and any holder of Contract Documents during the period between advertisement for and receipt of bids, will be permitted to make test borings, test pits, soundings or similar subsurface investigations on the Site. Prior to making these investigations the Contractor and/or any holder of Contract Documents must notify the Engineer when and where he proposes to make such investigations.

The locations where test boring samples, if any, may be examined is given in the Additional Instructions.

See also ARTICLES 00753.01.B, 00753.07, 00759.01, 01019.04 and 01019.06.

01019.03 PROTECTION OF EXISTING STRUCTURES

The Contractor shall at all times have on the Site suitable and sufficient plant and materials to adequately protect, support and sustain any and all existing structures and facilities, whether above or below ground, and shall use same as may be necessary or required to protect, support and sustain any and all such structures as may become weakened, endangered, undermined or uncovered.

He shall, at his own expense, support and sustain in their places and protect from direct or indirect damage all water, gas, steam, air or other mains or pipes, sanitary and storm water sewers and drains, conduits, subways, service connections, buildings, poles, wires, fences, pavements, sidewalks, curbs, railways, trees and other structures and property and appurtenances thereto on or in the vicinity of the Site, and shall assume all liability for damage thereto, including damage arising out of settlement or lateral movement of walls of excavations, whether occurring during performance of the work or the 12-month period of guarantee.

In the event of damage or danger to any such structure or facility the Contractor shall immediately notify the Engineer, and shall promptly repair or protect the structure as the Engineer may direct.

SECTION 01019

SITE CONDITIONS

01019.04 EXISTING STRUCTURES BELOW GROUND

The Contract Drawings show the location and character of certain existing subsurface structures and facilities apt to be encountered in excavations or located in such proximity to the work as to require precautions for their protection. The sizes, materials, locations and depths shown are only approximate, and the Contractor shall satisfy himself as to the accuracy and completeness of such information. The Contractor shall not be relieved from any of his obligations, nor be entitled to claim for damages or additional compensation, sustained or arising out of inadequacy or inaccuracy of the information given.

01019.05 ABANDONED STRUCTURES

Any structures, facilities or appurtenances therefor which are abandoned or become so by reason of the work, shall, at the Contractor's expense, be broken up and filled with approved material, if directed by the Engineer.

01019.06 LATENT SUB-SURFACE CONDITIONS

In the event that latent sub-surface conditions are found to materially differ from those on which the Plans and Specifications are based, the Contractor shall immediately notify the Engineer before they are disturbed. After prompt investigation, the Engineer will determine what changes, if any, should be made in the Plans and Specifications because of the revealed conditions, and shall instruct the Contractor accordingly. Any change in the cost of the work resulting therefrom shall be adjusted as provided in Section 00757.

01019.07 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES

If, in the opinion of the Engineer, an underground pipe or other structure requires realignment or relocation, and such realignment or relocation was not included in the Plans or Specifications, the Engineer will issue a Change Order for such work, and the Contractor shall be compensated therefor as provided in Section 00757. The Contractor shall strip or uncover and support or sustain the structure at his own expense prior to such Change Order, as part of his work under the original Contract, and he shall not be entitled to claim for damage or delay due to its presence or discovery.

SECTION 01019

SITE CONDITIONS

01019.07 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES - Continued

Wherever existing utilities come within limits of the work, the Contractor shall notify both the Engineer and the Utility before in any way disturbing same. Any work of realignment, relocation, removal or extension of the utilities shall be done as mutually agreed by the Utility, the Contractor and the Engineer. The Contractor shall maintain satisfactory drainage of the excavation at all times from revelation of the structure until completion of its realignment or readjustment. Interruption of service by utilities shall be kept to a minimum.

The Contractor shall not cause nor permit interference with or hindrance to any municipal department, individual, public service corporation, or other company in protecting its structures and facilities, nor in removing, replacing or relocating same.

01019.08 MAINTENANCE AND RESTORATION OF SERVICE

The Contractor shall, at his own expense, provide for the maintenance of flow in all water courses and all sanitary and storm sewers, drains, connections and appurtenances thereto. The contents of sewers, drains or service connections shall not be permitted to flow into excavations, sewers or other parts of the work without written permission of the Engineer, and the Contractor shall, at his own expense, immediately remove from the Site and adequately dispose of all offensive matter, in an approved manner.

The flow of water, and normal water pressure, in all water mains, conduits and service connections encountered on the Site, shall be provided for and maintained by the Contractor at his own expense. When water mains or service connections must be disturbed to the extent that service must be shut off, the Contractor shall give at least 24 hours notice to the Utility and all customers served by the lines involved. Such notice shall give the estimated times of shut-off, and restoration of service. If fire hydrants are involved, the fire department serving the area shall be similarly notified.

In the event of accidental disruption of water service, it shall be deemed an emergency, and the Contractor shall proceed with the necessary repairs immediately and continuously, giving this work priority over all other operations, until service has been satisfactorily restored. The Contractor shall give immediate notice of such break or service interruption to the Engineer, the Utility, and all customers affected, and shall supply, at his own expense, assistance in supplying

SECTION 01019

SITE CONDITIONS

01019.08 MAINTENANCE AND RESTORATION OF SERVICE - Continued

an emergency source of water when necessary by means of temporary lines, tank trucks, or other means. All lines and connections shall be restored to the satisfaction of the Engineer and the Utility.

All portions of the foregoing provisions regarding water service which are applicable to sewer, gas, telephone or other services shall apply also to maintenance and emergency repair of such services.

01019.09 POLES & POSTS ON SITE

Poles or posts of any Utility located within the lines of the work which, in the opinion of the Engineer, will impede progress of the work, shall be supported or removed and replaced by the Contractor at his own expense and in accordance with the requirements of the Utility involved. The Contractor shall remove, relocate, replace or support all other poles and posts at his own expense and to the satisfaction of the Engineer.

The Contractor shall employ no equipment which will unduly interfere with wires or other overhead facilities.

01019.10 NOTIFICATION OF OTHER PARTIES

In addition to notices to Utilities and others required elsewhere herein, the Contractor shall give written notice of his proposed construction operations to the owners of all public and private utilities at least seven days in advance of breaking ground in any area in which a utility is located. Copies of each such notice shall be simultaneously sent to the Engineer.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01051

LAYOUT OF WORK

01051.01 INFORMATION PROVIDED BY ENGINEER

The Engineer will provide, on the Contract Drawings, sufficient information for the Contractor to establish baselines, offsets and other survey control points. Unless otherwise noted, no additional survey work will be provided by the Engineer.

01051.02 SERVICES PROVIDED BY CONTRACTOR

Unless otherwise noted in the Additional Instructions or Specification, the Contractor will establish such additional lines, grades and elevations as he deems necessary and will include the following:

A. Structures & Buildings: Corner stakes at all principal corners of exterior walls or foundations. Two bench marks in the vicinity of the structure or building.

B. Sewers: Offset grade line stakes, on one side, with stations approximately forty linear feet on centers.

C. Water Mains & Force Mains: When laid to grade, the same as for sewers. When not laid to grade, none.

D. Roads & Runways: Offset center line grade stakes, on one side, with stations approximately fifty linear feet on centers.

E. Embankments: Slope stakes on both sides at approximately one hundred linear feet on centers, with additional stakes at principal breaks in grade.

F. Tunnels & Borings: Center line and offset baseline on the surface, on starting end. Also one progress check every fifty linear feet of long tunnels.

G. Other Types of Construction: The Contractor will provide control stakes as he deems necessary to properly layout his work.

SECTION 01051

LAYOUT OF WORK

01051.02 SERVICES PROVIDED BY CONTRACTOR - Continued

H. On Traverse or Cross-country type of construction, such as pipelines and roads, a temporary center line may be required for clearing purposes.

I. The Contractor will issue a grade letter for pipeline and road construction which is to be laid or installed to a predetermined grade. All other stakes will have the information marked on a witness stake beside the hub.

The Contractor shall provide all the necessary materials for control points, including all: stakes, hubs, lath, grade boards, cleats, nails and such other materials as may be required.

The Contractor shall also provide such non-technical assistance as may be required in the establishment of marks, other than primary or basic controls, such as clearing sight lines and driving stakes.

The Contractor shall erect and establish all grade boards, batter boards and construction control lines from the information provided by the Engineer.

The Contractor shall layout the work to best suit his methods of operations, using the Engineer's information provided to assure the construction will be in the position the design anticipated.

01051.03 OBLIGATIONS OF THE CONTRACTOR

The Contractor shall carefully preserve and protect all stakes, marks, monuments and points provided or described by the Engineer, and shall reimburse the Owner for any and all additional engineering costs incurred because of the replacement or reestablishment of any such items which may be moved, removed, obliterated or destroyed due to his construction operations. When directed, the Contractor shall provide suitable barricades for the protection of points.

The Contractor shall bear the entire cost of rectifying work improperly done due to his own negligence in preserving and protecting marks, or to moving or removing same without approval of the Engineer.

SECTION 01051

LAYOUT OF WORK

01051.03 OBLIGATIONS OF THE CONTRACTOR - Continued

He shall inform the Engineer a reasonable time in advance of his operations of the times and places he proposes to work, so that lines, grades and elevations may be established and necessary measurements for record and payment may be made with the minimum of inconvenience or delay to either himself or the Engineer. No additional compensation will be paid the Contractor for any delay caused by insufficient notice.

01051.04 LINES, GRADES AND ELEVATIONS

The terms "invert" or "grade" used in the Contract Documents in connection with pipes, sewers, channels, flumes and similar structures shall mean the inside bottom of the pipe or other surface on which the liquid flows along the center line of the completed work. "Subgrade" refers to the bottom line or surface to which excavations are necessarily made to construct the work as shown or specified, exclusive of any additional depth of excavation required for any special foundation.

The term "Grade Letter" shall mean a data sheet giving the amount of cut or fill from offset stakes to the invert or grade.

All work shall be constructed in accordance with the lines and grades shown, specified or directed. The Contractor shall be responsible for maintaining alignment and grade between points provided or described on the Contract Drawings.

01051.05 MASONRY CHASES, OPENINGS AND INSERTS

If the Owner awards other contracts for collateral work on the Site, it shall be the obligation and responsibility of the General Contractor to provide all openings and chases in his work to fit both his own work and that of the other contractors. The General Contractor shall provide all openings shown on the Contract Drawings, or reasonably implied thereby, as confirmed or modified by Additional Drawings or drawings submitted by Contractors and approved by the Engineer.

Where pipes or conduits pass through slabs or walls, the sleeves or opening forms shall be provided by the installer of the pipes or conduits but shall be placed by the General Contractor.

SECTION 01051

LAYOUT OF WORK

01051.05 MASONRY CHASES, OPENINGS AND INSERTS - Continued

If hanger inserts or similar items are required, they shall be furnished by the installer of the pipe or other equipment for which the hangers are intended, but shall be placed by the General Contractor.

Any expense resulting from mislocated, defective, or ill-timed work shall be borne by the Contractor responsible therefor. No Contractor shall alter the work of another Contractor without the consent of the Engineer and knowledge of the Contractor involved, and no Contractor shall endanger any work by cutting, excavating or other operations.

01051.06 PAYMENT FOR LAYOUT OF WORK

The cost to the Contractor of providing the services and materials specified in this Section 01051 shall be included in the price, or total of prices, given in the Bid on which the Agreement is based, and no separate payment will be made therefor. Any cost to the Owner for additional engineering layout work, as set forth in ARTICLE 01051.03, will be deducted from monies due or to become due the Contractor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01064

SAFETY AND HEALTH

01064.01 SAFETY AND HEALTH REGULATIONS

The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standard Act (PL 91-54), latest revisions.

In order to protect the general public and the lives and health of his employees under the Contract, the Contractor shall comply with all pertinent provisions of the latest issues of the Federal Register, Bureau of Labor Standards, Safety and Health Regulations; New York State Industrial Code Rule 30 pertaining to Tunneling Operations; New York State Industrial Code Rule 23 pertaining to Trenching Operations; and the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this Contract. In case of a conflict between the above noted authorities, the most stringent shall prevail.

The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. He shall have the duty and authority to stop and/or correct all unsafe and unhealthly conditions.

01064.02 SAFETY AND FIRST AID

The Contractor shall at all times exercise caution in his operations and shall be responsible for the safety and protection of all persons on or about the Site. All hazards shall be avoided or guarded in accordance with the provisions of the Manual of Accident Prevention in Construction of the AGCA, unless such provisions contravene local law. The safety provisions of all applicable laws, codes and ordinances shall be observed.

The Contractor shall provide and maintain at the Site, at each location where work is in progress, as part of his plant, an approved first aid kit. Ready access thereto shall be provided at all times when men are employed on the work.

SECTION 01064

SAFETY AND HEALTH

01064.02 SAFETY AND FIRST AID - Continued

The Contractor shall take due precautions against infectious diseases, and shall arrange for the immediate isolation and removal from the Site of any employee who becomes ill or is injured while engaged on the work.

01064.03 DUST HAZARDS

(a) If, in the construction of the work covered by the Contract, a harmful dust hazard is created for which appliances or methods for the elimination of dust have been approved by the Board of Standards and Appeals, such appliances or methods shall be installed and maintained and effectively operated by the Contractor at his expense.

(b) The Contract shall be void and of no effect unless the Contractor complies with the provisions of this subdivision of the Contract and Labor Law Section 222-a.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01340

SUBMITTALS

01340.01 DRAWINGS FURNISHED BY THE CONTRACTOR

The Contractor shall prepare, or cause to be prepared by his suppliers or Subcontractors, and submit to the Engineer for review, Shop Drawings, Setting Drawings, Working Drawings and Construction Drawings as may be specified or directed or necessary to the performance of the work. Deviations from the drawings and specifications shall be called to the attention of the Engineer at the time of the first submission of Shop Drawings, or other drawings, for consideration. Corrections or comments made on the Shop Drawings or other drawings during review do not relieve the Contractor from compliance with the requirements of the Contract Drawings and Specifications. Approval is only for general conformance with the design concept of the Project and with information set forth in the Contract Drawings and Specifications. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to the means and methods of construction, coordination with the work of all trades, and performing all work in a safe and satisfactory manner. Approval does not modify Contractor's duty to comply with the Contract Documents.

Within thirty days of the execution of the Agreement, the Contractor shall submit five copies of a schedule of submittals which includes a complete list of products proposed for the work tabulated by Specification Section, including manufacturer or fabricator, model number or other identifying designation.

Shop, Setting or Working Drawings shall be submitted for each type and model of fabricated materials and equipment. They shall provide complete and accurate working dimensions, weights, assembly and sectional views, details necessary to coordinating the work, anchor bolt and installation plans and instructions, parts lists and descriptions, materials and finishes lists, lists of any tools and spare parts required, diagrams of control wiring and piping, the location, sizes and types of connections to other work or other items, and any other data required to comply with the Contract or provide the workmen and the Engineer with information necessary to complete and inspect the work.

Electrical equipment drawings and data shall show physical dimensions, installation details, elementary and connection diagrams for each motor controller, interconnection diagrams for all equipment, identification of components external to electrical equipment, the coordination of control circuits, and definition of the contract arrangement and control action of the primary and final control elements.

SECTION 01340

SUBMITTALS

01340.01 DRAWINGS FURNISHED BY THE CONTRACTOR - Continued

If the Contractor proposes to furnish and install equipment requiring a layout or arrangement materially changed from that shown on the Contract Drawings as illustrative of one acceptable arrangement, he shall submit, for review, drawings showing the proposed arrangement and the appertaining changes to wiring, piping, structures and other equipment.

Submittals such as pre-printed manufacturers' installation instructions, maintenance data, parts lists, test results, or similar informational material are not considered Shop Drawings and will not be reviewed. Any submittal not required or otherwise requested will be returned to the Contractor.

See also ARTICLE 01340.08, ADDITIONAL ENGINEERING COSTS.

01340.02 TRANSMITTAL, IDENTIFICATION AND RESUBMITTAL

The Contractor shall accompany all drawings and other data submitted to the Engineer with a letter of transmittal in duplicate. Unless otherwise specified elsewhere herein, all other correspondence with the Engineer shall also be in duplicate.

All drawings shall be suitably identified with the name of the Project, Contract Number, Contractor name, name of the equipment or materials manufacturer, specification section designation and item number (if applicable) date, and initials indicating approval of such submittal by the Contractor under the applicable specification.

The Contractor shall submit to the Engineer for review five copies of all drawings and other data, plus the number of copies he wishes returned bearing the Engineer's review stamp, comments, or request for changes, but in no case shall the total number of copies so submitted be less than six. If the Engineer makes comments or corrections, they will be noted on the drawings, or explained in a letter of transmittal, or both, and all but three copies will be returned to the Contractor for revision or other requested action. The Contractor shall make any requested revisions or additions and resubmit the drawings in the same manner as for the initial submittal. If requested by the Engineer, the Contractor shall supply additional copies of submitted data.

SECTION 01340

SUBMITTALS

01340.02 TRANSMITTAL, IDENTIFICATION AND RESUBMITTAL - Continued

The Engineer's review stamp shall indicate one of the following:

- ☐ Approved
- ☐ Approved as Noted
- ☐ Revise as Noted - Resubmit
- ☐ Rejected - Resubmit as Specified

Upon return of a submittal marked "Approved" or "Approved as Noted", the Contractor may order, ship or fabricate the materials so noted. A submittal marked "Approved as Noted" should not be resubmitted for further review. Submittals marked "Revise as Noted – Resubmit" include extensive corrections or corrections of major importance affecting other items and require the submittal to be amended and resubmitted for a final review. Submittals marked "Rejected – Resubmit as Specified" are reserved for materials or equipment which are unacceptable. The Contractor shall resubmit for materials or equipment which are acceptable and in accordance with the Specifications.

More than one resubmittal per material or equipment will be considered an additional cost to the Engineer which shall be reimbursed by the Contractor. Refer to Article 01340.08 for method of reimbursement.

01340.03 DELAY THROUGH TARDY SUBMITTAL

All submittals shall be made on such a schedule and at such time as to permit adequate review. The Contractor shall make due allowance for possible revisions and resubmittals. Delays caused by tardy submittal of drawings or data for review shall be the responsibility of the Contractor. No work covered by submitted drawings, or drawings specified to be submitted, shall be performed until such drawings and data have been reviewed.

See also ARTICLE 00756.04, APPROVED WORK SCHEDULES.

SECTION 01340

SUBMITTALS

01340.04 CONTRACTOR RESPONSIBLE FOR ACCURACY

The Contractor shall be responsible for the accuracy and completeness of the drawings and other data he submits, for their conformity to the Plans and Specifications, and for the proper fit and clearance of all construction work.

The Owner retains for the Engineer the option to refuse to review submitted data that are improperly identified or incomplete or which have not been checked by the Contractor for compliance with the Contract Documents.

01340.05 ADDITIONAL INSTRUCTIONS

The Engineer may from time-to-time issue additional instructions to the Contractor as may be necessary to amplify, augment, modify or clarify the Contract Documents. These may be in the form of drawings, specifications, interpretations, orders and instructions, and may be in connection with or made a part of a Supplemental Agreement, Change Order, or Minor Change.

See also SECTION 00757, CHANGES IN THE WORK.

01340.06 DRAWINGS TO BE CHECKED BY CONTRACTOR

The Contractor shall check all dimensions, quantities and representations in the Specifications, Contract Drawings, Additional Drawings and all Supplemental Agreements, Change Orders and Instructions, and shall immediately notify the Engineer of any and all errors, omissions, or discrepancies therein which he may find. The Contractor will not be permitted to take advantage of any such error, omission or discrepancy in any Contract Document or subsequent document, as full instructions will be provided by the Engineer in such case.

01340.07 SUBSTITUTES AND "OR-EQUAL" ITEMS

Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item, the Specification or description is intended to establish the type, function and quality required. Unless the Specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment may be accepted by the Engineer under the following circumstances:

SECTION 01340

SUBMITTALS

01340.07 SUBSTITUTES AND "OR-EQUAL" ITEMS - Continued

"Or-Equal": If in Engineer's sole discretion an item of material or equipment proposed by Contractor is of similar quality and functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed equal items.

Substitute Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below in advance to provide adequate time to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the Engineer will include the following or as the Engineer may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for review thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation of the proposed substitute will prejudice Contractor's achievement of Substantial Completion on time, whether or not the substitute for use in the work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

SECTION 01340

SUBMITTALS

01340.08 ADDITIONAL ENGINEERING COSTS

In the event that the Contractor fails to submit acceptable Shop Drawings (i.e., Shop Drawings which are returned marked "Approved" or "Approved as Noted") within two submittals, further review of the Shop Drawings will be considered an Additional cost. Similarly, all Engineering Costs associated with the review of a substitution will be considered an Additional cost.

Additional Engineering Costs include redesign, additional Shop Drawing reviews, investigations, consultant fees and revisions to the Contract Documents required because of the proposed substitution. Additional Engineering Costs will be the total of:

a. Billing Rates Schedule
b. Direct Expenses Plus 10%
c. Consultant Fees Plus 10%

Additional Engineering Costs shall be deducted from Contractor Payments by the Owner, in accordance with the Agreement for Engineering Services between the Owner and the Engineer.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01506

WORK UNDER UNUSUAL CONDITIONS

01506.01 WORK AFTER DARK

Unless specifically required elsewhere herein, the Contractor shall perform no work after dark except in emergencies. When time permits, he shall inform the Engineer in advance of such work and shall obtain the Engineer's approval. When time does not permit advance notice to the Engineer, he shall inform the Engineer at the earliest possible moment.

The placing of concrete shall be so scheduled as to be started early enough in daylight hours to allow sufficient time for the completion of the section under construction before dark, including the work of finishers.

When, in order to minimize interference with existing structures or utilities, or maintain traffic, it may, in the opinion of the Engineer, be expedient or necessary to do work after dark, such work shall be performed by the Contractor at no additional cost to the Owner, and the Contractor shall provide adequate lighting therefor.

01506.02 WORK ON SUNDAYS OR HOLIDAYS

Unless specifically required elsewhere herein, the Contractor shall do no work on Sundays or locally recognized legal Holidays except in an emergency, and then shall confine his operations to only the work considered necessary to be performed at such time.

01506.03 WORK IN STORMS

If required by the Engineer, masonry work and the mixing and placing of concrete shall be halted during rain storms, and all fresh work shall be immediately protected with suitable coverings. The Contractor shall keep a sufficient quantity of such coverings at the Site as part of his plant and equipment.

No paving, exterior painting, fine grading, seeding or roofing shall be done during rain or snow storms.

SECTION 01506

WORK UNDER UNUSUAL CONDITIONS

01506.04 WORK IN COLD WEATHER

Certain Specifications contain provisions prohibiting the performance of certain work in cold weather, or outlining the conditions under which such work may be so performed. In the absence of specific mention elsewhere in the Contract Documents, the judgement of the Engineer shall govern in any case where temperature may adversely affect or prevent the performance of good work.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.01 SANITARY FACILITIES

The Contractor shall provide on the Site, at his own expense, one or more toilets, suitably screened from public observation for the use of all persons employed on the work. They shall be provided, maintained and removed, when directed, by the Contractor, in such quantity, locations and manner as approved by the Engineer. Contents shall be removed and disposed of in a manner and at such times as shall be approved. Chemical toilets are to be preferred.

The Contractor shall not permit or condone the committance of nuisances on or about the Site. Any employee found violating these provisions shall be discharged in accordance with the provisions of ARTICLE 00754.02.

The Contractor shall comply with any and all sanitary regulations as may have been established for the locality.

If the Owner awards other contracts for collateral work on the Project, the provision of sanitary convenience shall be the responsibility of the General Contractor, and all such facilities shall be made available to other Contractors and all Subcontractors until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor, however, shall be individually responsible for the acts of his employees and Sub-contractors, and for all provisions of this Section after completion of the General Contract.

01510.02 WATER

The Contractor shall provide at all times sufficient drinking water from an approved source and by approved means, for all persons having reason to be on the Site in connection with the work.

If an ample supply is owned or controlled by the Owner, and is available at or near the Site, such supply will be made available to the Contractor, subject at all times to the requirements of the Owner established therefor, and at a cost to the Contractor as determined by the current schedule of charges filed by the Utility for all customers. Permission to use the water must be obtained in writing.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.02 WATER - Continued

If water is obtained from a public or private supply not owned or controlled by the Owner, the Contractor shall make such arrangement for service with the owners thereof as they may require.

Non-potable water for other than drinking purposes may be obtained at the Site from the ground or surface sources, at the Contractor's own expense. The water must, however, be suitable for the purpose intended and shall be approved by the Engineer. The Specifications, for instance, contain requirements for water for making concrete and mortar.

If the Owner awards other contracts for collateral work on the Project, it shall be the responsibility of the General Contractor to obtain potable water for drinking purposes, and such water shall be made available to all Contractors, until the date of the Certificate of Substantial Completion for the General Contract. Each Contractor, however, shall be individually responsible for providing potable water for his own employees and his Sub-contractors after completion of the General Contract.

If the General Contractor provides water, whether potable or non-potable, for his own purposes during construction of the work, besides drinking water, such water shall be made available to other Contractors and their Sub-contractors during the life of the General Contract. Removal of temporary facilities shall be by the General Contractor, but such installation and meters shall remain until need therefor by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide his own services after completion of the General Contract.

01510.03 TEMPORARY HEAT

If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary heat in all above ground structures, and in all below ground structures other than manholes and similar pipeline appurtenances, by means of portable electric, oil or gas-fired appliances. The General Contractor shall provide and pay for all fuel and electric power used by such appliances, and any wiring or connections required, and shall provide suitable smoke pipes or other devices to prevent the deposit of smoke or smudge on building components or equipment.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.03 TEMPORARY HEAT - Continued

After their installation by the Heating & Ventilating Contractor, the permanent heating system facilities may be used for temporary heating purposes, the operation thereof, and any temporary wiring or piping required and all power consumed shall be the obligation and responsibility of the General Contractor, who shall also be responsible to the Heating & Ventilating Contractor for the repair of any damage of work of the Heating & Ventilating Contract suffered as the result of use by the General Contractor.

After enclosure of all spaces to be heated, except for doors, windows and similar apertures, temporary enclosures for all apertures shall be provided. Temperatures in the entirety of such spaces shall be continuously maintained at not less than 50°F between October 15 and May 15, unless written permission is granted otherwise by the Engineer. The General Contractor shall securely install on each floor of each building near the center of the building, a suitable thermometer. Either the temporary or the permanent heating system shall be available for around-the-clock use during the season specified above.

The Owner will supply all heat after the date of the Certificate of Substantial Completion of the General Contract.

No portion of the Temporary Heat provisions herein contained shall be construed to waive or modify any provisions regarding maintenance of air or materials temperatures for the protection of the work contained elsewhere in the Contract Documents.

01510.04 TEMPORARY ELECTRIC LIGHT AND POWER

If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary facilities for furnishing light and power necessary for operations under the General Contract, and to make all necessary arrangements therefor, including all required conductors, outlets and connections, ordering the meter, paying all fees and inspection charges and pay for all power bills until the date of the Certificate of Substantial Completion of the General Contract.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.04 TEMPORARY ELECTRIC LIGHT AND POWER - Continued

The facilities shall be available to other Contractors and their Sub-contractors for their use in connection with their work. The installation and meters shall remain until need for same by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide his own services after completion of the General Contract.

It shall be the responsibility of the General Contractor to provide, prior to the completion of his Contract, temporary power of proper voltage and capacity necessary to test and operate all equipment installed under this Contract.

01510.05 PAYMENT FOR SERVICES DURING CONSTRUCTION

The General Contractor will receive no direct payment for providing, maintaining or removing any of the temporary facilities or services specified in this Section 01510, and compensation for same shall be included, in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.01 GENERAL

The Contractor shall control erosion and sediment caused by construction activities through the use of scheduling, phased construction and restoration, berms, dikes, dams, sediment basins, hay bale strainers, fiber mats, netting, gravel, mulches, grasses, slope drains and other erosion control devices or methods.

In the event of conflict between these specification requirements and pollution control laws, rules or regulations of other Federal, State or local agencies, the more restrictive laws, rules or regulations shall apply.

01568.02 CONTROL SCHEDULE

At the pre-construction conference, or prior to the start of the applicable construction, the Contractor shall be required to submit, for acceptance, his schedules for the accomplishment of erosion and sediment control. He shall also submit, for acceptance, his proposed method of erosion and sediment control on haul roads and borrow pits and his plan for disposal of waste materials or control details for other potential sources of pollution.

The Contractor shall schedule and conduct his operations to minimize erosion of soils and to minimize silting and muddying of streams, rivers, irrigation systems, impoundments (lakes, reservoirs, etc.) and lands adjacent to or affected by the work. Construction of drainage facilities and performance of other contract work which will contribute to the control of erosion and sedimentation shall be carried out in conjunction with earthwork operations or as soon thereafter as practicable. The area of bare soil exposed at any one time by construction operations shall be kept to a minimum.

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.03 CONTROL MEASURES

In carrying out erosion control measures, the Contractor will be guided by, but not limited to, the following controls:

A. When borrow material is obtained from other than commercially operated sources, erosion of the borrow site shall be so controlled both during and after completion of the work that erosion will be minimized and minimal sediment will enter streams or other bodies of water. Waste or disposal areas and construction roads shall be located and constructed in a manner that will minimize sediment entering streams.

B. Frequent fording of live streams will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Engineer, mechanized equipment shall not be operated in live streams.

C. When work areas or gravel pits are located in or adjacent to live streams, such areas shall be separated from the main stream by a dike or other barrier to minimize sediment entering a flowing stream. Care shall be taken during the construction and removal of such barriers to minimize the muddying of a stream.

D. All waterways shall be cleared as soon as practicable of falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work.

Ditches which are filled, or partly inoperative shall be cleaned and made operative before the Contractor stops work for any day, and shall be maintained in a condition satisfactory to the Engineer for the duration of the Contract.

E. Water from aggregate washing, dewatering or other operations containing sediment shall be treated by filtration, settling basin or other means sufficient to reduce the turbidity so as not to cause a substantial visible contrast to natural conditions.

F. Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing operations shall not be allowed to enter live streams.

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.03 CONTROL MEASURES - Continued

G. All applicable regulations of fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied within the performance of the Contract.

H. Slopes exceeding 15 percent require special treatment such as water diversion berms, straw bale sediment barriers, sodding or the use of an approved mulch tacking agent over straw or hay mulch applied over seeded areas.

The erosion and sediment control features installed by the Contractor shall be acceptably maintained by the Contractor throughout the Contract period. When it becomes necessary, the Engineer will inform the Contractor of unsatisfactory construction procedures and operations insofar as erosion control, water and air pollution are concerned. If the unsatisfactory construction procedures and operations are not corrected promptly, the Engineer may suspend the performance of any or all of other construction until the unsatisfactory condition has been corrected.

01568.04 PAYMENT

Unless a specific payment item is included in the Bid, payment for Erosion and Sediment Control shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01577

MAINTENANCE OF TRAFFIC

01577.01 GENERAL

This work shall consist of maintaining traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract.

01577.02 TRAVEL NOT OBSTRUCTED DURING EXCAVATION

The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.

Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the Owner of each traveled way before interfering therewith. A minimum of 24 hours notice shall also be given to local police and fire control agencies.

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC

Traffic shall be maintained over a reasonably smooth traveled way which shall be so marked by signs, delineators, guiding devices and other methods that a person who has no knowledge of conditions may safely and with a minimum of discomfort and inconvenience ride, drive or walk, day or night, over all or any portion of the highway and/or structure under construction where traffic is to be maintained.

A. Surface. Maintain the surface condition of the traveled way so it is consistent with the appropriate speed limit.

B. Drainage. Maintain the drainage facilities and other highway elements, old or new, including detours.

SECTION 01577

MAINTENANCE OF TRAFFIC

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC - Continued

C.	Bus Stops.	Maintain existing bus stops, if any, so bus passengers are reasonably accommodated.
D.	Pedestrian Traffic.	Provide adequate protection for pedestrian traffic during all phases of construction.
E.	Intersecting Highways.	Provide ingress and egress to and from intersecting highways, homes, businesses and commercial establishments.
F.	Dust Control and Spillage.	Control dust and keep the traveled way free from materials spilled from hauling equipment. This shall also apply to dust control and spilled material resulting from the Contractor's operations in the areas outside the Contract limits. The Contractor shall provide for the control of dust, as necessary, during the construction period. Dust shall be controlled by water spray, or as approved by Engineer. Exposed soils shall be graded, seeded and mulched as soon as practicable.
G.	Flagmen.	Provide the necessary traffic control equipment and flagmen for adequate traffic control on the traveled way.
H.	Repairs.	Make the necessary repairs to existing pavement and structure wearing surfaces as required to provide a reasonably smooth traveled way where vehicle operation is maintained.
I.	Responsibility to the Public.	Protect the public from damage to person and property which may result directly or indirectly from any construction operation.
J.	Snow and Ice Control.	Maintain the traveled way in such a condition and conduct operations in such a manner that snow and ice may be readily controlled by others as and when necessary, and in such a manner that proper drainage is provided for the melting of snow in the banks resulting from normal plowing. The Contractor shall not, however, be responsible for snow and ice control on the pavement or traveled way.

SECTION 01577

MAINTENANCE OF TRAFFIC

01577.04 PAYMENT

Unless a specific payment item is included in the Bid, payment for Maintenance of Traffic shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01580

PROJECT SIGN

01580.01 GENERAL

If directed in the Additional Instructions, the Contractor shall provide and erect a project sign or signs at the project site identifying the project and the applicable funding agencies participating in the project. The project sign(s) shall also indicate the title and description of the project, Owner, Engineer and Contractor. The sign(s) shall be erected within fourteen (14) days after the construction contract is awarded, and shall be in accordance with the specifications and detailed drawing included in the Additional Instructions.

01580.02 SIGN PANEL

Each sign panel shall be constructed of 3/4" minimum thickness marine plywood rabbetted into a 2" x 4" lumber frame. All fasteners used in the construction of each sign shall be of a rustproof nature.

01580.03 PAINTING

Each sign face shall be painted with the proper paint colors for the background, lettering and emblem as specified in the Additional Instructions. All supports, trim and the back of the sign panel, shall be painted with at least two coats of the same color paint as used for each sign face. All paint used shall be exterior grade paint, suitable for use on wood signs.

01580.04 MISCELLANEOUS

Sign(s) shall be located in a prominent position and aligned as determined by the Engineer. Adequate support for the project sign(s) shall be provided by the Contractor. The bottom edge of each sign shall be a minimum of 3 feet above grade. The project sign(s) shall be maintained in good condition by the Contractor for the duration of construction. The removal of the project sign(s) from the construction site by the Contractor shall be at the completion of construction, when ordered by the Engineer.

SECTION 01580

PROJECT SIGN

01580.05 PAYMENT

Unless a specific payment item is included in the Bid, payment for Project Sign, including fabrication, erection, maintenance and removal of each sign, shall be included in the price, or total prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01590

ENGINEER'S FIELD OFFICE TRAILER

01590.01 DESCRIPTION

Unless waived by provisions within the Additional Instructions, the Contractor shall provide a field office trailer for the exclusive use of the Engineer and his assistants. The trailer shall be separate from that of the Contractor, and shall be ready for occupancy within ten days following execution of the Contract.

01590.02 FACILITIES TO BE PROVIDED

The name of the supplier and proposed layout shall be submitted to the Engineer and approved prior to delivery of the trailer.

The trailer office shall be new or in first class condition and shall be not less than 12 feet by 56 feet, excluding the tongue.

Washroom with hot water supply and toilet facilities within the trailer shall be supplied with potable water and connected to a sanitary sewage disposal system. The trailer shall be fully air conditioned. A gas or oil heat system shall be provided within the field office. A minimum of one month's fuel storage shall be provided, together with the necessary appurtenances to control heat and check fuel storage. Heating and air conditioning equipment shall be capable of maintaining an air temperature of 70°F.

An individual, unlisted, direct line telephone service shall be provided for the exclusive use of the Engineer. Telephone service, local and toll charge calls, shall be paid by the Contractor.

It shall be the responsibility of the Contractor to maintain the field office trailer and all facilities furnished with it. Maintenance shall include removal of snow, janitorial services, and adequate protection of pipes.

It shall be the Contractor's responsibility to furnish adequate heat, electric power and light to the field office trailer at his expense. Adequate lighting shall consist of a minimum, of four, two lamp, 4' fluorescent lights.

SECTION 01590

ENGINEER'S FIELD OFFICE TRAILER

01590.02 FACILITIES TO BE PROVIDED - Continued

The following office furniture and equipment shall be furnished with the trailer:

Two 8' flat top double desks with 2 sets of two drawer metal file cabinets in each desk.
1 built-in drafting table 36" x 72" with double storage cabinets underneath.
4 swivel chairs.
2 drafting stools.
1 four drawer, fireproof legal size filing cabinet with lock.
2 plan racks with space for 5 plan hangers each.
4 wall coat hooks.
2 large metal waste baskets.
1 refrigerator, minimum 2 cubic feet.

01590.03 LOCATION

The trailer shall be erected on an approved location convenient for inspection of the work, as directed by the Engineer. The field office trailer shall be moved once if directed by the Engineer.

01590.04 PAYMENT

Payment for the Engineer's Field Office Trailer, and all services to be provided with it, not included under other unit or lump sum price items shall be made at the price stated in the Bid.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.01 MATERIALS AND WORKMANSHIP - GENERAL REQUIREMENTS

All workmanship, materials, equipment and appliances shall comply in all respects with the applicable Specifications, unless specific exception is made.

All materials furnished or incorporated in the work shall be new, unused and of the quality and characteristics specified. Used materials may be furnished or incorporated in the work only under special circumstances and only with the Engineer's prior written approval. If the quality or characteristics of any material are not specifically set forth in the Contract Documents, the material used shall be that customarily used in first class work of a similar nature and character.

All workmanship in manufacture and construction not specifically covered in the Specifications shall be of the first class order and equal to that customarily used in first class work of a similar nature and character. The Contractor shall exercise special care during construction to make all structures watertight.

See also ARTICLE 00754.02 and 00753.08.

01640.02 SAMPLES, TESTS AND INSPECTIONS

All materials, equipment and workmanship shall be subject to inspection, examination and tests by the Engineer, or persons or corporations designated by him, at any and all times during manufacture or construction and at any place or places where manufacture or construction are performed.

If required by the Specifications, or if requested by the Engineer, the Contractor shall submit to the Engineer for examination, testing and approval, typical samples of materials and appliances. Samples shall be submitted sufficiently in advance of the time they are proposed to be used in the work so that neither rejections and re-submittals nor the time reasonably required for testing shall cause delay. Each unit, lot or batch of materials submitted shall be properly tagged or labeled and identified with the portion of the work for which they are intended. Transmittals shall be covered by a letter of transmittal in the manner specified for the submittal of drawings ARTICLE 01340.02.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.02 SAMPLES, TESTS AND INSPECTIONS - Continued

All laboratory tests called for in the Specifications or requested by the Engineer shall be performed at the Contractor's expense, and the Contractor shall furnish and deliver to the laboratory all requisite samples. Documentary evidence that materials pass the required inspection and tests shall be furnished to the Engineer by the Contractor prior to the use of the materials in the work. Bureaus, laboratories and agencies used for the inspection and testing of materials, equipment and appliances shall be selected by the Contractor, who shall submit their names to the Engineer for approval prior to the performance by them of any tests.

01640.03 REMOVAL OF FINISHED WORK FOR INSPECTION

If, at any time prior to the date of the Certificate of Substantial Completion, the Engineer considers it necessary or advisable to examine any portion of the work already completed by removing or tearing out materials or coverings, or by excavating or otherwise exposing the portion of the work to be examined, the Contractor, upon receipt of a written request from the Engineer, shall promptly perform such work as is necessary so to do.

If the work in question is found to be defective, or not in conformance with the Specifications, due to the fault of or omission of the Contractor, or if any work shall be covered over without the consent or approval of the Engineer, whether or not defective, the Contractor shall bear all the expense of such removal, tearing out, excavating or exposing and of satisfactory reconstruction.

If, however, such consent or approval shall have been given, and the work exposed is found to be satisfactory and in conformance with the Specifications, the Contractor shall be compensated for the expenses of such removal, examination and reconstruction as provided in ARTICLE 00757.03.

01640.04 FIELD TESTS

The Contractor, at his own expense, shall conduct all tests specified or required by law or permit of installed equipment and materials, when ordered by and under the supervision of the Engineer. The Engineer at his own discretion may make additional field tests of materials and equipment on the Site. The Contractor shall furnish, at his own expense, the materials required for all field tests and reasonable labor and plant to assist the Engineer in conducting the tests.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.05 MANUFACTURERS AND SUPPLIERS

Within 30 days following the execution of the Contract, the Contractor shall submit to the Engineer the name or names of the manufacturers or vendors from whom he proposes to purchase the equipment and materials specified for the work. Following approval of the manufacturer or supplier by the Engineer, the Contractor shall submit complete and detailed drawings, bulletins, specifications and other data in connection with the equipment and materials and arrangement thereof he proposes. See also ARTICLES 01340.01 through 01340.04 and 01340.06.

No award shall be made by the Contractor, and no work in connection with the equipment or materials shall proceed prior to review of the submitted data. All items of equipment of like type shall be the product of one manufacturer, unless specified otherwise or specifically permitted by the Engineer.

01640.06 EXPERIENCE AND EQUIVALENT CLAUSES

Unless otherwise specified, shown or permitted, all equipment and materials shall be the product of manufacturers who have built equipment or produced materials of a like or similar type, character, size and capacity for at least three years prior to submittal for approval and who, if requested by the Engineer, shall submit evidence thereof.

Wherever reference is made in the Contract Documents to any specific material, equipment, appliance or model, it is understood that any product considered to be equivalent by the Engineer may be used, and such reference is for the purpose of illustration and establishment of a standard. This provision is understood to hold true in all instances, use or omission of the term "or equal" notwithstanding.

01640.07 INSTALLATION OF EQUIPMENT

All equipment shall be installed in a neat and workmanlike manner as shown on the Plans or as directed, and shall be accurately leveled, aligned and adjusted for satisfactory operation and so installed that all necessary connections can be readily made.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.07 INSTALLATION OF EQUIPMENT - Continued

The Contractor shall furnish, install and protect all necessary bearing plates, guides, rails, anchor and attachment bolts and fastenings and all other appliances and appurtenances required for the installation of all components of the equipment specified. Adequate templates and installation drawings and instructions shall be provided. Anchor bolts shall be of the size, type and material recommended by the manufacturer or directed by the Engineer.

The Contractor shall furnish all oils and greases for initial operation, and shall provide the Engineer with a list of the lubricants used on each item of equipment. Insofar as possible, all lubricants shall be obtained from one manufacturer, approved by the Engineer and by the equipment manufacturers. Each piece of equipment shall bear a substantial metal or plastic nameplate, securely fastened in a convenient place inscribed with the name of the manufacturer, the year of manufacture, model number, serial number and basic rating data.

01640.08 TOOLS, ACCESSORIES AND MANUALS

Unless otherwise specified, the Contractor shall furnish for each type, model or size of equipment a complete set of any special tools and accessories, suitably identified, which may be required to adjust, operate, repair or maintain the equipment.

The Contractor shall also furnish and deliver to the Engineer five complete sets of bulletins, diagrams, parts lists, instructions, manuals and other data required for operation, maintenance and repair of the equipment.

01640.09 CARE AND PROTECTION OF THE WORK

During the life of the Contract, the Contractor shall be solely responsible for the care and protection of the work and for all materials, appliances, supplies and equipment to be used in the work, both during storage and after installation or incorporation in the work. He shall protect all materials to be used in the work, all work in progress, and all completed work from damage by flood, fire, freezing or other undesirable results of weather, accident, theft and vandalism. Any damage or loss shall be made good by the Contractor at his own expense before a Certificate of Substantial Completion will be issued.

See also ARTICLES 00759.07, 00759.08 and 00757.04.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.10 ABSENCE OF ENGINEER

The Contractor shall perform no backfilling or covering operations of any underground portions of the work until after the Engineer or his inspector shall have inspected or tested and approved the work. If such work is covered in absence of an inspector, it shall be exposed by the Contractor for inspection as specified in ARTICLE 01640.03.

END OF SECTION

SPECIFICATIONS

SECTION 02110

CLEARING

PART 1 - GENERAL:

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall prepare and clear from the site of the work, by removal or destruction, as may be required, the following:

- Debris
- Brush
- Logs
- Trees (as indicated)
- Stumps
- Snow and Ice
- Refuse and Rubbish
- Buildings (as indicated)

1.1.2 The work also includes:

- Removal and replacement, as required, or supporting of all telephone and power posts, poles and lines within the work area.

- Any work to be performed specifically to be paid for under the Clearing Item as stated in the Information For Bidders and/or the Additional Instructions.

PART 2 - PRODUCTS

2.1 The Contractor shall furnish and install materials and equipment required.

SECTION 02110

CLEARING

PART 3 - EXECUTION

3.1 The Contractor shall furnish all labor, material and equipment necessary to properly construct all items under this Section in an acceptable manner.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - CLEARING:

4.1.1 Measurement for Clearing shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - CLEARING:

4.2.1 For Clearing, not included in other unit or lump sum price items, payment for Clearing will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02220

EXCAVATION

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Excavation, as shown on the Plans, specified, and/or directed.

1.1.2 Excavation, in open cut, includes the loosening, removing, transporting, storage and disposal of all materials necessary to be removed for the construction and completion of all work under the Contract. Excavations shall be made to the widths and depths shown on the Plans, specified or directed.

1.1.3 Where rock is encountered, the excavations shall be done in accordance with the applicable provisions hereof.

1.2 DEFINITIONS:

1.2.1 The term "excavation" and the term "trenching" where used, shall be deemed and understood to cover the following described work, and the price bid for any and all items including "excavation", or "trenching" shall be deemed to include and cover all of the several following detailed operations:

- The loosening, removing, transporting, storage and rehandling of all materials;
- All sheeting, sheetpiling, bracing and shoring, and the placing, driving, cutting off and removing of the same;
- All diking, ditching, fluming, cofferdamming, pumping, well-pointing, bailing, dewatering and draining or otherwise disposing of water (surface and subsurface);
- The refilling of trenches, excavations and pits, and the furnishing and placing of material over trenches, excavations and pits to the original surface of the ground or to other grades as may be shown or directed;

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- The compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required;

- The removing and disposing of all surplus materials from all excavations in the manner specified;

- The maintenance, accommodation and protection of travel;

- 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 and its appurtenances, in the vicinity of the work, whether over or underground or which appear within the excavations, and the restoration of the same in case of settlement or other injury;

- All temporary bridging and fencing and the removing of same, the temporary paving of highways, roads, driveways, and the permanent repairing or replacing and relaying of pavements, curbs, gutters and sidewalks removed, disturbed, or injured, the removing and clearing away of all construction rubbish, refuse, unused materials, plant and tools from the site;

- The dressing, topsoiling, sodding and/or seeding of all unpaved areas disturbed by the Contractor within and outside the limits of the Contract as may be necessary to leave the surface in as good condition as it was previous to the commencement of the work.

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

1.2.3 "Backfill" includes selected materials for the backfilling or refilling of all excavations and trenches up to the original surface of the ground or to other grades as may be shown or directed.

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1.2.4 "Spoil" includes surplus excavated materials not required or not suitable for backfills or embankments.

1.2.5 "Embankments" include fills constructed of selected materials above the original surface of the ground.

1.2.6 "Rock" includes ledge or bedrock requiring blasting, barring or wedging from their original beds and individual boulders or masonry larger than one-half cubic yard in volume.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS: Where used for general site fill, soil material shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen, deleterious, or objectionable materials.

2.2 CONTROLLED FILL: Provide where indicted and also within building lines and under concrete slabs and aprons. Fill to be granular fill as specified in Section 02222.

PART 3 - EXECUTION

3.1 ROCK EXCAVATION:

3.1.1 Rock excavation shall include the loosening, removing, transporting, storing and disposal of all materials requiring blasting, barring, or wedging for removal from their original beds. All pieces of ledge or bed rock and boulders or masonry larger than one-half (1/2) cubic yard in volume are included under rock excavation. Rock excavations shall be made to the widths and depths shown on the Plans or as directed by the Engineer. For concrete structures, rock shall be excavated only to the bottom of the structure unless otherwise shown or noted on drawings. All excavated rock which cannot be handled and compacted as earth shall not be mixed with other backfill or embankment materials except as specified herein or as directed.

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3.1.2 Blasting:

3.1.2.1 Blasting shall be done with extreme care. All blasts in open cut shall be properly covered and protected with heavy timber chained together or approved blasting mats.

3.1.2.2 Charges shall be of such size that the excavation will not be unduly large and shall be so arranged and timed that adjacent rock upon or against which structures are to be built will not be shattered. Blasting shall be conducted in accordance with all applicable rules and regulations including, but not limited to, 12 NYCRR 23, 12 NYCRR 39, 12 NYCRR 53 and NYS Labor Law § 28-a. Where blasting occurs in highways under jurisdiction of NYSDOT or under jurisdiction of agencies adhering to the NYSDOT Standard Specification, the Provisions of NYSDOT Standard Specification Sections 107-05 and 203-3.05 shall also be adhered to. Where existing pipelines, conduits or structures have been exposed during excavation, such pipelines, conduits or structures shall be adequately protected from damage before proceeding with the blasting.

3.1.2.3 Any injury or damage to the work or to the existing pipelines, conduits, or structures shall be repaired or rebuilt by the Contractor at his own expense. Whenever the Engineer determines that further blasting may damage adjacent rock, pipelines or structures, blasting shall be discontinued and the rock removed by drilling, barring, wedging or other methods.

3.1.2.4 Danger signals shall be given before firing each blast. Blasting shall be done only by a person experienced in the handling and detonation of explosives, and shall be in conformity with all laws and regulations, imposed by public authorities.

3.1.2.5 Blasting shall not be carried on within three hundred (300) feet of any radio transmitter or radio frequency emission equipment such as high frequency welders, and blasting caps shall be kept in tightly-closed metal cans when in the vicinity of such equipment.

3.1.3 Explosives:

3.1.3.1 At no time shall an excessive amount of explosives be kept at the Site of the work. Such explosives shall be stored, handled and used in conformity with all applicable laws and regulations.

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3.1.3.2 Accurate daily records shall be kept showing the amounts of explosives on hand, both at the Site and at any storage magazine, the quantities received and issued, and the purpose for which issued. Copies of all records shall be furnished to the Engineer.

3.1.3.3 The Contractor shall be responsible for any damage or injury to any persons, property or structures as a result of his blasting operations.

3.2 EXCAVATION FOR STRUCTURES:

3.2.1 Excavation shall be of sufficient size, and only of sufficient size, to give suitable room for the proper construction of structures and appurtenances, including allowances for sheeting, dewatering, and other similar work necessary for completion of the Contract.

3.2.2 Excavations for structures shall be made only to the lines and grades shown on the Plans, specified or directed.

3.2.3 In no case will under cutting excavation faces for extended footings be permitted. Not less than twelve (12) inches clearance shall be provided between excavation faces and brick or block masonry exterior wall surfaces which are to be plastered.

3.2.4 Subgrade for all concrete structures shall be undisturbed original earth, thoroughly compacted where noted on drawings. Where excavation below subgrade is ordered, it shall be a thoroughly compacted and consolidated lining, special lining or special backfill as directed and as specified in Section 02224. It shall be sufficiently stable to remain firm and intact during the surfacing of subgrade, laying reinforcing steel and placing concrete thereon.

3.2.5 Where necessary, a layer of Class "D" concrete of sufficient strength and thickness to withstand subsequent construction operations shall be installed below the specified subgrade elevation and the structural concrete deposited thereon. Subject to the approval of the Engineer, lining or special lining may be used for subsoil reinforcement if satisfactory results can be obtained thereby. Such material shall be applied in thin layers, each layer being entirely embedded in the subsoil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner shall not be above the specified subgrade.

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3.3 BACKFILLING AROUND STRUCTURES:

3.3.1 Backfilling around structures shall not be commenced until all lumber, refuse, rubbish and other similar materials are removed from the excavated area. Backfill around structures may be placed by machine, provided the work shall be done carefully to prevent damage to the structure. In no case shall backfill materials be allowed to fall directly on a structure, until at least twelve (12) inches of hand-placed material has been placed thereon and compacted.

3.3.2 Backfill around structures shall be deposited in horizontal layers not more than eight (8) inches in thickness and shall be thoroughly compacted. Compaction shall be by a vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the AASHTO Standard Density Test or the Modified Proctor Compaction Test (ASTM D1557).

3.3.3 Backfilling shall be done immediately after work has been inspected and approved. No frozen material shall be used, nor shall backfilling be placed on or against frozen earth, debris or other deleterious matter not conducive to proper compaction. Backfill within building lines, under concrete slabs and aprons shall be granular fill as specified in Section 02222.

3.3.4 Backfilling against free standing walls shall be made against both sides at the same time. If backfill is required on one side only, the wall shall be adequately braced on the opposite side until properly cured to full strength.

3.3.5 Contractor shall take every necessary precaution during compaction of fill adjacent to foundations, walls, etc., that such items are not displaced from their proper location or damaged by compacting equipment. In the event damage or displacement occurs during or resulting from compaction of fill as specified above, the Contractor shall be responsible for correcting the same, to approval of the Engineer and at no expense to the Owner.

3.4 TRENCHING:

3.4.1 The alignment, depth and pipe subgrades of all pipe trenches shall be determined by overhead grade lines parallel to the pipe invert, or other grade control devices, installed and maintained by the Contractor.

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3.4.2 Under ordinary conditions, excavation shall be by open cut from the ground surface. Where the depth of trench and soil conditions permit, tunneling may be required beneath crosswalks, curbs, gutters, pavements, concrete driveways, railroad tracks and other surface structures. No additional compensation will be allowed for such tunneling over the price bid for open cut excavation of equivalent depths below the ground surface unless such tunnel excavation is specifically provided for in unit or lump sum price items.

3.4.3 Trenches shall not be opened for more than three hundred (300) feet in advance of the completed pipe or sewer nor left unfilled for more than one hundred (100) feet in the rear thereof without consent of the Engineer. Excavation of the trench shall be fully completed at least twenty (20) feet in advance of the pipe laying or construction of the invert unless specifically permitted otherwise.

3.4.4 Width and Depth of Trenches:

3.4.4.1 The trenches in which pipelines are to be constructed, shall be excavated in all cases in such manner and to such depths and widths as will give suitable room for the pipelines which the trenches are to contain, for sheeting, pumping, dewatering, well-pointing and draining of water, and for removing the material not suitable for pipe subgrade.

3.4.4.2 Trenches for pipes shall be not less than six (6) inches wider than the hubs of the pipe in the clear on each side, measured over the hubs of the pipe. Width of trenches, measured at a point twelve (12) inches above the top of the pipe shall not exceed twelve (12) inches on each side. Width of trenches greater than specified above will be permitted in the vicinity of joints for welded steel pipe where access for the welding of joints is required.

3.4.4.3 Where, as required by loading conditions, the width of the lower portion of the trench, measured at twelve (12) inches above top of pipe, exceeds the maximum for the size of pipe, additional concrete cradle or concrete encasement shall be installed by the Contractor at his own expense.

3.4.4.4 Ledge rock, shale, boulders and large stones shall be removed to provide minimum bottom and side clearances, for the size of pipe being laid in each case, as follows:

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Size of Pipe (Inches)	Minimum Clearance Below Pipe (Inches)	Minimum Clearance At Sides (Inches)
12 or smaller	4	6
15, 18, and 21	5	6
24 to 36	7	6
Over 36	9	7

Where concrete embedment or cradle is to be placed, it shall be placed directly on the rock, and the bottom clearance shall be adjusted as directed by the Engineer.

3.5 EARTH SUBGRADE PREPARATION FOR PIPES:

3.5.1 Unless otherwise permitted by the Engineer, the trench shall have a flat bottom conforming to the grade to which the pipe is to be laid.

3.5.2 Except where concrete cradle or encasement is required below the specified pipe subgrade, mechanical excavation of trenches for pipe shall not extend lower than one (1) inch above the finished pipe subgrade elevation at any point. The remainder of the trench excavation shall be made with hand tools.

3.5.3 Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. The trench bottom shall be accurately graded by means of hand tools in such a manner that a uniform and continuous bearing and support on solid and undisturbed ground is provided for each pipe for its entire length or between bell holes.

3.5.4 All trenches shall be so graded that the spigot end of the pipe will be accurately centered in the adjacent pipe bell when laid, without raising the pipe off the trench bottom. Regrading of a trench bottom which is too high will be permitted. Correction of a subgrade that is too low shall be done only by placing and compacting lining over the entire width of the trench and regrading.

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3.5.5 The trench bottom shall be accurately graded and ready for the installation of the pipe thereon prior to excavating bell holes if and where required.

3.5.6 Each bell hole shall be excavated immediately prior to laying the pipe therefor. Bell holes shall have a length, measured at the elevation of the pipe subgrade, not in excess of nine (9) inches and shall be of sufficient size so that no part of the pipe bell will be in contact with the trench bottom or granular fill thereon.

3.6 EXCAVATION FOR CONCRETE CRADLE OR ENCASEMENT:

3.6.1 Where concrete cradle or encasement is required, the trench subgrade elevation will be determined by the required concrete section in each case. Unless otherwise authorized by the Engineer, concrete cradle or encasement shall extend across the full width of the trench as excavated, and the concrete therein shall be poured directly against vertical trench banks. In the case of concrete cradle or encasement of pipe in a sheeted trench, the concrete may be poured directly against sheeting which is to be left in place in the trench, as specified.

3.7 PIPE EMBEDMENT:

3.7.1 All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in suitable pipe embedment material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe embedment shall be placed so as to insure adequate lateral and vertical stability of the installed pipe during pipe jointing and embedment operations. A sufficient amount of the specified pipe embedment material to hold the pipe in rigid alignment shall be uniformly deposited and thoroughly compacted on each side, and back of the bell, of each pipe laid.

3.7.2 Pipe embedment materials placed at any point below an elevation six (6) inches above the top of pipe or sewer, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactions shall be done simultaneously and uniformly on both sides of the pipe. Compaction shall be by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test. All such materials shall be placed in the trench with hand tools in such a manner that they will be scattered alongside the pipe and not dropped into the trench in compact masses.

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3.7.3 Concrete cradle and encasement of the class specified shall be installed where and as shown on the Plans or ordered by the Engineer. Before concrete cradle or encasement is placed, the pipe shall be braced in all directions to prevent movement or flotation.

3.8 BACKFILL ABOVE PIPE EMBEDMENT:

3.8.1 The portion of pipe trenches between the top of the pipe embedment (see paragraph 3.7) and the upper limit of backfill shall be refilled with suitable materials.

3.8.2 Where trenches are within the ditch-to-ditch or curb-to-curb limits of any street, road, driveway or other recognized traveled vehicular way, or within other limits that may be specifically shown or specified for this purpose, the backfill materials shall be deposited in the trench in horizontal layers not more than eight (8) inches in thickness, and each layer shall be compacted by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557).

3.8.3 Where trenches are outside the ditch-to-ditch or curb-to-curb limits of any street, road, driveway or other recognized traveled vehicular way, and outside of other limits that may be specifically shown or specified as areas in which mechanical compaction in layers is to be performed, the backfill material may be deposited in the trench by mechanical means for the full depth of the trench between the top of pipe embedment and ground surface with no special compaction. In such case the backfill materials shall be mounded over the trench to an elevation slightly above desired finished grade to allow for settlement and compaction by natural means, and the Contractor shall return to the area during his clean-up operations to remove any excess materials remaining above finished grade or add sufficient additional backfill to bring the completed work to grade. If a hazard should be created by such excess materials, or by settlement below finished grade, prior to the performance of clean-up operations, the Contractor shall remove such excess, or add additional backfill, at the time the hazard is created or when directed.

3.8.4 Any additional material added during clean-up operations, or at any other time to prevent or remove a hazard, shall be placed in horizontal layers not more than eight (8) inches in thickness, with each layer adequately compacted by mechanical means, by the Contractor at his own expense.

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3.9 REMOVAL OF WATER:

3.9.1 The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures, or other work.

3.9.2 Removal of water includes the construction and removal of cofferdams, sheeting and bracing, the furnishing of materials, equipment and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways and the furnishing and operation of pumps, wellpoints, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

3.9.3 Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.

3.9.4 Unless otherwise specified, all excavations which extend down to below the ground water elevation at the sites of structures shall be dewatered by lowering and maintaining the ground water beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structures or pipe thereon.

3.9.5 Where an upward pressure or flow of water in combination with a fine-grained subsurface material causes a quick condition, the Contractor shall install wellpoints to stabilize the subgrade. Where wellpoints are used, the ground water table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the ground water shall be maintained not less than twenty-four (24) inches below the subgrade. Unless otherwise permitted by the Engineer, the ground water shall be maintained not less than twenty-four (24) inches below the subgrade until completion of the backfilling to an elevation at least twelve (12) inches above natural ground water level. Wellpoint headers, points, and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

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3.9.6 In areas where ground water enters the excavation but does not cause a quick condition, the ground water may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with construction operations.

3.9.7 The ground water control requirements specified for wellpointing operations apply to other dewatering methods.

3.9.8 Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

3.9.9 Water pumped or drained from excavations, or any sewers, drains, or water courses encountered in the work, shall be disposed of in a suitable and environmental manner without injury to adjacent property, the work under construction, or to pavements, roads, and drives. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.

3.9.10 Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

3.10 SHEETING & BRACING:

3.10.1 The Contractor shall 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, injure the pipe, sewers, masonry, or other work; diminish the width necessary; otherwise damage or delay the work; or endanger existing structures, pipes or pavements; cause the excavation limits to exceed the right-of-way limits; or to occasion a hazard to persons engaged on the project or to the general public.

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

3.10.3 The Contractor shall be solely responsible for the safety and adequacy of all sheeting and bracing. He shall make good any damage resulting from failure of supports with no additional cost to Owner.

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3.10.4 Removal of Sheeting & Bracing:

3.10.4.1 In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe or sewer shall be withdrawn, unless directed, before more than six (6) inches of earth is placed above the top of the pipe or sewer and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose, or otherwise as may be approved.

3.10.4.2 The Engineer may order the Contractor to delay the removal of sheeting and bracing, if in his judgement the installed work has not attained the necessary strength to permit placing of backfill.

3.10.5 Sheeting & Bracing Left In Place:

3.10.5.1 If, to serve any purpose of his own, the Contractor files a written request for permission to leave sheeting or bracing in the trench or excavation, the Engineer may grant such permission, in writing, on condition that the cost of such sheeting and bracing be assumed and paid by the Contractor.

3.10.5.2 The Contractor shall leave in place all sheeting, shoring and bracing which are shown on the Drawings or specified to be left in place or which the Engineer may order, in writing, to be left in place. All shoring, sheeting, and bracing shown or ordered to be left in place will be paid for under the appropriate item of the Contract. No payment allowance will be made for wasted ends or for portions above the proposed cut-off level which are driven down instead of cut-off.

3.10.5.3 In case sheeting is left in place, it shall be cut off or driven down as directed so that no portion of the same shall remain within twelve (12) inches of the finished street or ground surface.

3.10.5.4 All timber sheeting and bracing to be left in place and paid for under an item of the Contract shall be new, sound and straight, free from cracks, shakes and large or loose knots, and shall otherwise conform with National Design Specifications for Stress Grade Lumber for lumber of a minimum fiber stress of 1,200 pounds per square inch.

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3.10.5.5 Steel sheeting and bracing left in place and paid for under an item of the Contract shall be new and shall conform with ASTM Des: A7, with a minimum thickness of 3/8-inch.

3.10.5.6 Sheeting and bracing left in place and paid for under an item of the Contract shall be driven as the excavation progresses and in such manner as to maintain pressure against the original ground at all times. The sheeting shall be driven vertical with the edges tight together, and all bracing shall be of such design and strength as to maintain the sheeting in its proper position.

3.11 STORAGE OF MATERIAL:

3.11.1 Any sod cut during excavation shall be removed and stored during construction so as to preserve the grass growth, and shall be replaced in position upon completion of the work.

3.11.2 Topsoil suitable for final grading shall be removed and stored on the Site separately from other excavated material, and shall be replaced in position upon completion of the work.

3.11.3 All excavation materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travel or to adjoining property holders. All stockpiled fill material shall be stored only in those fill areas as approved by the Engineer and the New York State Department of Environmental Conservation.

3.11.4 All excavated materials shall be kept clear of all sidewalks, driveway entrances, street crossings, and any other points that may inconvenience the public. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, police and fire department driveways, and other points of public convenience.

3.11.5 Where traffic is to be maintained, at least one-half (1/2) of the street width must be kept open at all times. Approved types of bridging across trenches shall be constructed and maintained where necessary. Where conditions do not permit storage of materials, the material excavated from the first one hundred (100) feet of any opening, or from such additional length as may be required, shall be removed from the street by the Contractor, at his own cost and expense, as soon as excavated. The material subsequently excavated shall be used to refill the trench where the facility has been built, provided it be of suitable character.

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3.11.6 If more material is excavated from any trench, excavation, or pit than can be refilled over the completed work or stored on the street, leaving space for traffic as herein provided, or within the limits of the right-of-way, the excess material shall be spoiled at locations selected and obtained by the Contractor. A copy of the signed agreement between the property owner and Contractor granting permission to deposit spoil shall be given to the Engineer prior to placement. When the facility is complete, the Contractor shall, at his own cost and expense, bring back adequate amounts of satisfactory excavated materials as may be required to properly refill the trenches, excavations, or pits. If directed by the Engineer, the Contractor shall refill such trenches, excavations, or pits with special backfill or other suitable materials, and excess excavated materials shall be disposed of as spoil.

3.12 DRAINAGE:

3.12.1 All material deposited in roadway ditches or other water courses crossed by the line of trench or near a structure shall be removed immediately after backfilling is completed and the section grades and contours of such ditches or water course restored to their original condition, in order that surface drainage will be obstructed no longer than necessary.

3.12.2 Backfilling of trenches for pipes installed beneath or across roadways, driveways, walks and other traffic ways adjacent to drainage ditches and water courses shall not be done prior to the completion of backfilling to the original ground surface of the trench on the upstream side of such traffic-way in order to prevent the impounding of water at any point after the pipe has been laid, and all necessary bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained. All backfilling shall be done in such a manner that water will not accumulate in unfilled or partially filled trenches.

3.12.3 Where trenches are constructed in or across roadway ditches or other water courses, the backfill shall be protected from surface erosion by adequate and environmentally sound means. Where trenches cross such waterways; the backfill surface exposed on the bottom and slopes thereof shall be protected by means of stone or concrete riprap, at no additional cost to the Owner.

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3.13 ADDITIONAL EXCAVATION:

3.13.1 In case the materials encountered at the locations and grades shown on the Plans or specified are not suitable, or in case it is found desirable or necessary to excavate additional materials to secure good support for the structure or pipeline, the excavation shall be carried to such additional limits as the Engineer may direct. The Contractor shall refill such additional excavated space with either lining, special lining, Class "D" or "E" concrete or other material, as the Engineer may direct. Additional excavation, lining, special backfill, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

3.14 UNAUTHORIZED EXCAVATION:

3.14.1 Whenever excavations are carried beyond or below the lines and grades shown on the Plans, or as given or directed by the Engineer, all such excavated space shall be refilled with lining, special backfill, concrete or other materials as the Engineer may direct. Beneath structures, all such excavated space shall be refilled with Class "D" concrete. All refilling of unauthorized excavations shall be at the Contractor's own expense.

3.14.2 All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever shall be removed and disposed of at the Contractor's own expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.15 DISPOSAL OF MATERIALS:

3.15.1 All spoil shall be transported and placed on the Site of the work at the locations and to the elevations and grades shown on the Plans, or if spoil areas are not shown, all spoil materials shall be disposed off the Site at appropriate locations selected and obtained by the Contractor and approved by the Engineer and the New York State Department of Environmental Conservation. No environmental sensitive areas shall be used for spoil areas. A copy of the signed agreement between the property owner and the Contractor granting permission to deposit spoil shall be given to the Engineer prior to placement.

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3.15.2 The surface of all spoil placed on the Site shall be graded and dressed, and no unsightly mounds or heaps shall be left on completion of the work.

3.16 UNFINISHED WORK:

3.16.1 When for any reason the work is left unfinished, all trenches and excavations shall be filled and all roadways and sidewalks left unobstructed with their surfaces in a safe and satisfactory condition.

3.17 HAULING MATERIAL ON STREETS:

3.17.1 When it is necessary to haul material over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same at least daily or as often as directed and keep the crosswalks, streets and pavements clean and free from dirt, mud, stone and other hauled material.

3.18 TEST PITS:

3.18.1 For the purpose of locating underground obstructions, the Contractor shall make such excavations in advance of the work as directed. Payment for the excavations of test pits will be made under an appropriate item of the Contract.

3.19 RESTORATION OF SURFACES:

3.19.1 The various types of street surface, gutters and culverts, disturbed, damaged or destroyed during the performance of the work under the Contractor, shall be restored and maintained as specified herein and as shown and directed.

3.19.2 Restoration of Property:

3.19.2.1 The Contractor shall restore all pavement, driveways, sidewalks, gutters, culverts, trees, shrubs, lawns, landscaped areas and any other public or private property damaged as a result of work under this Contract. The quality of materials and workmanship used in the restoration shall produce a condition equal to or better than the condition before the work began. If conditions are inferior before restoration, they shall be superior after restoration.

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3.19.2.2 Payment for restoration of property shall be included in the applicable excavation items unless specifically provided for in other unit or lump sum price items.

3.19.3 Time of Replacement:

3.19.3.1 In general, permanent restoration of street surfaces will not be permitted until one month's time has elapsed after trenches have been completely backfilled as specified. A greater length of time, but not more than nine (9) months, may be allowed to elapse before permanent restoration of street surfaces is undertaken, if, in the opinion of the Engineer such additional time is required for complete shrinkage and settlement of the backfill.

3.19.3.2 If the Contractor is permitted to replace pavement at any time by the Engineer, it shall not relieve the Contractor of responsibility to make repairs to damage caused by settlement for a period of one year or as elsewhere specified.

3.19.4 Schedule of Operations:

3.19.4.1 A schedule of replacement operations shall be worked out by the Contractor, and approval of the Engineer shall be obtained. The program shall be adhered to unless otherwise approved by the Engineer.

3.19.5 Temporary Resurfacing & Repaving:

3.19.5.1 Immediately upon completion of refilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of the streets, driveways, alleys and other traveled places where the original surface has been disturbed by his operations. The temporary repavement shall be of a character satisfactory in all respects and safe for public travel.

3.19.5.2 The temporary resurfacing shall consist of a minimum of six inches (6") of well-graded broken stone with such additional depth as is necessary to withstand the traffic to which it is subjected. Where concrete pavements are removed, the broken stone shall be surfaced with "cold patch". The surface of the temporary repaving shall conform to the street grades. Mounding up of the material over the trench and covering the same with loose broken stone will not be considered as compliance with the above requirements.

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3.19.5.3 For dust prevention, the Contractor shall treat all surfaces, not covered with cold patch, as approved by the Engineer. Use of calcium chloride and/or petroleum products for dust control is prohibited.

3.19.5.4 The temporary repavement shall be placed and maintained by the Contractor in a safe and satisfactory condition until such time as the permanent repaving is completed. The Contractor shall immediately remove and restore to a satisfactory condition any and all such resurfacing and repavements as shall become unsatisfactory and not in accordance with the terms and intent of the Specifications.

3.19.6 Preparation for Permanent Replacement:

3.19.6.1 After due notice and within the time specified, the temporary broken stone or gravel pavement shall be prepared as the base to receive the permanent pavement. It shall be brought to the required grade and cross section and thoroughly compacted before placing the permanent pavement. Service boxes, manhole frames and covers, and similar structures, within the area of pavement to be replaced and not conforming to the new work, shall be set to established grade by the Contractor at his expense, unless a specific item is included in the Contract.

3.19.7 Permanent Repaving:

3.19.7.1 The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or on account of the work of the Contract shall be repaired and replaced by the Contractor, by a new and similar pavement at such time as directed. The top surface shall conform with the grade of existing adjacent pavement, and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.

3.19.7.2 Concrete pavement and concrete base beneath asphalt, brick and other pavement surfacings supported by a concrete base, shall be replaced with Class "B" concrete.

3.19.7.3 Undamaged brick removed from brick pavement laid with sand or a bituminous filler may be reused in the pavement replacement. All broken and otherwise damaged brick, even though such brick were broken prior to removal, and all brick from grout filled pavement, shall be replaced with new brick of equal or better quality by and at the expense of the Contractor.

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3.19.7.4 Where specified or approved by the Engineer, in writing, brick or block surfacing may be replaced by placing Class "B" concrete even with the adjacent wearing surface.

3.19.7.5 All pavement other than brick and concrete, and all gravel, crushed stone, and other types of roadway surfacings shall be replaced with new materials except where, in the opinion of the Engineer, materials salvaged from stone or gravel roadways have been removed, handled, and stored in such a manner that their original quality has been maintained, in which case such salvaged materials may be used to the extent available in the lower portion of the roadway surfacing after proper screening to remove dust and other excess fine material.

3.19.7.6 All such roadway surfacings shall be replaced to their original thickness at all points and such replacement shall in all cases conform in type, kind, and quality to the original when built. Where specifications covering the original construction are available, such specifications will apply to the replacement work. If not, the work shall be done in conformity with the State Department of Transportation Standard which conforms the closest to the type of surfacing being replaced, as determined by the Engineer.

3.19.8 Concrete Walks:

3.19.8.1 Concrete walks removed in connection with, or damaged as a result of, construction operations under the Contract shall be replaced with new construction; such walks shall be constructed of Class "B" concrete on a thoroughly compacted subgrade, shall have a vertical thickness of not less than four (4) inches (or thickness of the replaced walk where greater than four (4) inches), shall be constructed with vertical construction joints spaced not more than twenty-five (25) feet apart, shall be provided with expansion joints spaced not to exceed fifty (50) feet apart, and shall be sloped for drainage at right angles to the longitudinal center line in the amount of approximately 1/8-inch per foot of walk width.

3.19.8.2 Walks shall be float finished, edged with an edging tool, and grooved at construction joints and at intermediate intervals not in excess of the width of the walk. The length of blocks formed by grooving tool and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location. All walks shall be cured as specified for concrete slabs in the Section headed "Cast-In-Place Concrete".

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3.19.9 Curbs, Gutters & Culverts:

3.19.9.1 The Contractor shall, at his own cost and expense, permanently repair and relay all curbs, gutters, roadway and driveway culverts, where the same have been broken, injured or disturbed by the Contractor, his agents or employees, in executing any of the work covered by the Contract or by or on account of said work. He shall restore the same in a manner, to a condition and with material, either new or old as required, similar and equal to that existing before such excavations were made.

3.19.10 Maintenance & Surfaces:

3.19.10.1 The pavements, sidewalks, curbs, driveways, gutters, culverts, restored lawns, shrubs, trees, landscaped areas and any other public or private property shall be maintained in satisfactory condition during a period of one year from and after completion and acceptance of the Contract.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - EXCAVATION - GENERAL:

4.1.1 The quantity of Excavation - General for which payment will be made shall be the number of cubic yards actually removed, measured as the volume occupied by it (including rocks) before its removal; the maximum limits of such volumes shall not exceed those defined by the drawings, specified or ordered.

4.2 PAYMENT - EXCAVATION - GENERAL:

4.2.1 For Excavation - General, not included in other unit or lump sum price items, will be made at the applicable price stated in the Bid and shall include the cost of all the several detailed operations incidental to the excavation. No additional payment will be made for excavation of rock, boulders, masonry or concrete encountered in the work. No payment will be made for material not excavated between the actual excavation and the maximum payment limits, if shown.

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4.3 MEASUREMENT - EXCAVATION BELOW SUBGRADE:

4.3.1 The quantity of Excavation Below Subgrade, for which payment will be made, shall be the number of cubic yards (including rock) removed in accordance with the drawings, specified and/or ordered.

4.4 PAYMENT - EXCAVATION BELOW SUBGRADE:

4.4.1 For Excavation Below Subgrade, not included in other unit or lump sum price items, will be made at the applicable price stated in the Bid and shall include and cover all costs incidental to Excavation Below Subgrade when ordered. No additional payment will be made for excavation of rock, boulders, masonry, or concrete encountered in the work.

4.5 MEASUREMENT - EXCAVATION - TRENCHING:

4.5.1 The quantity for which payment will be made for Excavation - Trenching shall be the number of lineal feet, horizontal measurement, on the center line of the trench. The depth shall be measured on the center line of the trench from the invert or grade line to the original ground surface. Excavation - Trenching will be measured continuously through standard drop manholes, and no deduction will be made therefor. For other structures, deduction shall be made for length of trench occupied by the structures.

4.6 PAYMENT - EXCAVATION - TRENCHING:

4.6.1 For Excavation - Trenching, not included in other unit or lump sum price items, payment for Excavation - Trenching will be made at the price bid per lineal foot of Trenching for the various depths stated and shall include and cover all costs incidental to the trenching. No additional payment will be made for excavation of rock, boulders, masonry, or concrete encountered in the work. If so stated in the Additional Instructions, a percentage of the funds or unit amount to be retained under Excavation - Trenching will be withheld until all surface restoration is completed.

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4.7 MEASUREMENT - EXCAVATION FOR STRUCTURES:

4.7.1 The quantity of Excavation for Structures for which payment will be made shall be the number of cubic yards actually removed, measured as the volume occupied by it (including rock) before its removal unless otherwise specified; the maximum limits of such volumes shall not exceed those defined upon drawings, specified and/or ordered.

4.8 PAYMENT - EXCAVATION FOR STRUCTURES:

4.8.1 For Excavation For Structures, not included in other unit or lump sum price items, payment for Excavation For Structures will be made at the applicable unit price stated in the Bid and shall include and cover the cost of all the several detailed operations incidental to the excavation. No additional payment will be made for excavation of rock, boulders, masonry, or concrete encountered in the work. No payment shall be made for material not excavated between the actual excavation and the maximum payment limits if shown.

4.9 MEASUREMENT AND PAYMENT - EXCAVATION - TEST PITS:

4.9.1 Measurement and Payment for Excavation - Test Pits, not included in other unit or lump sum price items will be made in accordance with the following schedule:

4.9.1.1 If a specific item for Excavation - Test Pits is included in the Bid, payment shall be made at the applicable unit price stated in the Bid.

Measurement of quantity shall be the actual number of cubic yards removed and replaced, measured as the volume occupied by it before its removal in accordance with the limits ordered by the Engineer.

4.9.1.2 If no specific item for Excavation - Test Pits is included in the Bid, Excavation - Test Pits shall be measured and paid for in accordance with the Section entitled - Measurement & Payment, Excavation - General.

4.9.1.3 If neither of the above two items are included in the Bid, Excavation - Test Pits shall be measured and paid for in accordance with the Section entitled - Measurement & Payment Excavation - Trenching.

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4.10 MEASUREMENT - EXCAVATION - ROCK:

4.10.1 Unless a specific item of Excavation - Rock is included in the Bid, no additional payment will be made for Rock encountered in the work.

4.10.2 If a specific item of Excavation - Rock is included in the Bid, measurement for payment shall be the actual volume of Rock excavated, measured within the limits specified or directed by the Engineer.

4.11 PAYMENT - EXCAVATION - ROCK:

4.11.1 For Excavation - Rock, not included in other unit or lump sum price items, payment for Excavation - Rock will be made at the price stated in the Bid, and shall include and cover all costs incidental to Excavation - Rock.

END OF SECTION

SPECIFICATIONS

SECTION 02232

LINING, SPECIAL LINING, SAND LINING, SPECIAL BACKFILL
& SPECIAL BACKFILL MIX

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment to place Lining, Special Lining, Sand Lining, Special Backfill & Special Backfill Mix as shown on the Plans, as specified, and/or directed.

PART 2 - PRODUCTS

2.1 All granular materials shall be free from any organic or other deleterious materials.

2.2 The quality of the gravel or stone particles shall be determined by the Magnesium Sulphate Soundness Test. The maximum percent loss at four (4) cycles, by weight, shall be twenty (20).

2.3 Lining shall consist of clean, sound, crushed stone and shall be free from coatings. Lining shall have the following ASTM No. 67 gradation by weight:

% Passing	Sieve
100	1"
90 - 100	3/4"
20 - 55	3/8"
0 - 10	No. 4
0 - 5	No. 8

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LINING, SPECIAL LINING, SAND LINING, SPECIAL BACKFILL & SPECIAL BACKFILL MIX

2.4 Special Backfill shall consist of washed coarse sand, gravel or broken stone. The gravel or broken stone shall be well graded from fine to coarse. Special Backfill shall have the following gradation by weight:

% Passing	Sieve
100	2"
30 - 65	1/4"
0 - 10	No. 200

2.4.1 For Special Backfill, the result of multiplying the percentage passing the No. 200 sieve by the Plasticity Index of the particles passing the No. 40 sieve shall not exceed thirty (30.0). In no case shall the Plasticity Index exceed five (5.0), or the percentage passing the No. 200 mesh sieve exceed ten percent (10%). Of the particles retained on the one-half inch (1/2") square sieve, not more than thirty percent (30%) by weight, shall consist of flat or elongated pieces. A flat or elongated piece is defined herein as one, the greatest dimension of which is more than three (3) times the least dimension.

2.5 Special Backfill Mix shall consist of dry cement with gravel, meeting the specifications for Special Backfill, mixed in the proportion of one to fifteen (1:15) by volume.

2.6 Special Lining shall consist of a specially-blended mixture of not more than two approved local washed sands and one approved local screened gravel, mixed in the field as directed by the Engineer.

2.6.1 Special Lining shall have the following gradation by weight:

% Passing	Sieve
100	2"
20 - 70	No. 40
2 - 10	No. 200

2.7 Sand Lining shall consist of sand with particle size ranging from 0.8 mm to 1.5 mm and free from particles that would be retained on a No. 8 sieve (ASTM No. 67).

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LINING, SPECIAL LINING, SAND LINING, SPECIAL BACKFILL
& SPECIAL BACKFILL MIX

2.8 The Contractor shall employ an approved commercial testing laboratory at his own expense to conduct the sieve analysis, plasticity index and soundness tests prior to delivery of any of the materials to the site of the project. The Engineer may, at the Contractor's expense, require additional tests if, in his opinion, the quality of the materials has changed.

PART 3 - EXECUTION

3.1 Lining shall be used for backfilling below subgrade in trenches for pipelines or excavations for structures, provided the sides and bottom of the excavations will remain stable when wet.

3.2 Where directed by the Engineer, Special Backfill shall be used for backfilling excavations in streets, roads, or drives, or in areas upon which structures are to be built or where the excavated material is, in the opinion of the Engineer, unsuitable for backfilling.

3.3 Special Backfill Mix shall be used under paved highways and shoulders and for other backfilling operations as shown or directed.

3.4 Special Lining shall be used for backfilling below subgrade in trenches and excavations where the sides and bottom of the excavation will not, in the opinion of the Engineer, remain stable when wet.

3.5 Sand Lining shall be used for rebedding of gas piping exposed within excavations as shown on the Plans and/or as directed.

3.6 Lining, Special Lining, Special Backfill and Special Backfill Mix shall be placed in horizontal layers not more than eight (8) inches in thickness and shall be so thoroughly and uniformly compacted as to prevent after-settlement. In areas upon which structures are to be built, the Special Backfill shall be placed in layers not exceeding six (6) inches in thickness, measured after compaction, and shall be thoroughly and uniformly compacted to prevent settlement of the concrete or other structures to be placed on the fill. Compaction shall be by traveling vibrators or other approved method and shall be to a minimum dry density of ninety-five percent (95%) of the maximum dry weight density, as determined by ASTM D1557.

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LINING, SPECIAL LINING, SAND LINING, SPECIAL BACKFILL & SPECIAL BACKFILL MIX

3.7 All Lining, Special Lining & Special Backfill shall be inspected and approved by the Engineer before any pipelines are laid or any forms for structures are placed.

3.8 Any settlement in the finished work due to settlement of the compacted Lining, Special Lining, or Special Backfill shall be made good by the Contractor at his own cost and expense.

3.9 COMPACTION TEST (LINING, SPECIAL LINING, SPECIAL BACKFILL, SPECIAL BACKFILL MIX):

3.9.1 The Contractor shall employ an approved commercial testing laboratory at his own expense to conduct the compaction tests.

3.9.2 Each layer shall be tested and approved by the Engineer before succeeding layers are placed. A minimum of one field density test shall be made each day and/or for each fifty (50) cubic yards of material placed and/or as shown or specified in the Drawings.

3.9.3 The following reports in quadruplicate shall be submitted directly to the Engineer:

a. Report and Certification of Gradation.

b. Field Density Reports.

c. One optimum moisture-maximum density curve for each type of fill.

3.9.4 Based on the reports of the testing laboratory and inspection, if the subgrade or fills which have been placed and compacted are below the specified density, the Engineer will ask for additional compaction and testing at the expense of the Contractor.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT – LINING, SAND LINING OR SPECIAL LINING:

4.1.1 The quantity of Lining, Sand Lining or Special Lining allowed for payment shall be computed by using the product of the length, depth as directed, and the actual width, but not to exceed the Maximum Payment Width as shown on the Contract Drawings, less the volume occupied by the pipe or structure, if any.

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LINING, SPECIAL LINING, SAND LINING, SPECIAL BACKFILL
& SPECIAL BACKFILL MIX

4.2 PAYMENT – LINING, SAND LINING OR SPECIAL LINING:

4.2.1 For Lining, Sand Lining or Special Lining, not included in other unit or lump sum price items, payment for Lining, Sand Lining or Special Lining will be made at the applicable price stated in the Bid.

4.3 MEASUREMENT - SPECIAL BACKFILL OR SPECIAL BACKFILL MIX:

4.3.1 The quantity of Special Backfill or Special Backfill Mix allowed for payment shall be computed by using the product of the length, depth as directed, and the actual width, but not to exceed the Maximum Payment Width as shown on the Contract Drawings.

4.4 PAYMENT - SPECIAL BACKFILL OR SPECIAL BACKFILL MIX:

4.4.1 For Special Backfill or Special Backfill Mix, not included in other unit or lump sum price items, payment for Special Backfill or Special Backfill Mix will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02247

GEOTEXTILE

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Geotextile as shown on the Plans, as specified and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 American Society for Testing and Materials (ASTM) Publications:

D1117	Tests for Nonwoven Fabrics
D1682	Tests for Breaking Loads and Elongation of Textile Fabrics
D3786	The Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diagram Bursting Strength Tester Method
D3787	The Test Method for Bursting Strength of Knitted Goods - Constant-Rate of Traverse (CRT), Ball Burst Test

1.3 SUBMITTALS:

1.3.1 The Contractor shall submit to the Engineer for approval five (5) copies of manufacturer's specifications and installation instructions and one (1) 12-inch square sample of the proposed geotextile.

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GEOTEXTILE

1.4 DELIVERY AND STORAGE:

1.4.1 Geotextile shall be protected from exposure to sunlight during transport and storage. Additionally, all materials shall be handled so as to prevent damage. Damaged materials will be rejected.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 All materials shall be of the finest quality. Inferior materials will be rejected. All geotextiles shall be resistant to rot, mildew, acids and alkalies in a pH range from 3 to 12.

2.2 GEOTEXTILE FOR PAVEMENT OVERLAY:

2.2.1 Geotextile for pavement overlay shall be composed of nonwoven polypropylene fabric with the following certifiable property values.

FABRIC PROPERTY	TEST METHOD	VALUE
Trapezoidal Tear Strength (lb.)	ASTM D1117	35 (min)
Grab Tensile Strength (lb.)	ASTM D1682	90 (min)
Grab Tensile Elongation (%)	ASTM D1682	55 (max)
Mullen Burst Strength (psi)	ASTM D3786	215 (min)
Puncture (lb.)	ASTM D3787	60 (min)

2.2.2 Geotextile for pavement overlay shall be Mirafi 900N as manufactured by Mirafi, Inc., Amopave 4599 as manufactured by Amoco Fabrics Company, or equal.

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GEOTEXTILE

2.3 GEOTEXTILE FOR UNDERCUT STABILIZATION:

2.3.1 Geotextile for undercut stabilization shall be a woven fabric composed of polypropylene fibers. The fabric shall conform to the following certifiable property values.

FABRIC PROPERTY	TEST METHOD	VALUE
Trapezoidal Tear Strength (lb.)	ASTM D1117	75 (min)
Grab Tensile Strength (lb.)	ASTM D1682	200 (min)
Grab Tensile Elongation (%)	ASTM D1682	35 (max)
Mullen Burst Strength (psi)	ASTM D3786	400 (min)
Puncture (lb.)	ASTM D3787	90 (min)

2.3.2 Geotextile for undercut stabilization shall be Mirafi 500X as manufactured by Mirafi, Inc., TerraTex GS as manufactured by Synthetic Industries, Inc., ProPex 2002 as manufactured by Amoco Fabrics Company, or equal.

2.4 GEOTEXTILE FOR RIPRAP BEDDING:

2.4.1 Geotextile for riprap bedding shall be a woven fabric composted of polypropylene fibers. The fabric shall conform to the following certifiable property values.

FABRIC PROPERTY	TEST METHOD	VALUE
Trapezoidal Tear Strength (lb.)	ASTM D1117	65 (min)
Grab Tensile Strength (lb.)	ASTM D1682	250 (min)
Grab Tensile Elongation (%)	ASTM D1682	35 (max)
Mullen Burst Strength (psi)	ASTM D3786	460 (min)
Puncture (lb.)	ASTM D3787	145 (min)

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GEOTEXTILE

2.4.2 Geotextile for riprap bedding shall be Mirafi 700X as manufactured by Mirafi, Inc., TerraTex EP as manufactured by Synthetic Industries, Inc., or equal.

2.5 GEOTEXTILE FOR SEDIMENT CONTROL:

2.5.1 Geotextile for sediment control shall be a woven fabric composed of polypropylene fibers. The fabric shall conform to the following certifiable property values.

FABRIC PROPERTY	TEST METHOD	VALUE
Trapezoidal Tear Strength (lb.)	ASTM D1117	50 (min)
Grab Tensile Strength (lb.)	ASTM D1682	120 (min)
Grab Tensile Elongation (%)	ASTM D1682	25 (max)
Mullen Burst Strength (psi)	ASTM D3786	200 (min)
Puncture (lb.)	ASTM D3787	80 (min)

2.5.2 Geotextile for sediment control shall be Mirafi 100X as manufactured by Mirafi, Inc., TerraTex SC as manufactured by Synthetic Industries, Inc., 1380 Silt Stop as manufactured by Amoco Fabrics Company, or equal.

2.6 GEOTEXTILE FOR UNDERDRAIN TRENCH:

2.6.1 Geotextile for drainage shall be a nonwoven fabric composed of polypropylene filaments. The fabric shall conform to the following certifiable property values.

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GEOTEXTILE

FABRIC PROPERTY	TEST METHOD	VALUE
Trapezoidal Tear Strength (lb.)	ASTM D1117	45 (min)
Grab Tensile Strength (lb.)	ASTM D1682	120 (min)
Grab Tensile Elongation (%)	ASTM D1682	60 (max)
Mullen Burst Strength (psi)	ASTM D3786	200 (min)
Puncture (lb.)	ASTM D3787	65 (min)

2.6.2 Geotextile for drainage shall be Mirafi 140N as manufactured by Mirafi, Inc., TerraTex SD as manufactured by Synthetic Industries, Inc., ProPex 4551 as manufactured by Amoco Fabrics Company, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 Geotextile shall be installed in strict accordance with all manufacturers' recommendations.

3.1.2 The subgrade or surface upon which the fabric is to be applied shall be graded to eliminate ruts and surface depressions. All stumps, rocks and similar objects which could puncture the fabric shall be removed prior to installation.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - GEOTEXTILE:

4.1.1 The quantity of Geotextile for which payment will be made, of specified type and extent, in place and accepted, will be the number of square yards as computed from the product of the length and width of Geotextile installed.

SECTION 02247

GEOTEXTILE

4.2 PAYMENT – GEOTEXTILE:

4.2.1 For Geotextile, not included in other unit or lump sum price items, payment for Geotextile will be made at the applicable price stated in Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02315

HIGHWAY CROSSINGS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 The Contractor shall furnish and install complete as shown, specified or directed, casing pipe of the size, material and gauge indicated, across and under the highway at the location shown or directed.

1.2 SITE INSPECTION:

1.2.1 The Contractor shall inspect the locations at the proposed crossings and familiarize himself with the conditions under which the work will be performed, and with all necessary details and the suitability of his equipment for the work required. The omission herein of any details for the satisfactory installation of the work in its entirety shall not relieve the Contractor of full responsibility.

1.3 EXPERIENCE:

1.3.1 The Contractor may install the casing with his own organization provided he has been engaged in the construction of installations of a similar nature for a period of three years and can furnish a record of successful performance.

1.3.2 If the Contractor does not meet the qualifications outlined above, he shall employ a sub-contractor to install the casing who has had the required experience. The Contractor shall submit to the Engineer the name of the sub-contractor he proposes to employ.

1.3.3 Following the approval of the Contractor or subcontractor by the Engineer, the Contractor shall submit a description of the work which he proposes to perform to construct the casing.

PART 2 - PRODUCTS (NOT USED)

SECTION 02315

HIGHWAY CROSSINGS

PART 3 - EXECUTION

3.1 METHODS:

3.1.1 Within the limits shown on the Drawings for the casing to be driven, the Contractor shall construct the casing by jacking, tunneling or boring unless otherwise specified. The remaining portion of the casing may be constructed in the same manner or by open cut methods in a sheeted trench.

3.1.2 The installation of the casing pipe shall be carried on without disturbance of the embankment, pavement, tracks, or other railroad or highway facilities and without obstructing the passage of traffic at any time.

3.1.3 Once the operation is started, field conditions may require it to proceed on a 24-hour basis without interruption until complete in order to prevent undermining the roadway or railroad road bed and tracks. The casing pipe shall be maintained accurately to line and grade during operations. Should the Engineer permit the Contractor to interrupt operations, bulkheads and dewatering measures shall be provided as approved by the Engineer.

3.1.4 The driven portions of the casing shall be advanced from the lower end of the casing unless specific permission to do otherwise is obtained by the Contractor from the Engineer.

3.1.5 A tight fitting bulkhead shall be readily available in case unforeseen conditions require the operation to be halted.

3.2 ALTERNATE "A" JACKING:

3.2.1 Casing Pipe:

3.2.1.1 The casing pipe shall be of the minimum size shown, and shall be either reinforced concrete pipe as manufactured by an approved manufacturer or steel pipe of the gauge noted unless otherwise stated on the Contract Drawings. The pipe shall conform in all respects to the appropriate specifications except as noted on the Contract Drawings.

SECTION 02315

HIGHWAY CROSSINGS

3.2.2 Jacking:

3.2.2.1 The jacking pipe shall be maintained accurately to line and grade during the jacking operation. Elliptical pipe shall be placed with the long diameter vertical.

3.2.2.2 Tongue and groove pipe shall be placed with the tongue end downstream. Tongue and groove jacking pipe shall be jointed by placing a bituminous coated or tarred rope around each tongue. The inner surface of all joints shall be filled with mortar and brushed smooth.

3.3 ALTERNATE "B" TUNNELING:

3.3.1 Casing Pipe:

3.3.1.1 Under this method, the casing pipe shall be constructed of tunnel liner plates. Tunnel liner plates shall be galvanized and bituminous coated and shall conform to AASHTO "Design Specifications for Tunnel Liner Plates". In no event shall the liner plate thickness be less than 0.1046 inches.

3.3.2 Tunneling:

3.3.2.1 Poling plates or poling boards shall be used as necessary to prevent caving of material above the tunnel before the liner plates can be installed. Steel liner plates shall be installed as soon after excavation is removed as possible. Excavation shall be carried on in such manner that voids behind the liner plates will be held to a minimum.

3.3.2.2 Such voids as there are shall be filled within the working day with a Portland Cement grout placed under pressure. Grout plugs shall be placed in every third ring, on 4-1/2 foot centers.

3.3.2.3 All work pertaining to the construction of tunnels shall be performed in accordance with the Industrial Code Rule 30 of the New York State Department of Labor as amended effective December 1, 1957, or latest addenda thereto.

3.3.2.4 Tunneled casings shall have a foundation of concrete placed for the entire length of the interior of the casing pipe before the installation of the water main or sewer.

SECTION 02315

HIGHWAY CROSSINGS

3.4 ALTERNATE "C" BORING:

3.4.1 Casing Pipe:

3.4.1.1 The casing pipe shall be of the minimum size indicated and shall be steel pipe of the minimum wall thickness shown on the Drawings. Steel pipe used for the casing pipe shall have a minimum yield strength of 35,000 psi and an ultimate strength of 60,000 psi.

3.4.2 Boring:

3.4.2.1 The boring machine shall be accurately aligned before boring is commenced, and the Contractor shall take such necessary steps as are required to accurately place the casing with respect to line and grade.

3.4.2.2 The leading edge of the steel casing shall be kept as close to the auger head as possible and shall be advanced at the same rate of speed as the earth auger in order to minimize any unsupported holes in the earth.

3.5 ALTERNATE "D" DIRECTIONAL DRILLING:

3.5.1 Casing Pipe:

3.5.1.1 The casing pipe shall be of the minimum size indicated and shall be HDPE having at least the same minimum yield strength and ultimate strength of a comparable steel pipe, or meeting the requirements of 3.4.1 1 whichever is greater.

3.5.1.2 HDPE carrier pipe shall be in accordance with Section 02735 Part 2, and shall be installed per Section 02735 Part 3. An approved bore plan shall be required prior to the commencement of all directional drilling.

3.6 WATERLINE INSTALLATION:

3.6.1 Before the pipe is installed in the casing, casing spacers shall be installed on the water main as it is inserted in the casing pipe and the ends of the casing shall be bulkheaded per the manufacturer's recommendations. No physical or electrical contact will be permitted between the casing and the water main. Ends of casing shall be sealed with end seals and stainless steel banding clamps.

SECTION 02315

HIGHWAY CROSSINGS

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT - HIGHWAY CROSSINGS:

4.1.1 When the Bid requires a unit price bid per linear foot of crossing, the length of the crossings for which payment will be made shall be the total linear feet of casing and carrier pipe installed according to the Plans and/or as directed by the Engineer in writing, as measured in place along the center line of the casing pipe.

4.2 PAYMENT - HIGHWAY CROSSINGS:

4.2.1 Payment for Highway Crossings, not included under other unit or lump sum price items, will be made at the applicable price stated in the Bid and shall include and cover the cost of all work, materials, labor and expense, including excavation specified or implied, incidental to the completion of each crossing in accordance with the Drawings and Specifications, specifically including the furnishing and placing of the carrier pipeline within the casing.

END OF SECTION

SPECIFICATIONS

SECTION 02439

SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE AND END SECTIONS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Smooth Interior Corrugated Polyethylene Pipe and End Sections as shown on the Plans, as specified and/or directed, including all flow control devices necessary for maintaining flows within the existing storm sewer system.

1.1.2 For smooth interior corrugated polyethylene pipe, work shall include the following items specified in other Sections and all work necessary to complete the work as shown on the Plans and or specified herein.

Section	
02220	Excavation
02484	Topsoil
02485	Seeding
02521	Asphaltic Concrete Paving

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Smooth interior corrugated polyethylene pipe shall conform to the requirements of Section 706-12 of the New York State Standard Specifications latest edition. The units shall conform to the shape, dimensions and thickness shown on the Contract Drawings or as listed in the Additional Instructions.

SECTION 02439

SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE AND END SECTIONS

2.1.2 Polyethylene end sections shall conform to the requirements of Section 706-12 of the New York State Standard Specifications, latest edition.

2.1.3 All smooth interior corrugated polyethylene pipe and end sections shall be of the same manufacturer and shall be designed to be joined by couplings or other positive mechanical means approved by the Engineer.

PART 3 - EXECUTION

3.1 CONSTRUCTION:

3.1.1 Smooth interior corrugated polyethylene pipe shall be installed in the locations shown on the Contract Drawings. Connections and embedment shall be performed in strict accordance with all manufacturer's recommendations and as indicated on the Drawings.

3.1.2 All pipe shall be laid in reasonably close conformity to line and grade and shall have a full firm and even bearing at each joint and along the entire length of pipe. Pipe laying shall begin at the downstream end and progress upstream. Any single run of pipe, including end sections, shall consist wholly of the same material unless otherwise directed by the Engineer.

3.1.3 All pipe shall be handled and assembled in accordance with the Manufacturer's instructions except as modified on the Plans or by the Engineer's written order.

3.1.4 Special care shall be exercised in placing and compacting material immediately adjacent to pipes in order to avoid damage to the pipe and to prevent pipe misalignment.

3.1.5 Movement of construction equipment, vehicles and loads over and adjacent to any pipe shall be done at the Contractor's risk.

3.1.6 Corrugated polyethylene pipe connections for making field joints shall consist of corrugated bands, so constructed as to lap on equal portions of each culvert section to be connected. All connections shall be an approved type, fabricated and installed so that a secure and firm pipe connection may be readily made in the field.

SECTION 02439

SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE AND END SECTIONS

3.2 FINAL INSPECTION:

3.2.1 Each section of sewer, between each pair of drainage inlets or manholes, will be inspected by the Engineer before final acceptance. Such inspection will be visual and by traversing the inside of the pipe or by looking through the sewer from manhole to manhole with the aid of reflected sunlight or by the use of an electric light, when the sewer is too small to be entered. The pipe shall be true to both line and grade, shall show no obstruction to flow, shall have no projections of connecting pipe into the sewer beyond those shown and specified, shall be free from cracks and protruding joint materials, and shall contain no deposits of sand, dirt or other materials which will in any way reduce the full cross sectional area. All wall joints in manholes, junction chambers, pumping stations and elsewhere shall be tight. All finished work shall be neat in appearance and of first class workmanship. Proper stoppers and bulkheads must be in place, where required. Any pipe section or length identified by the Engineer as having excessive deflection or reduced cross-sectional area as a result of pipe crushing, shall be removed by the Contractor and replaced at his sole expense.

3.3 STORM SEWER FLOW MAINTENANCE:

3.3.1 Storm sewer flow control measures shall be used by the Contractor during times when the existing Town storm sewer system, including pipes, catch basins, yard drains, or any other pipe entering the system, is severed, damaged, removed, or blocked off as a result of the Contractor's operations during CPP installation. Flow control measures shall include temporary bypass pumping, piping, or ditching, and shall be utilized whenever flows within an existing storm system are scheduled to be interrupted due to new pipe installation.

3.3.2 The Contractor shall conduct his operations such that storm water conveyance within the existing Town storm sewer system is maintained at all times. At no time shall the existing system be severed or blocked such that storm water flows back up onto Town streets, building structure basements, or private property. The Contractor shall install the necessary flow control measures to ensure storm flow maintenance during his operations. The Contractor shall be held liable for any property damage which may result from his negligence to install the proper measures.

SECTION 02439

SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE AND END SECTIONS

3.3.3 Pumping and Bypassing: When pumping and bypassing is required, the Contractor shall supply the pumps, conduits, and other equipment to divert the flow of storm water around the sewer section in which work is to be performed. The bypass system shall be of sufficient capacity to handle peak flows plus additional flow that may occur during a rainstorm. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum, and on-site personnel shall be provided to assure continuous operation.

3.3.4 Flow Control Precautions: When flow in a storm sewer line is plugged, blocked, or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might result from sewer surcharging. Further, precautions must be taken to insure that sewer flow control operations do not cause backup, surcharge, flooding or damage to Town or private property being served by the storm sewers involved. The Contractor will be solely responsible for any damage caused by his operations. At no time shall the Contractor's operations cause system backup and the discharge of storm water to the surface.

3.3.5 Temporary Piping and Ditching: Temporary piping and ditching may be used upon approval of the Engineer and/or Owner as a means of temporarily redirecting or outletting an existing storm sewer system to a new system or existing natural outlet during construction operations. Temporary connections shall be adequately sized to handle storm water flows which may result from a rainstorm.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE:

4.1.1 Measurement for which payment will be made for Smooth Interior Corrugated Polyethylene Pipe shall be the number of linear feet of straight pipe incorporated in the work, in accordance with the Plans and orders, measured along the center line of the finished sewer less the space occupied by drainage structures. For all structures, measurement will be to the outside face of the structure.

SECTION 02439

SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE AND END SECTIONS

4.2 PAYMENT - SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE:

4.2.1 For Smooth Interior Corrugated Polyethylene Pipe, not included in other unit or lump sum price items, payment for Smooth Interior Corrugated Polyethylene Pipe will be made at the applicable price stated in the Bid.

4.2.2 The price bid shall include the cost of excavation, topsoil and seeding, embankment fill, storm sewer flow maintenance, asphaltic concrete paving and saw cutting asphalt pavement or concrete pavement as required, and all materials, equipment and labor necessary to complete the work as shown and specified, not specifically included under other items.

4.3 MEASUREMENT - END SECTIONS:

4.3.1 Measurement for which payment will be made for End Sections shall be the number of end sections incorporated in the work, in accordance with the Contract Drawings.

4.4 PAYMENT - END SECTIONS:

4.4.1 For End Sections, not included in other unit or lump sum price items, payment for End Sections will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02444

FENCE, CHAIN LINK

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Fence, Chain Link, including accessory items of work herein described, as shown on the Plans, as specified and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 American Society for Testing and Materials (ASTM) Publications:

A121	Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
A153	Standard Specification for Zinc Coating on Iron and Steel Hardware
A392	Standard Specification for Zinc-Coated Chain-Link Fence Fabric
A817	Standard Specification for Metallic Coated Steel Wire for Chain-Link Fence Fabric
F567	Standard Practice for Installation of Chain-Link Fence
F1083-9	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

SECTION 02444

FENCE, CHAIN LINK

1.3 SUBMITTALS:

1.3.1 Shop Drawings and Catalog Cuts Show all fencing components, details of fencing and accessories. These drawings or cuts shall be accompanied by a layout drawing showing spacing of posts, end and pull posts. Drawing shall also show fence height and concrete footing details.

1.3.2 Manufacturer's Certificate of Conformance: Certify that materials and coatings furnished have been tested and conform to the referenced ASTM Specification.

a. Posts
b. Braces
c. Framing
d. Rails
e. Tension Wire
f. Fabric

1.4 DELIVERY, STORAGE, AND PROTECTION: Deliver materials to the site in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact.

PART 2 - PRODUCTS

2.1 POSTS, RAILS, BRACES AND GATE FRAMES: All posts, rails, gate frames, and post braces shall be hot-dip galvanized Schedule 40 standard steel pipe.

2.1.1 Minimum pipe diameters shall be as follows:

End, corner and pull posts	2-7/8" OD, 5.79 lb per foot
Line posts	2-3/8" OD, 3.65 lb per foot
Slide gate posts	3-1/2" OD, 9.1 lb/L.F.
Top rail	1-5/8" OD, 2.27 lb per foot
Horizontal post braces	1-5/8" OD, 2.27 lb per foot

SECTION 02444

FENCE, CHAIN LINK

2.1.2 All posts shall be equipped with pressed steel combination. Tops shall be provided with a hole to permit through passage of the top rail.

2.2 FENCE FABRIC:

2.2.1 Wire for chain link fence fabric shall be No. 9 coated wire gauge carbon steel produced in accordance with ASTM A392, Class 2 with a 1-inch mesh; twisted selvage at top, knuckled selvage at bottom. The fabric shall be stretched taut and anchored so that a pull of 150 pounds at the middle of a panel will not lift the bottom of the fabric more than 6 inches.

2.2.2 Coated fence fabric shall be produced from helically wound and interwoven steel wire forming a continuous 1-inch mesh.

2.2.3 Ties or clips of adequate strength shall be provided in sufficient number for attachment of the fabric to line posts at intervals not exceeding 16 inches and to the top rail and bottom tension wire at a maximum 24-inch spacing.

2.3 TENSION BARS: Tension bars shall be minimum 3/16-inch by 3/4-inch flat steel plates and no more than 2 inches shorter than the fabric height. Bars shall be hot-dip galvanized.

2.4 TERMINAL POST BANDS: Bands or clips of adequate strength shall be provided in sufficient number for attachment of the fabric and stretcher bars to all terminal posts at intervals not exceeding 15 inches. Tension bands shall be formed from No. 12 gauge flat or beveled steel and attached with 3/8-inch diameter carriage bolts hot-dip galvanized.

2.5 FENCING ACCESSORIES: All accessories shall have zinc coatings.

2.6 TENSION WIRE: Bottom tension wire shall be 7 gauge galvanized coil spring wire.

2.7 BARBED WIRE: Barbed wire shall consist of six (6) strands of twisted 12-1/2 gauge steel wire with 4 point 14 gauge barbs on 4-inch spacing; wire shall be zinc coated.

2.8 CANTILEVER SIDE GATES:

2.8.1 The Contractor shall provide cantilever slide gates for vehicular entranceways as specified. Cantilever slide gates shall be of a type with an enclosed track to provide smooth operation and protection from the weather.

SECTION 02444

FENCE, CHAIN LINK

2.8.2 The slide gate frame shall be minimum 2" O.D. standard weight hot-dip galvanized steel pipe, 2.72 #/L.F. and shall be welded at all corners to form a rigid one piece unit. The gate fabric shall be the same as the fence fabric and shall be securely stretched and secured to the frame on all four sides of the gate opening frame.

2.8.3 The track shall be a formed galvanized steel channel integrally connected to the gate frame top rail. The truck wheel assembly within the track frame shall be rigidly attached to the gate posts. Guide wheel assemblies shall be provided at the bottom of each gate support post and adjusted to maintain a plumb gate frame and proper alignment. An overhead gate support structure will not be allowed.

2.8.4 Cantilever slide gates shall be counterbalanced for ease of operation and be complete with stays and bracing when required.

a. The following slide gates shall be provided:

GATE NO.	LOCATION	OPENING	GATE POST	POST WEIGHT
1	Water Storage Tank Site	Single 12'	3-1/2" O.D.	9.1 #/L.F.
2	Pump Station Site	Single 8'	3-1/2" O.D.	9.1 #/L.F.

2.8.5 Fabric Connections: The chain link fabric shall be fastened to line posts with fabric bands spaced approximately 12 inches part, and to top rail with wires spaced approximately 12 inches apart.

2.8.6 Gate latches, stops, and keepers shall be provided for gates. Latches shall have a plunger-bar arranged to engage the center stop, except that for single gates for opening less than 10 feet wide a forked latch may be provided. Latches are to be provided with a locking device and padlock eyes for locking with a single padlock. Catches shall be arranged for locking. Center stops shall consist of a device arranged to set in concrete and to engage a plunger bar of the latch of doubled gates. No stop is required for single gates. Keepers shall consist of a mechanical device for securing the free end of the gate in the full open position.

2.8.7 All Gate hardware shall be zinc coated.

SECTION 02444

FENCE, CHAIN LINK

2.9 FOOTINGS:

2.9.1 Where posts are set in earth, concrete foundations 48 inches deep shall be provided. If bedrock is encountered, post excavation shall be continued to the 48-inch depth or 18 inches into the rock, whichever is less. Concrete foundations shall be circular in horizontal section, not less than 10 inches in diameter for line posts, and with a diameter not less than the post OD plus 9 inches for terminal and gate posts, except that foundations in bedrock shall be a minimum of 6 inches larger than the outside dimension of the post. Foundations shall extend above the ground surface and shall be crowned approximately 1 inch.

2.9.2 Concrete for footings shall conform to the requirements of Specification 03300, "Cast-In-Place Concrete".

PART 3 - EXECUTION

3.1 INSTALLATION: Install fence in accordance with the fence manufacturer's written installation instructions except as modified herein. Fencing shall consist of galvanized steel framework and steel fabric with a height of 6 feet. The fence shall have a top rail and bottom tension wire.

3.1.1 Grading: Establish a graded fence line prior to fencing installation. Clear the fence line of all obstacles that will interfere with the fencing.

3.1.2 Post Spacing: Provide line posts spaced equidistant apart, not to exceed 10-foot centers maximum.

3.1.3 Bracing: Brace gate, end and corner posts to the nearest adjoining line post at mid height with a horizontal standard steel pipe used as a compression member and a diagonal truss rod and truss tightener used as a tension member. Diagonal tension bracing provided from end, corner, or gate posts to line posts shall consist of 3/8-inch minimum diameter steel truss rods with turnbuckles or equivalent provision for adjustment.

3.1.4 One tension bar shall be provided for each end and gate post, and two (2) for each corner and pull post.

SECTION 02444

FENCE, CHAIN LINK

3.1.5 Post Caps: Design post caps to accommodate the top rail. Install post caps as recommended by the manufacturer.

3.1.6 Top Rails: Install top rails before installing chain-link fabric. Pass top rail through intermediate post caps. Rails shall be furnished in random lengths averaging a minimum of 18 feet. Joints shall be made up with extra long pressed steel sleeves (6 inches long) to provide a rigid connection while permitting expansion and contraction. Expansion springs shall be provided in every fifth coupling.

3.1.7 Bottom Tension Wires: Install bottom tension wires before installing chain-link fabric, and pull wires taut. Bottom tension wires shall be within 8 inches and the respective fabric edge. Fabric shall be attached to wires at 24 inches on center.

3.2 CLEANUP: Remove waste fencing materials and other debris from the fencing site.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - FENCE, CHAIN LINK:

4.1.1 Measurement for Fence, Chain Link shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - FENCE, CHAIN LINK:

4.2.1 For Fence, Chain Link, not included under other unit or lump sum price items, payment for Fence, Chain Link will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02449

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Maintenance and Protection of Traffic as indicated on the Drawings, as specified and/or directed.

1.1.2 The following items of work shall be included:

a. Furnish and install all temporary traffic signs indicated on the drawings including all labor, equipment, sign panels, posts, hardware, post anchorage and all appurtenances necessary for a complete installation.

b. Furnish and place all traffic cones indicated on the drawings including all labor, materials and appurtenances necessary for a complete installation.

c. Furnish and install all barricades indicated on the drawings including all labor, materials and appurtenances necessary for a complete installation.

d. Provide flagmen as required on the drawings.

1.1.3 The work shall be performed in accordance with Section 619 of the New York State Department of Transportation Specification current edition and any addenda to these Specifications issued after that date, as specified and as indicated on the Contract Drawings.

1.1.4 In addition to the requirements of this Section, all items of work in Section 01577 of these Specifications shall be provided.

SECTION 02449

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Temporary traffic signs are intended for maintenance and protection of traffic during construction operations on or near the roadway. Such temporary traffic signs shall be provided in accordance with Section 619 of the NYS Department of Transportation Specifications.

2.1.2 The sign design numbers shown on the drawings refer to the size, shape, color and legend of each sign and correlate to those sign numbers as shown in the NYS Manual on Uniform Traffic Control Devices.

2.1.3 Traffic cones and barricades shall be provided in accordance with Section 619 of the NYS Department of Transportation Specifications.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 Temporary traffic signs, barricades and traffic cones shall be located in accordance with the latest revision of the NYSDOT Manual of Uniform Traffic Control Devices and as indicated on the Contract Drawings or directed by the Engineer.

3.1.2 All temporary traffic signs, barricades and traffic cones shall be installed in strict accordance with the requirements of Section 619 of the NYS Department of Transportation Standard Specifications and as indicated on the drawings.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - MAINTENANCE AND PROTECTION OF TRAFFIC:

4.1.1 Measurement for Maintenance and Protection of Traffic shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

SECTION 02449

MAINTENANCE AND PROTECTION OF TRAFFIC

4.2 PAYMENT - MAINTENANCE AND PROTECTION OF TRAFFIC:

4.2.1 For Maintenance and Protection of Traffic, not included in other unit or lump sum price items, payment for Maintenance and Protection of Traffic will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02484

TOPSOIL

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Topsoil as shown on the Plans, as specified, and/or directed.

PART 2 - PRODUCTS

2.1 MATERIAL:

2.1.1 Topsoil for such depth as directed shall be removed from areas of the Site where excavations are to be made or embankments placed. The soil so removed shall be transported and stored in piles at convenient locations designated or approved and shall be kept separate from all other classes of excavated material. Should the Contractor fail to keep separate from other material any soil removed, he shall procure and furnish at his own expense an equivalent quantity of satisfactory topsoil.

2.1.2 In the event the topsoil removed from areas of the Site is unsatisfactory, or the quantity available is inadequate, the Contractor shall furnish topsoil from an approved source or sources off the Site. The off-site material shall contain no admixture of refuse or any material toxic to plant growth and shall be free from subsoil, stumps, roots, brush, stones, clay lumps or similar objects larger than two inches in greatest dimension. Topsoil shall not be delivered or placed in a frozen or muddy condition.

PART 3 - EXECUTION

3.1 PLACING:

3.1.1 Topsoil shall include fine grading the surface of the ground upon which topsoil is to be placed and the furnishing and placing of topsoil in the areas to be seeded or planted.

SECTION 02484

TOPSOIL

3.1.2 Depth of topsoil shall be minimum 4 inches unless otherwise shown or directed.

3.1.3 After approval by the Engineer of the fine grading of the subgrade, the topsoil shall be spread and compacted with a light roller to the lines, grades and elevations shown on the drawings, or directed by the Engineer, without unsightly variations, ridges or other depressions which will hold water. Any stone, litter or objectionable material shall be removed from the topsoil and the surface raked to true lines. Any uneven spots shall be leveled. The work shall not be performed during unsuitable weather.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - TOPSOIL:

4.1.1 The quantity allowed for payment for Topsoil shall be the actual number of cubic yards of compacted material in place computed as the area covered times the thickness.

4.2 PAYMENT - TOPSOIL:

4.2.1 For Topsoil, not included in other unit or lump sum price items, payment for Topsoil will be made at the applicable price stated in the Bid and shall cover all costs and expense incidental to excavating from storage, transporting, rehandling and placing in the completed work as shown, specified and directed. No payment will be made for any portion of this item until the Topsoil has been placed in final location.

END OF SECTION

SPECIFICATIONS

SECTION 02485

SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Seeding in new and disturbed areas where shown on the Drawings, specified or directed by the Engineer.

PART 2 - PRODUCTS

2.1 FERTILIZER:

2.1.1 Commercial fertilizer (5-10-5) shall contain not less than five percent nitrogen, ten percent available phosphoric acid and five percent water soluble potash. The fertilizer shall be inorganic or a combination of inorganic and organic substances.

2.1.2 If, as an alternative, the Contractor wishes to substitute another fertilizer, such as 10-20-10 to 6-12-6, he may do so with the approval of the Engineer, and the rate of fertilizer to be used shall be whatever amount is required to furnish the same amount of nitrogen as would be supplied by the 5-10-5.

2.1.3 Commercial fertilizer shall be delivered in original bags of the manufacturer, showing weight, analysis and the name of the manufacturer.

2.1.4 If the commercial fertilizer is not used immediately after delivery, the Contractor shall store it in a place designated by the Engineer, in such a manner that its effectiveness will not be impaired.

2.2 SEED:

2.2.1 Grass seed shall be a mixture of the species and/or varieties specified, mixed in the proportions specified.

SECTION 02485

SEEDING

2.2.2 The seed shall be fresh, recleaned and of the latest crop year. It shall conform to Federal and State Standards. Each type of grass in the mixture shall meet or exceed the minimum percentage purity and germination listed for that type of grass.

2.2.3 The following lawn mixture shall be used for residential, commercial or institutional lawn areas:

Percentage By Weight	Species or Variety	Purity	Percentage Germination
45	Kentucky Bluegrass	85	70
40	Red Fescue (Commercial)	95	80
15	Red Top	95	85
100			

2.2.4 For open fields or non-developed areas, the following seed mixture shall be utilized:

Percentage By Weight	Species or Variety	Percent Germination
45	Creeping Red Fescue	85
45	Kentucky 31 Tall Fescue	85
10	Perennial Ryegrass	85
100		

2.2.5 For excessively wet areas, Reed Canary Grass shall be utilized.

2.2.6 The balance of material in an acceptable seed mixture, other than specified pure live seed shall, for the most part, consist of non-viable seed, chaff, hulls, live seeds of crop plants and harmless inert matter. The percentage of weed seed shall not exceed one percent by weight for the mixture.

2.2.7 All seed mixtures furnished under this Section shall be mixed by the vendor and shall be delivered in standard sized bags of the vendor, showing the weight, analysis and vendor's name.

SECTION 02485

SEEDING

2.2.8 All seed shall be properly stored by the Contractor at the site of the work and any seed damaged during storage shall be replaced.

2.3 MULCH:

2.3.1 Straw mulch shall consist of oats, wheat, rye or other approved crops which are free of noxious weeds. Weight shall be calculated on the basis of the straw having not more than 15% of moisture content.

PART 3 - EXECUTION

3.1 TIME FOR SEEDING:

3.1.1 Grass seed shall be sown from March 15th to May 15th or from August 15th to October 1st, unless in a favorable season, and upon written permission of the Engineer, the seeding period is extended. All seeding shall be done in a dry or moderately dry soil and at times when the wind does not exceed a velocity of five miles per hour.

3.2 PREPARATION OF SEED BED:

3.2.1 After the finished grading is completed and just before seeding, the areas to be seeded shall be loosened to a depth of two inches and raked to true lines, free from all unsightly variations, bumps, ridges and depressions which will hold water. All sticks, stones, clods, roots or other objectionable material which interfere with the formation of a fine seed bed shall be removed from the soil.

3.2.2 Commercial fertilizer shall be evenly applied at the rate of 30 lbs. per 1,000 square feet.

3.3 SEEDING:

3.3.1 Grass seed mixture shall be sown at the rate of 5 pounds per one thousand square feet.

3.3.2 The seed shall be sown by hand or by an approved machine, in such a manner that a uniform stand will result.

SECTION 02485

SEEDING

3.3.3 After sowing, seeded areas shall be rolled with a light lawn roller weighing not more than one hundred pounds per foot of width.

3.4 MULCHING:

3.4.1 Within three days after the seed is sown, the seeded areas shall be covered with a uniform blanket of straw mulch at the rate of one thousand pounds per acre of seeded area.

3.5 HYDROSEEDING:

3.5.1 The Contractor may substitute a hydroseeding process for hand seeding and mulching as specified above.

3.5.2 Where hydroseeding is used, the Contractor shall mix water, seed fertilizer, mulch and mulch anchorage at the following rates and apply to the prepared seed bed by means of a hand-held hose. No truck mounted spraying equipment shall be driven over the areas to be seeded. Discharge shall be in an uphill direction only.

3.5.2.1 Fertilizer - 1,000 lbs. per acre.

3.5.2.2 Seed - 250 lbs. per acre.

3.5.2.3 Mulch - 1,500 lbs. per acre.

3.5.2.4 Mulch Anchorage - 25 gal. per acre.

3.5.3 Where the mulch anchorage is provided ready mixed with the mulch, no additional mulch anchorage will be required.

3.5.4 Mulch shall be a commercial cellulose hydromulch such as "Conwed 2000", "Turf Fiber", or equal. Soil seal or mulch anchorage used shall be approved by the Engineer. An asphalt emulsion shall not be used as mulch anchorage.

SECTION 02485

SEEDING

3.6 MAINTENANCE AND PROTECTION:

3.6.1 The Contractor shall maintain and protect all seeded areas until final acceptance of the Seeding portion of the Contract.

3.6.2 Final acceptance will not be made until an acceptable uniform stand of grass is obtained in all newly seeded areas except that the Engineer at his discretion may accept a portion or portions of the work at various times.

3.6.3 Upon final acceptance of a seeded area by the Engineer, the Owner will assume responsibility for maintenance and protection of that area.

3.6.4 Any portions of seeded areas which are unacceptable, and which fail to show a uniform stand of grass from any cause, shall be reseeded as before except the fertilizer shall be applied at one-half the original rate. The seeding shall be repeated until the seeded areas are satisfactorily covered with grass.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - SEEDING:

4.1.1 The quantity of Seeding allowed for payment shall be the number of acres seeded in accordance with the plans, specified or directed.

4.2 PAYMENT - SEEDING:

4.2.1 For Seeding, not included in other unit or lump sum price items, payment for Seeding will be made at the applicable price stated in the Bid and shall include the cost of furnishing all labor, materials and equipment necessary to fertilize, seed, mulch and maintain lawn areas in accordance with the Specifications.

END OF SECTION

SPECIFICATIONS

SECTION 02521

ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Asphaltic Concrete Paving, including accessory items of work herein described, as shown on the Plans, as specified, and/or directed.

1.1.2 All work and material shall be in accordance with the applicable requirements of the NYSDOT. Sections mentioned herein refer to those Specifications. Paragraphs in NYSDOT titled "Method of Measurement" and "Basis of Payment" shall not apply.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basis designation only.

1.2.1 State Highway Specification:

New York State Department of Transportation, Standard Specifications, Construction and Materials, (NYSDOT)

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS:

1.3.1 Excavation and filling to establish elevation of subgrade is specified in Section 02220, "Excavation".

1.4 CERTIFICATES:

1.4.1 Provide approved certification that all paving materials conform to the Specification.

SECTION 02521

ASPHALTIC CONCRETE PAVING

PART 2 - PRODUCTS

2.1 SUBGRADE:

2.1.1 Preparation of subgrade shall be in accordance with NYSDOT Section 203 [and Article 1.3.1 of this Specification].

2.2 SUBBASE:

2.2.1 Materials and methods of construction of Subbase shall be in accordance with NYSDOT Section 304, Type 2 (Item No. 304.03).

2.3 BINDER COURSE:

2.3.1 Materials and methods of construction of Binder Course shall be in accordance with NYSDOT Section 400, Type 3 (Item 403.13).

2.4 TOP COURSE:

2.4.1 Materials and methods of construction of Top Course shall be in accordance with NYSDOT Section 400, Type 6 (Item No. 403.16). For asphalt driveway repairs, materials and methods of construction of top course shall be in accordance with NYSDOT Section 400, Type 7 (Item No. 403.198902 M).

2.5 TESTING: The Contractor shall employ an approved commercial testing laboratory at his own expense to conduct any and all tests required prior to the delivery of materials to the site of the project and shall also perform compaction as required. The Engineer may, at the Contractor's expense, require additional tests if, in his opinion, the quality of the materials has changed.

SECTION 02521

ASPHALTIC CONCRETE PAVING

PART 3 - EXECUTION

3.1 CONSTRUCTION DETAILS: The Contractor shall comply with details of construction as specified in NYSDOT Sections 203-3.01 thru 203-3.20, Sections 304-3.01 thru 304-3.05 and Sections 401-3.01 thru 401-3.15.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - SUBBASE:

4.1.1 The quantity of Subbase allowed for payment shall be computed by using the product of the length, depth as directed, and the actual width, but not to exceed the maximum pavement width as shown on the Contract Drawing, less the volume occupied by any pipes or structures.

4.2 PAYMENT - SUBBASE:

4.2.1 For Subbase, not included in other unit or lump sum price items, payment for Subbase will be made at the applicable price stated in the Bid.

4.3 MEASUREMENT - BINDER COURSE AND TOP COURSE:

4.3.1 The quantity of Binder Course and Top Course, where used, shall be measured by the number of tons of compacted mixture placed in the work within the pavement limits shown or directed, as determined by certified truck scale weights.

4.4 PAYMENT - BINDER COURSE AND TOP COURSE:

4.4.1 For Binder Course and Top Course, not included in other unit or lump sum price items, payment for Binder Course and Top Course will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Ductile Iron Pipe & Fittings as shown on the Plans, as specified, and/or directed.

1.1.2 Ductile Iron Pipe and Fittings shall include, ductile iron pipe and standard or compact pattern fittings with flanged, push-on or mechanical joints.

1.1.3 Related Work Specified Elsewhere:

02110 - Clearing
02220 - Excavation
02224 - Lining and Special Backfill
02439 - Smooth Interior Corrugated Polyethylene Pipe and End Sections
02484 - Topsoil
02485 - Seeding
02521 - Asphalt Concrete Paving
02618 - Corrugated Metal Pipe and End Sections
03300 - Cast-In-Place Concrete

1.2 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS:

1.2.1 Ductile Iron Pipe and Fittings shall comply with the latest edition of the applicable following standards:

a. American National Standards Institute (ANSI).
b. American Water Works Association (AWWA).

Item	ANSI/AWWA
Mechanical Joint Pipe	A21.11/C111 A21.51/C151
Mechanical Joint Fittings	A21.10/C110
Compact Fittings	A21.53/C153

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DUCTILE IRON PIPE & FITTINGS

Item	ANSI/AWWA
Push-On Joint Fittings	A21.10/C110
Flanged Pipe	A21.15/C115 A21.51/C151
Flanged Fittings	A21.10/C110
Threaded Flanges	A21.15/C115
Cement - Mortar Lining	A21.4/C104
Installation of Ductile Iron Water Mains and Their Appurtenances	AWWA C600
Polyethylene Encasement for Ductile Iron Piping for Water and other Liquids	AWWA C105
Disinfecting Water Mains	AWWA C652

1.3 SUBMITTALS:

1.3.1 If requested by the Engineer, the Manufacturer shall furnish a sworn statement that his ductile iron pipe and fittings meet the requirements set forth in the standards.

1.3.2 Pipe, fittings and joint details and catalog cuts with sufficient information to determine compliance with these Specifications.

PART 2 - PRODUCTS

2.1 QUALITY ASSURANCE:

2.1.1 All material will be inspected on delivery and immediately before being placed in the work, and such pipe or fittings as do not conform to the Specifications, will be rejected. The Contractor shall furnish all labor necessary for handling the material during inspection and shall remove all rejected items from the site of the work.

2.1.2 Defective pipe or fittings found after installation shall be removed and replaced by the Contractor at his own expense.

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

2.1.3 Each pipe or fitting shall have its true weight in pounds plainly marked on its exterior, and shall be weighed in the presence of the Engineer, if so required, on scales to be provided by the Contractor. Pipes and castings shall be at least the thickness required for the class shown, but may be thicker, if the Contractor prefers, subject to approval. Any pipe or casting whose weight shall be less by more than five (5) percent, than the standard weight required, may be rejected.

2.2 MATERIAL:

2.2.1 All pipe to be furnished and installed in the work, except as otherwise specified, shall be Class 52 ductile iron cement-lined pipe. Compact ductile iron fittings may be provided. All fittings shall be cement-lined ductile iron or cement-lined cast iron with a 250 psi rating. Joints for all straight buried pipe shall be of the push-on self-centering, rubber-gasket type. Joints on buried fittings shall be of the mechanical joint type. Two metallic wedges, sufficient to assure electrical conductivity, shall be provided for each joint. Exposed pipe and fittings shall have flanged joints unless otherwise noted. Transition gaskets shall be provided as required at mechanical joint fittings and pipe ends when a pipe of material other than ductile iron is inserted into the mechanical joint.

2.2.2 All cement-lined ductile iron pipe shall conform in all respects to the most recent revisions of AWWA Specifications C-104, C-110, C-110a, C-111, C-151 and C-153. These Specifications cover ductile iron pipe, fittings, linings and joints.

2.2.3 The pipe shall be made by a manufacturer experienced in producing pipe of the type, size and quality specified herein. The pipe manufacturer shall have produced pipe having a record of at least five years successful performance.

2.2.4 The nominal pipe laying length shall be, as much as practical, in full pipe lengths (18 feet minimum).

2.2.5 All ductile iron pipe and fittings shall be encased in polyethylene. The Contractor shall provide polyethylene encasement in accordance with AWWA C105. The polyethylene film shall be 8 mil, Class C tubes or sheets as required.

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work.

3.1.2 All pipe and fittings shall be carefully handled by means of suitable equipment, in such a manner as to prevent damage to materials and protective coatings or linings. Under no circumstances shall materials be dropped or, in the case of the underground piping, dumped into the trench.

3.1.3 Pipe shall be laid on a prepared earth subgrade or special embedment as shown in the Contract Drawings, specified and directed. Selected material shall be put in the trench and tamped uniformly under the full length of pipe and up to the horizontal diameter of the pipe. Preparation of the subgrade, embedment of the pipe and backfilling shall be as specified in Section 02224. Blocking under pipe will not be used without specific approval of the Engineer.

3.1.4 Where bell and spigot pipe is utilized, the pipe shall be installed with the bell ends in the direction of laying. Except as otherwise specified, all pressure pipelines shall be laid on a flat bottom trench on a satisfactory foundation throughout the entire length. Bell holes may be dug to provide continuous support for the pipe.

3.1.5 No pipe shall be laid upon a foundation in which frost exists, nor at any time when the Engineer shall deem that there is a danger of the formation of ice, or the penetration of frost at the bottom of the excavation.

3.1.6 Where no depths, lines or grades are shown, specified or directed, the minimum depth to top of pipe shall be five (5'-0") feet. Otherwise pipe shall be laid to the lines and grades shown in the Contract Drawings, specified and directed.

3.1.7 Every precaution shall be taken to prevent foreign matter from entering the pipe while it is being placed in the line. During installation, no debris, tools, clothing or other materials shall be placed in the pipe.

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

3.1.8 At times when underground pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer.

3.2 CUTTING OF PIPE:

3.2.1 Cutting of pipe shall be done with pipe cutters, motor drive saws using abrasive disks, or with hand saws as required. Where machining is necessary for cut ends or for extending factory machining, it shall be done in accordance with the manufacturer's recommendations for the type of pipe and joint used.

3.2.2 The flame cutting of pipe by means of an oxyacetylene torch will not be allowed.

3.3 PIPE SUPPORTS AND JOINT RESTRAINTS:

3.3.1 Joints in interior and underground piping shall be restrained as shown or directed.

3.3.2 Restraining systems shall include Field Lok 350 gaskets as manufactured by U.S. Pipe or MJ restraining glands, lugs, clamps, threaded rods, rod couplings, nuts and washers as required. All units shall be constructed of corrosion resistant material.

3.3.3 Clamps shall be fabricated of not less than 1/2" x 2" barstock. Rods and bolts shall have a minimum diameter of 3/4" unless otherwise shown. Cor-ten bolts shall be used on all buried mechanical joints.

3.3.4 Structural members, pipe columns and concrete, where shown or indicated, shall also be used as means of pipe joint restraining.

3.3.5 Tie rods and nuts shall have a minimum yield strength of 70,000 psi.

3.3.6 Ferrous metal used in restraining systems for buried piping shall receive two coats of asphalt-based coating and shall be polyethylene encased in accordance with AWWA C105. Exposed systems shall be coated same as piping.

3.3.7 Pipe supports (if required) shall be as shown on the Contract Drawings.

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DUCTILE IRON PIPE & FITTINGS

3.4 ANCHORAGE:

3.4.1 Adequate blocking or anchorage, as shown on the Contract Drawings or as directed by the Engineer, shall be provided where abrupt changes in direction, steep slopes and dead ends occur.

3.5 MECHANICAL JOINTS:

3.5.1 Prior to assembly, the surfaces of the pipe which come into contact with the rubber gasket must be thoroughly wire brushed and wiped clean with clean rags to remove all loose rust and other foreign material. These surfaces must be clean before the joint is assembled. Just prior to slipping the gasket over the spigot end, the gasket and pipe surfaces shall be coated with an NSF approved lubricant.

3.5.2 The spigot must be centrally located in the bell, and the bolts must be tightened in such a manner that the gland is brought up toward the pipe flange evenly. Bolts must not be tightened excessively. If effective sealing is not attained with a tightening of the bolts by an average pull on the wrench, the joint shall be disassembled and reassembled after thorough cleaning.

3.5.3 Wherever it is necessary to deflect the pipe from a straight line, the maximum deflection for each joint shall not exceed 1°30' for 24" through 48" diameter pipe, 2°30' for 14" through 20" diameter pipe, 4° for 12" or smaller size pipe, or 80 percent of the manufacturer's recommendation, whichever is greater.

3.6 PUSH-ON JOINTS:

3.6.1 Push-on joints shall be assembled in accordance with the manufacturer's recommendation. Joint areas and gaskets shall be cleaned and lubricated as provided for in the mechanical joint assembly paragraphs above. Where no maximum joint deflection is shown or specified, the deflection for each joint shall not exceed 1°30' for 42" and 48" diameter pipe, 2°30' for 14" through 36" diameter pipe, 4° for 12" or smaller size pipe, or 80% of the manufacturer's recommendation, whichever is greater.

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DUCTILE IRON PIPE & FITTINGS

3.7 FLANGED JOINTS:

3.7.1 Flanged joints shall conform to AWWA Specification C-115. They shall be firmly bolted with through, stud or tap bolts.

3.7.2 Gaskets of the best quality sheet rubber packing or other approved material shall be used on all flanged joints.

3.8 FITTINGS:

3.8.1 All fittings shall be supported independently from the pipe in such a manner that no part of the weight of the fitting is held by the pipe unless otherwise shown on the Plans or directed by the Engineer.

3.8.2 Fittings and pipe within structures shall be placed to line and grade and properly supported before joints are made. The Contractor shall furnish all the necessary pipe supports, including stirrups, rods, clamps, hangers, pipe columns and piers, necessary to sustain the pipe and fittings in a firm and substantial manner to the lines and grades given.

3.9 PRESSURE AND LEAKAGE TESTING:

3.9.1 All pipelines carrying water shall be tested for strength and tightness after installation. All testing shall conform to AWWA C600, latest revision. All leaks at joint shall be corrected in a manner satisfactory to the Engineer, and any defective pipe shall be removed and replaced with sound pieces at the expense of the Contractor, and the line again tested.

3.9.2 Prior to testing, all dirt and foreign matter shall be removed by a thorough flushing of the newly laid pipeline. The flushing velocity shall be a minimum of 2.5 ft./sec. The Contractor shall assume that the rate of flow available from the existing water system is minimal, unless otherwise stated in the Information for Bidders and shall plan his flushing operation accordingly. The Contractor shall confer with the responsible person in charge of the municipal or private water system regarding notification of water customers before commencing the flushing operations. Contractor shall be responsible for the cost of water for this flushing and testing.

3.9.3 Test Pressure: Working pressure for this project shall be 150 pounds per square inch.

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

3.10 CHLORINATING, TESTING (CHEMICAL AND BACTERIOLOGICAL) AND FINAL FLUSHING:

3.10.1 Before the use of water is permitted from any portion of newly constructed waterline, and before said line shall be accepted, it shall be chlorinated, tested and flushed in the presence of and as directed by the Engineer. All aspects of disinfection, flushing and testing shall be in accordance with and conform to AWWA C651, latest revision, except as modified in this Section.

3.10.2 Prior to chlorination, the pipeline shall have been flushed, pressure tested and tested for leakage in accordance with Section 3.9.

3.10.3 Liquid chlorine or sodium hypochlorite shall be used for disinfection. Calcium hypochlorite and/or other granular or tablet types of disinfection shall not be acceptable. The treated water shall be retained in the pipe at least 24 hours unless otherwise directed by the Engineer. The chlorine residual shall not be less than 10 PPM at any point in the pipe at the end of the retention period.

3.10.4 The Contractor shall be responsible for the cost of water for chlorination and final flushing.

3.10.5 Chlorination and final flushing of water mains are to be fully coordinated with the Engineer.

3.10.6 Following chlorination, all treated water shall be thoroughly flushed from the new laid pipeline at its extremities until the replacement water throughout its length shall, upon test, both chemically and bacteriologically, be proved equal to the water quality served to the public from the existing water supply system, and approved by the Public Health Authority having jurisdiction. All such tests shall be performed by a New York State certified lab, and subject to the Engineer's approval. The cost of such tests shall be at the Contractor's expense. Sampling and testing protocol shall be in accordance with AWWA C651, latest revision or the Public Health Authority having jurisdiction, whichever is more stringent.

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DUCTILE IRON PIPE & FITTINGS

3.10.7 The Contractor shall not be allowed to discharge chlorinated water. The Contractor shall neutralize the chlorinated water used for the disinfection of the water main to a maximum residual of 0.05 ppm with one of the following chemicals listed in the following table, or the Contractor shall make provisions for the chlorinated water to be tanked away and disposed of.

POUNDS OF CHEMICALS REQUIRED TO NEUTRALIZE VARIOUS RESIDUAL CHLORINE CONCENTRATIONS IN 100,000 GALLONS OF WATER*

RESIDUAL CHLORINE CONCEN. mg/L	SULFUR DIOXIDE (SO_2)	SODIUM BISULFATE ($NaHSO_3$)	SODIUM SULFITE (Na_2SO_3)	SODIUM THIOSULFATE ($Na_2S_2O_3$$5H_2O$)
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
50	41.7	62.6	73.0	60.0

*Except for residual chlorine concentration, all amounts are in pounds.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - DUCTILE IRON PIPE & FITTINGS

4.1.1 The quantity of Ductile Iron Pipe & Fittings for which payment will be made will be the actual number of linear feet of ductile iron pipe and fittings furnished, installed and incorporated in the work, measured along the plain centerline of the pipe as installed, including excavation, trenching, thrust restraint, all backfilling with spoil materials, trench blocks, all surface restoration, saw cutting asphalt pavement, replacement of driveway culverts, storm drain piping and structures, and polyethylene encasement, as well as all other items of work not included in other unit or lump sum price items, in accordance with the Drawings, Specifications and instructions.

SECTION 02616

DUCTILE IRON PIPE & FITTINGS

4.2 PAYMENT - DUCTILE IRON PIPE & FITTINGS

4.2.1 For Ductile Iron Pipe & Fittings, not included in other unit or lump sum price items, payment for Ductile Iron Pipe & Fittings will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02617

UNDERGROUND VALVES & VALVE BOXES

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Underground Valves & Valve Boxes as shown on the Plans, as specified, and/or directed.

PART 2 - PRODUCTS

2.1 GATE VALVES:

2.1.1 All gate valves 12-inches or smaller to be installed shall be of the non-rising stem, resilient seated type. Resilient seated gate valves for underground use shall be furnished in accordance with the requirements of the latest revision of AWWA C509, but shall meet the specific requirements and exceptions to the aforementioned specifications, which follow:

a. Resilient seated gate valves shall have mechanical joint end with accessories unless otherwise specifically required or permitted.

b. Resilient seated gate valves shall open by turning counterclockwise unless otherwise indicated, they shall be manufacturer's standard patterns, of the inside screw, parallel double disk type, with iron body and shall be fully bronze mounted with O-ring seals and shall be lubricated and shall be packed, ready for use.

c. Operating nuts shall be 2 inches square and shall be loosely fitted on the stems.

d. All resilient seated gate valves shall be noted for 200 psi working pressure and 400 psi test pressure.

e. All iron work, after being thoroughly cleaned, shall be coated with asphaltum varnish.

SECTION 02617

UNDERGROUND VALVES & VALVE BOXES

2.2 VALVE BOXES:

2.2.1 Valve boxes shall be provided at all underground gate valves installed under this Contract. Valve boxes shall be 5-1/4" shaft size and be the three (3) piece screw type. The valve box length shall be as required. The castings shall be made of light grey cast iron, true to pattern and free from flaw. They shall be thoroughly coated with two coats of asphaltum varnish. Each complete valve box shall weigh about 110 pounds. The valve boxes shall conform to the following requirements:

a. The valve box top section shall be 17" long.

b. The valve box water cover shall have the word "Water" cast in the water cover, and an arrow with the word "Open". The arrow shall point in a counterclockwise direction.

c. The valve box bottom section shall be 29" long and shall be able to interlock into a round or an oval base.

d. The valve box base shall be round or oval, sized to fit 12" valves and smaller.

e. The valve box extension shall be screw type and shall fit and be made of the same materials as the above described valve boxes. It shall be 14" in length, or as specified. The minimum depth of cover shall be 5'. Valve box extensions may be required where depth of cover exceeds 5'.

f. All external fasteners shall be stainless steel (Type 304).

2.3 POLYETHYLENE ENCASEMENT:

2.3.1 All valves shall be encased in polyethylene. The Contractor shall provide polyethylene encasement in accordance with AWWA C105. The polyethylene film shall be 8 mil, Class C tubes or sheets as required. No separate payment shall be made for polyethylene encasement.

SECTION 02617

UNDERGROUND VALVES & VALVE BOXES

PART 3 - EXECUTION

3.1 WORK INCLUDED:

3.1.1 The work under this Section shall include, but not necessarily be limited to, the following:

- Excavation, Backfill and Clean-up
- Furnish and Install Underground Valves
- Furnish and Install Valve Boxes
- Lining
- Select Backfill
- Restoration

3.2 INSTALLATION:

3.2.1 Each valve shall be installed in accordance with the manufacturers' recommendations or as directed.

3.2.2 Valves shall be set plumb and jointed in the same manner as that specified for jointing mechanical joint pipe. Valve boxes shall be firmly supported and shall be kept centered and plumb over the operating nut of the valve. All valve box covers shall be approximately one inch below the surrounding surface, or as directed by the Engineer.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - UNDERGROUND VALVES & VALVE BOXES

4.1.1 The quantity of Underground Valves & Valve Boxes measured for payment shall be the actual number of underground valves furnished and installed complete, including valve, valve boxes, polyethylene encasement, excavation and backfill, in accordance with the Contract Drawings and/or as ordered.

SECTION 02617

UNDERGROUND VALVES & VALVE BOXES

4.2 PAYMENT - UNDERGROUND VALVES & VALVE BOXES

4.2.1 For Underground Valves & Valve Boxes, not included in other unit or lump sum price items, payment for Underground Valves & Valve Boxes will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02618

CORRUGATED METAL PIPE & END SECTIONS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Corrugated Metal Pipe & End Sections as shown on the Plans, as specified, and/or directed.

1.1.2 The end sections shall be attached to inlet and outlet ends of corrugated metal pipe and pipe arches in the locations and by the method shown on the Contract Drawings or as directed by the Engineer.

PART 2 - PRODUCTS

2.1 GALVANIZED CORRUGATED METAL PIPE & END SECTIONS: Galvanized Corrugated Metal Pipe & End Sections shall conform to the requirements of ASTM Specification A444 and Federal Specification QQ-C-806a. The units shall conform to the shape, dimensions and thickness shown on the Contract Drawings, or as verified in the field by the Contractor.

2.1.1 Damage to galvanized coating at the construction site shall be repaired in a method to be approved by the Engineer prior to acceptance of the work.

2.1.2 All Corrugated Metal Pipe & End Sections shall be of the same manufacturer and shall be designed to be joined by the couplings or other positive mechanical means approved by the Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION: Corrugated Metal Pipe and End Sections shall be installed in the locations shown on the Contract Drawings or as described in the Specifications or as directed by the Engineer. Connections and embedment shall be performed in strict accordance with all manufacturer's recommendations and as indicated on the Drawings.

SECTION 02618

CORRUGATED METAL PIPE & END SECTIONS

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - CORRUGATED METAL PIPE & END SECTIONS:

4.1.1 The quantity of Corrugated Metal Pipe & End Sections for which payment will be made will be the number of linear feet of corrugated metal pipe and end sections incorporated in the work, in accordance with the Drawings, Specifications and Instructions.

4.2 PAYMENT - CORRUGATED METAL PIPE & END SECTIONS:

4.2.1 For Corrugated Metal Pipe & End Sections, not included in other unit or lump sum price items, payment for Corrugated Metal Pipe and End Sections will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 02735

HDPE CASING INSTALLATION - DIRECTIONAL BORE METHOD

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for HDPE Casing Installation - Directional Bore Method of the specific locations as shown on the Plans, as specified, and/or directed.

1.1.2 This Section covers the installation of new HDPE casing pipe using the horizontal directional boring system. The directional boring system shall utilize a self-contained, surface-mounted boring machine to advance an electronically guided drill rod from an entrance pit to an exit pit at a specified pipe slope. The drill rod shall provide a pilot hole for pulling a back-reamer assembly, complete with nozzle, reamer, swivel, and product holder through the borehole for new product (pipe) installation. Directional boring shall be used: at the specified highway crossing locations at the Contractor's option; or as directed by the Engineer.

1.2 WORK SPECIFIED IN OTHER SECTIONS:

1.2.1 The work under this Section shall include the following:

02220	Excavation
02232	Lining, Special Lining, Sand Lining, Special Backfill & Special Backfill Mix
02484	Topsoil
02485	Seeding
02521	Asphaltic Concrete Paving

1.3 QUALIFICATIONS:

1.3.1 The Contractor shall be a factory-certified directional boring specialist, and shall be certified by the directional bore machine manufacturer. The Certification shall state that the Contractor is a fully trained user of the directional bore machine and is fully versed in its safe operation. The Certification shall be furnished to the Engineer for approval.

SECTION 02735

HDPE CASING INSTALLATION - DIRECTIONAL BORE METHOD

1.3.2 Polyethylene pipe jointing shall be performed by personnel trained in the use of butt-fusion equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified representative.

1.4 SUBMITTALS:

1.4.1 Submit the following:

1.4.1.1 Shop Drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendations for handling, storage, and repair of pipe and fittings damaged.

1.4.1.2 Method of construction, detail drawings showing space requirements for equipment setup at entrance pit and exit pit, safety provisions, etc., and written descriptions of the entire construction procedure to install the new pipe and new manholes.

1.4.1.3 Certification of workmen training for installing pipe.

1.4.1.4 Completed "Bore Planner" form (see end of section) for each bore submitted prior to commencing bore. Approval of the Engineer shall be obtained prior to commencing any bore.

1.4.1.5 The manufacturer of the HDPE pipe shall certify and submit that the materials used to manufacture pipe and fittings meet or exceed the requirements of this Specification.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS:

2.1.1 Polyethylene (PE) plastic pipe shall be high density polyethylene pipe (HDPE) and meet the applicable requirements of AWWA C906 and NSF Standard #14. The material used for the manufacturing of polyethylene pipe and fittings shall be PE 3408 High Density Polyethylene (HDPE) meeting the ASTM D3350 cell classification of 345434C.

2.1.1.1 All pipe shall be made of virgin material. No rework except that obtained from the manufacturer's own production of the same formulation shall be used.

SECTION 02735

HDPE CASING INSTALLATION - DIRECTIONAL BORE METHOD

2.1.1.2 The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

2.1.1.3 Dimension Ratios: The minimum wall thickness of the polyethylene pipe shall meet the following:

Depth of Cover (Feet)	Minimum DR of Pipe
0 - 16.0	11

2.1.1.4 Polyethylene pipe shall be ductile iron pipe size (DIPS) equivalent.

2.1.1.5 Tracer wire shall be affixed to the top of the pipe and pulled through the bore hole along with the pipe. Tracer wire shall be stainless steel wire not less than 0.10 inch in diameter, provided in sufficient length to be continuous over each separate run of nonmetallic pipe.

2.2 EQUIPMENT:

2.2.1 Directional Boring Machine:

2.2.1.1 The directional boring machine shall be of self-contained design for convenient setup at the specified locations. The self-contained design shall include, as a minimum, a power plant, rod box, and integral drilling-fluid pump. The boring machine shall be self-propelled for efficient loading, unloading and job site access.

2.2.1.2 The directional boring machine shall be capable of delivering rotational torques and pullback power required for the specified pipe installations.

2.2.1.3 The bore machine shall be capable of drilling a 4-1/2-inch diameter borehole. The bore head shall have a maximum locating depth of 50' walkover and 100' wire line. Locator accuracy shall be a minimum 5 percent of above measured value.

2.2.1.4 The bore machine's water pumping system shall be capable of delivering sufficient flows at sufficient pressures for the proposed installation.

2.2.1.5 The bore machine drill rods shall be of a diameter recommended by the manufacturer for the specified installations. Drill rods shall be of one-piece forged design, and 15 feet in length. The maximum angle in degrees/rod shall be no less than 4.3 degrees, or 7.5 percent per rod. Drill rods shall have a torque rating adequate for the installation specified.

2.2.1.6 The bore machine shall be equipped with all safety devices as furnished by the manufacturer, including, but not limited to, grounding stake, voltage stake, voltage equalizing mats for grounding standing personnel, electrical strike alert sensing system, area warning cones, warning decals and operating instructions, and insulated linemen's gloves and boots for operating personnel.

2.3 DELIVERY, STORAGE, AND HANDLING:

2.3.1 Transport, handle, and store pipe and fittings as recommended by manufacturer.

2.3.2 If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer and/or the Town of Volney at the Contractor's expense, before proceeding further.

2.3.3 Deliver, store and handle other materials as required to prevent damage and interference with Town of Volney, day to day operations and activities with residents.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHOD:

3.1.1 The Contractor shall verify the location (horizontal and vertical burial) of all existing utilities within the project area before proceeding with the bore, and shall submit a complete "Bore Planner" form to the Engineer for approval prior to commencing the bore. The Contractor shall secure the approval of the Engineer before performing any excavations for utility location. All surfaces disturbed during approved utility excavations shall be restored by the Contractor.

3.1.2 The Contractor shall thoroughly review the proposed pipe installations before proceeding with any bore, and shall submit his proposed method of construction for the Engineer's approval in accordance with Paragraph 1.3.1.2 of this Section.

3.1.3 The Contractor shall insure that all equipment, materials, supplies, utilities, and personnel are on-site before commencing any bore.

3.1.4 The Contractor shall review all soil bore data obtained by the Owner at the project site before commencing any bore to ensure that he/she is thoroughly familiar with the types of soils which could potentially be encountered during the bores. The Contractor shall be responsible for determining soil characteristics at locations not covered by the soil bores obtained by the Owner.

SECTION 02735

HDPE CASING INSTALLATION - DIRECTIONAL BORE METHOD

3.1.5 The Contractor shall set up the directional boring machine and perform the directional bore in accordance with the manufacturer's recommendations. The Contractor, based on soil types encountered, shall utilize the manufacturer's recommended drilling rods, drill bits, drilling fluids (i.e., water, bentonite, and polymers), back reamers and pullback speeds to allow for installation of the specified pipe sections without the occurrence of hydra-lock and frac-out (surfacing of high-pressure drilling fluid), the creation of voids around the new pipe, pipe seizing due to a dry hole, or stretching the new pipe due to soil resistance during the pull. Should the Contractor encounter any of these problems during his boring operations, he shall immediately inform the Engineer of the occurrence, and shall rectify the situation at his sole expense.

3.1.6 The Contractor shall be responsible for any damage his operations may cause to existing facilities, utilities, roadways, highways, etc., and shall be responsible for all costs associated with repairing any damaged facilities and amenities.

3.1.7 The Contractor shall determine if pre-reaming prior to the back ream is required for the specified installations. No additional payment shall be made for pre-reaming.

3.1.8 The Contractor shall be responsible for measuring all required pipe lengths for the specified installations, and shall provide sufficient excess lengths of new pipe for connections.

3.2 PIPE JOINING:

3.2.1 The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leakproof joint. Threaded or solvent-cement joints and connections shall not be permitted. All equipment and procedures used shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.

3.2.2 The butt-fusion joint shall be true alignment and shall have uniform rollback beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the Engineer prior to installing. All defective joints shall be cut out and replaced at no cost to the Owner. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, manufacturing or handling as determined by the Engineer shall be discarded and not used.

SECTION 02735

HDPE CASING INSTALLATION - DIRECTIONAL BORE METHOD

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT – HIGHWAY CROSSINGS - DIRECTIONAL BORE METHOD:

4.1.1 The quantity of Highway Crossings – Directional Bore Method measured for payment shall be per each highway crossings installed by the directional bore method, constructed in accordance with the Plans, or as directed.

4.2 PAYMENT – HIGHWAY CROSSINGS - DIRECTIONAL BORE METHOD:

4.2.1 Payment for Highway Crossings – Directional Bore Method not included under other unit or lump sum price items, will be made at the applicable price stated in the Bid and shall include the cost of all work, materials, labor and expense, including excavation, backfilling excavations with native or imported materials, furnishing and installing the HDPE casing pipe, all surface restoration, and all other work, in accordance with the Contract Specifications.

END OF SECTION

SPECIFICATIONS

SECTION 03210

REINFORCING STEEL

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for installing all Reinforcing Steel, welded wire fabric and accessories for cast-in-place concrete as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES:

1.2.1 Reference to standard specifications for the following organizations is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.

a. American Society for Testing and Materials (ASTM) Publications, Latest Edition.

b. American Concrete Institute (ACI) Standards, Latest Edition.

c. American Welding Society (AWS) Publications, Latest Edition.

d. American National Standards Institute (ANSI) Publications, Latest Edition.

e. Concrete Reinforcing Steel Institute (CRSI) Publications, Latest Edition.

1.3 SUBMITTALS:

1.3.1 Shop Drawings: Indicate bar sizes, spacings, locations and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices. No work on fabricating or placing steel shall be done until such drawings and schedules have been approved.

1.3.2 Manufacturer's Certificate: Submit certified copies of mill test report of reinforcement materials analysis.

SECTION 03210

REINFORCING STEEL

1.3.3 Welder's Certificate: Submit certification from welders employed on the work, verifying AWS qualification within the previous twelve months.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Reinforcing steel bars shall be free from defects, kinks, bends, rust, scale or other irregularities. Reinforcing mesh shall be of the electrically welded type, with wires arranged in rectangular or square patterns.

2.1.2 Reinforcing bars shall be deformed billet steel meeting the requirements of ASTM A615 Grade 60.

2.1.3 Steel wire fabric shall meet the requirements of ASTM A185.

2.1.4 Stirrup steel shall be cold drawn steel wire meeting the requirements of ASTM A82.

2.1.5 Epoxy coated reinforcing bars shall be deformed billet steel meeting the requirements of ASTM A775, Grade 60.

2.1.6 Accessory materials shall include: tie wire, minimum 16 gage annealed type. Epoxy-coated reinforcing bars shall be tied with plastic-; epoxy-; or nylon-coated tie wire. Chairs, bolsters, bar supports, and spacers shall be sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.2 IDENTIFICATION AND PROTECTION OF BARS AND FABRIC:

2.2.1 Reinforcing steel shall be delivered to the work in strongly tied bundles identified with metal tags corresponding to the bar schedules and diagrams. Identification marks shall show quantity, producing mill, bar size, type of steel and grade mark.

SECTION 03210

REINFORCING STEEL

2.2.2 All bars and fabric shall be stored off the ground and shall, at all times, be protected from moisture and be kept free from dirt, oil, or injurious coatings. Epoxy-coated reinforcing bars shall be stored on protective cribbing. If concreting is delayed for any considerable number of days after the reinforcing is placed in position, it shall be protected by covering with canvas or other satisfactory covering, or, if directed, shall be painted with a coat of neat cement grout.

2.2.3 Any bar or fabric having a scaly rust shall be cleaned. Epoxy-coated reinforcing bars that are cut, welded or otherwise damaged shall be repaired with patching material conforming to ASTM A775 and done in accordance with the Material Manufacturer's recommendation. The Contractor will be required to replace bars exhibiting severely damaged coatings.

PART 3 - EXECUTION

3.1 FABRICATION AND INSTALLATION:

3.1.1 Metal reinforcing shall be properly fabricated in accordance to references specified.

3.1.2 Metal reinforcing shall be properly placed in accordance to CRSI, ACI 301, ACI 318, ACI SP-66, as shown on the approved Shop Drawings and as herein directed.

3.1.3 Bars shall be bent in the shop to the shapes shown or required. Field bending shall be done only with the written approval of the Engineer. Field welding shall not be allowed without direct approval and supervision of the Engineer.

3.1.4 Unless otherwise shown, splices in tension reinforcement shall not be permitted, and splices in compression reinforcement shall be lapped 40 diameters. All bar splices shall be staggered, wherever possible. Locate splices not indicated on drawings, at point of minimum stress. Splice locations must be approved by the Engineer.

3.1.5 Reinforcing shall be securely tied and supported and must not be displaced during concrete placing operations. Epoxy-coated reinforcing bars shall rest on coated wire bar supports, or other acceptable materials. Dowels must be wired in place before concreting begins. All metal shall be kept away from exposed surfaces of concrete.

SECTION 03210

REINFORCING STEEL

3.1.6 Conduit in slabs on grade shall be placed in a depression below the slab and the mesh run continuous over conduit. Conduit in slabs on forms shall be above the bottom reinforcing and below the top reinforcing. No conduit is permitted in thin joist slabs.

3.1.7 Cutting of bars to clear openings in walls or slabs is strictly prohibited. Warp bars around such openings.

3.1.8 Provide two #6 diagonal bars at each corner of every rectangular opening in walls, unless otherwise shown on the Plans.

3.1.9 All slabs, unless otherwise shown on the Plans, to be reinforced with not less than WWF 6 x 6 - W2.9 x W2.9 welded wire mesh.

3.1.10 Placing of concrete shall not be scheduled until all of the reinforcing for the section is secured in place and the reinforcing and forms have been approved by the Engineer or his representative. Contractor shall notify the Engineer 24 hours prior to a concrete pour.

3.1.11 Welded wire mesh in slabs is to be placed in the upper third of the depth of the slab. Lap 6" minimum. Fabric shall be straightened as required before placement.

3.1.12 Provide bent bars 6'-0" long of same size and spacing as horizontal bars for all corners of foundation walls, unless otherwise shown on the Plans.

3.1.13 Do not displace or damage vapor barrier.

3.1.14 For footing reinforcement - support bars on small precast concrete blocks; space at intervals as shown on the Plans and within minimum height specified above underside of slab or footing.

3.1.15 Reinforcement shall not be bent after being partially embedded in hardened concrete.

3.2 CONCRETE PROTECTION FOR REINFORCEMENT:

3.2.1 Unless otherwise shown or directed, concrete protection, measured from the surface of the bar, shall be the following:

SECTION 03210

REINFORCING STEEL

3.2.1.1 For concrete deposited against the ground, without the use of forms..... 3 inches

3.2.1.2 For formed concrete in contact with the ground..... 2 inches

3.2.1.3 For slabs and walls contacting water or sewage..... 2 inches

3.2.1.4 For beams, girders and columns not directly exposed to ground and weather ..... 1-1/2 inches

3.2.1.5 For formed concrete exposed to the weather ..... 2 inches

3.2.1.6 For slabs and walls, not directly exposed to ground, weather, water or sewage..... 1 inch

3.2.2 Exposed reinforcing bars intended for bonding with future extensions shall be protected from corrosion by a covering of concrete or other approved material.

3.3 FIELD QUALITY CONTROL:

3.3.1 Field inspection will be performed under the provisions of Section 03300 or 03302.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - REINFORCING STEEL:

4.1.1 The quantity of reinforcing steel shall be determined by weight. Extra metal in laps will be included where authorized, where a single bar would be unreasonably long. The weight of devices for securing the reinforcement in position shall not be included in the quantity for payment. The quantity for which payment will be made will be the actual number of pounds of reinforcing steel placed as shown on the Plans and/or ordered by the Engineer.

SECTION 03210

REINFORCING STEEL

4.2 PAYMENT - REINFORCING STEEL:

4.2.1 For Reinforcing Steel, not included in other unit or lump sum price items, payment for Reinforcing Steel will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for plain and reinforced Cast-In-Place Concrete work including accessory items of work herein described, as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES:

1.2.1 Reference to standard specifications for the following organizations is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.

a. American Society for Testing and Materials (ASTM) Publications, Latest Edition.

b. American Concrete Institute (ACI) Standards, Latest Edition.

c. Standard Specifications - Construction and Materials, New York State Department of Transportation (NYSDOT), Latest Edition, including Addenda thereto.

1.3 QUALITY ASSURANCE:

1.3.1 Perform work in accordance with ACI 301 and ACI 302.

1.3.2 Acquire cement and aggregate from same source for all work.

1.3.3 Conform to ACI 305R when concreting during hot weather, except as herein modified.

1.3.4 Conform to ACI 306R when concreting during cold weather, except as herein modified.

SECTION 03300

CAST-IN-PLACE CONCRETE

1.4 SUBMITTALS, SAMPLES AND TESTS:

1.4.1 Product Data: Provide data on joint devices, attachment accessories and admixtures.

1.4.2 Concrete:

1.4.2.1 Samples and tests of all materials to be incorporated in the concrete shall be submitted in ample time for testing before delivery. All materials are subject to inspection and testing by a commercial testing laboratory approved by the Engineer at the Contractor's expense. All materials are subject to approval by the Engineer prior to their delivery to the site.

1.4.2.2 The Contractor shall obtain from the manufacturer, prior to the actual delivery of the concrete, a statement giving the sources, specific gravities, and sieve analyses of the aggregates and the dry weights of cement and saturated-surface-dry weights of fine and coarse aggregate and quantities, type and name of admixture (if any) and of water per cubic yard of concrete that will be used in the manufacture of each class of concrete to be provided. This data shall be sent to the Engineer for review and approval.

a. Aggregates shall be tested for gradation, purity and accelerated soundness. Tests shall comply with ASTM C33, C136, ASTM C40, and ASTM C88. The source of the material shall not be changed without retesting.

b. Cement shall have representative mill test reports on physical and chemical requirements. All cement stored at job site or at concrete supplier's place for over 60 days shall be tested for compliance with ASTM C150.

1.4.2.3 Contractor shall submit concrete mix design to be reviewed by the Engineer.

1.4.2.4 Tests of other materials may be required by the Engineer.

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 All materials shown, specified or required to be incorporated in cast-in-place concrete shall be of finest quality, and shall be delivered, stored and handled so as to prevent damage. Damaged or inferior materials will be rejected. Approved brands or sources must be used, without change for the entire project. All materials shall be proportioned to produce a well graded mixture of high density and maximum workability.

2.1.2 Portland Cement shall be a standard brand in compliance with ASTM C150 Type I. Only one brand shall be used for exposed work. Generally, Type I cement shall be used; however, Types II or III may be employed with the approval of the Engineer or if shown, or specified.

2.1.3 Fine Aggregates shall be clean, sharp, natural sand, free from loam, clay, organic impurities or frozen materials and shall conform to ASTM C33 in all respects. Sand shall be tested for impurities in accordance with ASTM C40.

2.1.4 Coarse Aggregates shall consist of strong, clean, crushed limestone or crushed gravel, free from harmful material and meeting all of the requirements of ASTM C33. Coarse aggregate shall also comply with New York State Department of Transportation Material Designation 703-02. Crushed limestone and crushed gravel shall meet the Physical Requirements (Testing) Designation 703-0201 and 703-0202, respectively.

2.1.5 Water used in mixing concrete shall be clean and free from all acid, alkali or organic matter and shall be obtained from a public water supply unless specifically permitted otherwise by the Engineer.

2.1.6 Ready Mix Concrete shall comply with ASTM Specification C94, this Specification, and used subject to the Engineer's approval.

2.1.7 Admixtures, where shown or specified, shall be as follows:

a. Air entraining agent shall be "Daravair" or "Darex AEA" as manufactured by W.R. Grace Co., or Master Builder's "MBVR", or equal meeting the requirements of ASTM C260.

b. Water reducing agent shall be Sika "Plastiment", Master Builder's "Pozzolith", W.R. Grace's "WRDA", or equal meeting the requirements of ASTM C494.

c. High range water reducers or superplasticizers shall be Sika "Sikament-FF", W.R. Grace's "Daracem-100" or "WRDA-19", or equal meeting the requirements of ASTM C494.

2.1.8 Bonding Agent, where shown or specified, shall be "Dural 104" bonding compound manufactured by Dural International Corporation, "Sikadur 32 Hi Mod" by Sika Corporation, or equal.

2.1.9 Anchorage Items, where shown or specified, shall be as follows:

a. Inserts for fastening shelf angles shall be malleable iron adjustable wedge type, with bolt and washer, if required, as manufactured by Hohman & Barnard, Inc., Richmond Screw Anchor Co., Inc., or equal.

b. Threaded inserts for fastening of soffits of concrete beams shall malleable iron, as manufactured by Hohman & Barnard, Inc., Richmond Screw Anchor Co., Inc., or equal.

c. Ceiling hanger inserts shall be standard type wire as manufactured by Hohman & Barnard, Inc., Heckman Building Products, Inc., or equal.

d. Masonry anchor slots shall be galvanized sheet metal, felt filled, as manufactured by Hohman & Barnard, Inc., Heckman Building Products, Inc., or equal.

e. Flashing reglets shall be O'Keefe's Inc., PVC "Watertite Type P", Hohman & Branard, Inc., or equal to size and shape shown.

2.1.10 Flexible Sleeve, where shown or specified, shall be of resilient rubber with a flanged, serrated waterstop and shall be cast directly into the walls of the concrete structure as shown on the Contract Documents. Flexible sleeve shall conform to the following physical requirements:

PROPERTY	ASTM TEST REQUIREMENTS		
	METHOD	MIN.	MAX.
Tensile Strength, psi	D412	1500	-
Ultimate Elongation, percent	D412	450	-
Hardness, Type A durometer	D2240	45	55

2.1.10.1 Flexible sleeve must permit a minimum of 10 degrees deflection in all directions. Flexible sleeve shall be "Lockjoint Flexible Manhole Sleeve" as manufactured by Chardon Rubber Company, "Kor-N-Seal" as manufactured by National Pollution Control Systems, Inc., or equal.

2.1.11 Forms shall be wood, metal, or other approved materials as follows:

a. Plywood shall be Commercial Standard Douglas Fir, moisture resistant, concrete form plywood, at least 5-ply 5/8" thick.

b. Metal forms shall be as approved, and must produce surfaces equal to those specified for wood forms.

c. Form oil shall be an approved non-staining mineral oil, such as "Duoguard II" by W.R. Meadows, "SEI Form Release GCC 100" by SEI Chemical, or equal.

d. Form ties shall be of approved design, adjustable length and free of devices that will leave hole or depression larger than 7/8" diameter. When forms are removed no metal shall be left within 1" of finished surface.

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2.1.12 Waterstops, where shown or specified, shall be minimum 3/8-inch thick across their entire section, heavy duty, serrated type manufactured from virgin polyvinyl chloride compound, "Model RB6-38H", as manufactured by Vinylex Corporation or TAM 5 as manufactured by Masons Supply Co., or equal. They shall have a tensile strength of minimum 1800 psi and an elongation of minimum 200%.

2.1.12.1 Waterstops shall be open bulb type, 6-inch wide unless otherwise shown or directed by the Engineer. The waterstops shall be supported during concrete placement to prevent dislodgement and to insure that the ends remain at right angles to the joint. Field joints shall be butt welded with an electric iron in accordance with the manufacturer's instructions.

2.1.12.2 Sample of the waterstops to be used shall be submitted to the Engineer for approval.

2.1.13 Premolded Joint Filler, where shown or specified, shall be premolded, resilient, non-extruding type, 1/2-inch thick unless shown otherwise, full depth of concrete section as manufactured by Celotex Corporation, "Fibre Expansion Joint Filler" by W.R. Meadows, or equal.

2.1.13.1 Sample of the premolded filler proposed to be used shall be submitted to the Engineer for approval.

2.1.14 Joint Sealant, where shown or specified, shall be elastomeric polyurethane sealant material, black in unexposed locations, and grey in exposed locations, and have balanced properties of elongation recovery and tensile strength, and shall be Sonneborn "Sonolastic NP1", Sika "Sikaflex 1A", or equal.

2.1.15 Protective Covering for concrete finish slabs, where shown or specified, shall be "Orange Label Sisalkraft", Polyethylene Film as manufactured by Fortifiber Corp., or equal.

2.1.16 Non-Shrink Grout, where shown or specified, shall be premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days; such as "Embeco" as manufactured by Master Builders, "SikaGrout 212" as manufactured by Sika, or equal.

2.1.16.1 Non-Shrink grout shall be used under structural steel column baseplates and all equipment baseplates. All work shall be done in strict accordance with the manufacturer's recommendations. At the request of the Engineer, the manufacturer's representative shall be called to the job site for consultation regarding detailed use of the grout.

2.1.17 Grout for fillets, channels, or other non-structural applications shall consist of one (1) part cement (Portland Cement Type 2) and three (3) parts fine aggregate (sand) with sufficient mixing water for the intended application.

2.1.18 Cementitious Coating Materials, where shown or specified, shall be "Thoroseal" with "Acryle 60" bonding agent, as manufactured by Thoro System Products, "Anchor Masonry Surfacer" as manufactured by Anti Hydro Waterproofing Company, or equal.

2.1.19 Curing Compound shall be acrylic based "Kure-N-Seal" as manufactured by Sonneborn, acrylic based "CS-309", or water based "VOCOMP-20" as manufactured by W.R. Meadows, or equal.

2.1.20 Vapor Retarder, where shown or specified, shall be "Moistop" as manufactured by Fortifiber Corp. Vapor Barrier shall be "Premoulded Membrane Vaporseal" as manufactured by W.R. Meadows, or equal.

2.1.21 Perimeter Insulation, where shown or specified, shall be "Styrofoam Square Edge" as manufactured by the Dow Chemical Corporation, "Foamular 250" as manufactured by UC Industries, or equal.

2.1.22 Penetrating Sealer, where shown or specified, shall be two components, 50% solids penetrating epoxy sealer. The penetrating sealer shall be fully compatible with the types of form oil, curing compound and joint sealant used.

2.1.22.1 Concrete surfaces to be treated must be dry, cured for a minimum of 21 days, free from surface accumulations of dust, dirt, oil, debris, concrete curing compounds, bond breakers, or other compounds which would prevent penetration and intimate contact between the concrete surface and the penetrating sealer. Concrete surfaces require preparation per manufacturer's directions prior to sealer installation.

2.1.22.2 Penetrating sealer shall be "Spec-Seal" as manufactured by Conspec, Inc., ESI Product 850 as manufactured by Epoxy Systems, Inc., or equal.

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2.1.23 Metal Slab Joints, where shown or specified, shall be keyed type, minimum 18 gauge, galvanized steel by Heckmann Building Products, Seymore Brothers, Inc., or equal.

2.1.24 Vapor Barrier: 6 mil (0.5 mm) thick clear polyethylene film type recommended for below grade application.

2.2 CONCRETE MIX DESIGN:

2.2.1 The Contractor shall submit concrete mix designs to be reviewed by the Engineer. The mix designs shall be confirmed by making and testing trial mixes for each class of concrete to be incorporated in the work. All testing shall be made by an approved testing laboratory at the expense of the Contractor. Mix designs shall conform to the ACI 301, except as may be modified in the Plans and/or Specifications.

2.2.2 No job concrete shall be poured until the mix design for that concrete has been approved by the Engineer. Once the mix has been approved, it shall not be changed, except when requested by the Engineer, or if requested by the Contractor and approved by the Engineer.

2.2.3 Ready-mixed concrete from an established company will be approved, if conforming to ASTM C94, and to this specification. All concrete shall be batched, mixed, delivered to the site, and shall conform to these requirements and be controlled in a manner to assure uniform concrete for the quality specified.

2.2.4 Water/cement ratios of all mixes shall be determined from w/c curve plotted from tests of the cement and aggregates used on the job. If necessary to increase the water content of the mix due to field conditions, sufficient cement must be added to maintain the design water/cement ratio. Accelerating or retarding admixtures may be permitted by the Engineer if requested by the Contractor to compensate for adverse weather conditions.

2.2.4.1 The various classes of concrete shall be designated as follows:

MAXIMUM PERMISSIBLE WATER-CEMENT RATIOS FOR CONCRETE (WHEN STRENGTH DATA FROM TRIAL BATCHES OR FIELD EXPERIENCE ARE NOT AVAILABLE) Maximum permissible water-cement ratio					
CLASS	MIN. 28-DAY COMPRESSIVE STRENGTH IN PSI*	NON-AIR-ENTRAINED CONCRETE		AIR-ENTRAINED CONCRETE	
		ABSOLUTE RATIO BY WEIGHT	US GAL. PER 94-LB. BAG OF CEMENT	ABSOLUTE RATIO BY WEIGHT	US GAL. PER 94-LB. BAG OF CEMENT
A	5,000	**	**	**	**
B	4,000	0.44	5.0	0.35	4.0
C	3,000	0.58	6.6	0.46	5.2
D	2,500	0.67	7.6	0.54	6.1
E	2,000	0.71	8.0	-	-

*28-day strength. With most materials, water/cement ratios shown will provide average strengths greater than indicated in Section 5.4 of ACI 318R as being required.

**For strength above 4,500 psi (non-air-entrained concrete) and 4,000 psi (air-entrained concrete) proportions shall be established by methods of Section 5.3 of ACI 318R.

Unless otherwise specified, all concrete shall be Class "B", non-air-entrained except exposed concrete which shall be air-entrained. When foundation walls or grade beams are exposed to weather above grade, the entire wall shall be considered exposed concrete.

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2.2.4.2 Maximum size aggregates shall be used as follows unless otherwise designated by the Engineer.

1-1/2"	general work
3/4"	thin sections; heavy reinforcing
3/4"	columns, beams and slabs
Over 1-1/2"	massive structures, with approval
3/8"	floor toppings

2.2.4.3 Slump - Maximum:

Reinforced concrete - general	4"
Reinforced concrete - thin walls, columns	5"
Non-reinforced concrete	3"
Pavements, including sidewalks	3"
Heavy mass concrete	3"

2.2.4.4 Air Content: Use an approved air entraining admixture. The entrained content shall be controlled between 4% - 6%. See Plans for concrete work requiring air entrainment.

2.2.4.4.1 For mixes containing coarse aggregate with a top size of 3/4" or smaller and for exposed concrete subject to frost and salt action, air contents shall be increased to the range of 5% - 7%.

2.2.4.5 Should the Contractor feel it advantageous to employ concrete additives to improve workmanship or facilitate his work, he shall obtain the approval of the Engineer prior to his use of additives.

2.2.4.6 Use of accelerating admixtures in cold weather will not relax cold weather placement requirements.

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2.3 STORAGE OF MATERIALS:

2.3.1 Portland Cement shall be stored in a weather-tight structure. No cement that has taken a warehouse set shall be used and any stored over sixty (60) days shall be rejected unless tested for soundness and setting time under ASTM C150. Such tests shall be at the Contractor's expense.

2.3.2 Fine and coarse aggregates shall be kept separated and free from deleterious substances. All topsoil shall be removed from the storage area. Materials shall be stockpiled in layers to prevent segregation; however, re-mixing may be required if gradation is not maintained. Care shall be taken not to inter-mix materials in the area with the aggregates.

2.3.3 Any materials that have deteriorated or become contaminated will be rejected for use in the concrete and must be promptly disposed of by the Contractor.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL:

3.1.1 Before each pour, forms and reinforcing shall be inspected and approved by the Engineer. The Contractor shall give at least 24 hours notice before such an inspection is required. No pour shall be started until the Engineer has given approval. No concreting may be done in the absence of the Engineer without written permission of the Engineer.

3.1.2 Concrete Batch Ticket:

3.1.2.1 The Contractor shall require the manufacturer of the concrete to furnish to the Engineer with each batch of concrete before unloading at the site, a delivery ticket on which is printed, stamped, or written, information concerning said concrete as follows:

- Name of ready-mix batch plant
- Serial number of ticket
- Date
- Truck number
- Name of purchaser
- Specific designation of job (name and location)
- Designation of the concrete by compressive strength

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- Amount of concrete in cubic yards
- Time loaded or of first mixing of cement and aggregates
- Reading of revolution counter at the first addition of water
- Type and brand, and amount of cement
- Type and brand, and amount of admixtures
- Total water added by producer (and W/C ratio)
- Water added at job site (upon approval of the Engineer)
- Maximum size of aggregate
- Weights of fine and coarse aggregate
- Ingredients certified as being previously approved
- Signature or initials of ready-mix representative

3.1.3 Concrete Testing:

3.1.3.1 The Contractor shall employ an approved commercial testing laboratory at his own expense to provide field sampling, testing and inspection of all concrete. Continuous inspection by the approved testing laboratory shall be provided during all concrete pours. The Contractor shall maintain a record set of plans at the site showing date and amount of each pour, test results and temperature. If any portion of the work shows low test results, the Engineer may require batch plant inspection, additional testing, load tests, cored samples, and/or replacement of the faulty work, etc., at the Contractor's expense.

3.1.3.2 The Contractor, through its approved testing laboratory, shall make all laboratory or field tests as required and shall furnish all necessary equipment. The Contractor, through its approved testing laboratory, shall transport all test cylinders from the site to the laboratory.

3.1.3.3 Field concrete inspection: The Contractor, through its approved testing laboratory, shall provide a competent field concrete inspector whose minimum duties shall be as follows:

- Check each truck on arrival to make sure that the concrete is not retempered.

- Make necessary slump tests for uniformity control.

- Make air tests and yield tests as required.

- Make any and all test cylinders as may be required in the Specifications.

- Notify the Engineers and/or his representative if any test results vary from the specified limits.

3.1.3.4 Tests:

a. Concrete shall be tested by an approved testing laboratory as follows:

- Standard 6" x 12" compression cylinders shall be in compliance with ASTM C39 in sets of four and shall be moist cured. Break 2 at 7 days, and 2 at 28 days. One set shall be made for approval of each mix design, one set for first pour of 50 cubic yards or less, and one set for each additional pour of 50 cubic yards. If less than 50 cubic yards are placed in one day, one set shall be made for each day's pour.

- All test cylinders shall be cast, moist cured and broken under laboratory conditions in accordance with the ASTM C31 and ASTM C39. All four cylinders of a test shall be taken from the middle third of a single load. Each cylinder shall be properly labeled with an identifying mark, the mix proportions, air content, amount of water, slump, and the location in the structure where the concrete was placed. Test reports shall include all this information. Distribute copies of reports as requested by the Engineer. Should any results be questionable, the Engineer shall be notified immediately so that corrective measures can be taken. Any test cylinder which has broken and fails to meet requirements shall be preserved for inspection by the Engineer.

3.1.4 Records:

3.1.4.1 Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.2 BATCHING AND MIXING:

3.2.1 All Batching and Mixing shall conform to the following and the ACI 304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".

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3.2.2 Aggregates and bulk cement shall be measured to within 1% by weight. Cement in standard sacks need not be weighed. Water shall be measured by volume or by weight to within 1/2%. Aggregate weights shall be corrected for moisture content. Admixtures shall be added through appropriate dispensing equipment to an accuracy of 3%.

3.2.3 The complete plant assembly shall be approved by the Engineer and shall conform to the following requirements:

- Provide ready adjustment of aggregate weights for varying moisture contents.
- Provide means of accurately controlling and easily checking water-cement ratio.
- Provide accurate control of all materials with positive shut-off.
- Facilities shall be provided for prompt removal of excess materials in hoppers.
- Each specified size of aggregate shall be measured separately with a separate beam scale.
- Bulk cement shall be dropped through canvas drop chutes or telescopic flexible hose tremie.

3.2.4 Concrete mixers or mixer trucks shall not be loaded to more than the rated capacity of the truck.

3.2.5 All concrete shall be mixed not less than 60 revolutions in the drum of a modern power mixer, at the rated speed of rotation Mix not less than an additional 30 revolutions after the addition of any further water to the mix..

3.2.6 Do not add raw materials to the drum until all of the preceding batch has been discharged. For transit mixers, the wash water shall be discharged and not used as part of the mix water for the next batch.

3.2.7 Transit-mixed concrete shall be transported to the job site unmixed and only after arrival at the job site shall mixing begin. All concrete shall be unloaded from the mixer within 45 minutes after completion of mixing. All concrete still remaining in the truck shall be rejected.

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3.2.8 The total time interval from the time the cement makes contact with the aggregate to the complete unloading from the mixer shall not exceed 90 minutes, unless such time is extended by the Engineer. The time may be reduced in hot weather or under unusual conditions, if unsatisfactory results are obtained.

3.3 FORMWORK:

3.3.1 The Contractor shall design and construct suitable and adequate formwork in conformance with ACI 347R. All shoring shall be properly braced to safely withstand all vertical, moving and lateral forces during the construction period. Responsibility for adequacy and safety rests with the Contractor. Materials shall be as stated in Paragraph 2.1.

3.3.2 General requirements for all forms shall be as follows:

- Forms shall be constructed of wood, plywood, or steel.

- All forms shall be set true to line, plumb, and properly braced so as to maintain the desired position and shape during and after pouring concrete. Forms shall be sufficiently tight to prevent leakage.

- All joints between sheets shall be backed up to assure that both sheets are in the same plane. Edges of abutting sheets shall be straight and true and shall be forced tightly together to minimize fins. Quality of form contact surfaces shall be subject to Engineer's approval.

- Form ties shall be designed for the specific wall thickness required, and after removal of the external portion, no metal shall remain closer than one inch (1") from the surface. Ties to be left in place shall be equipped with washers or other approved devices to prevent seepage of moisture along the tie. The removable portion shall be oil or grease coated.

- Immediately following the removal of forms, the projecting ties shall be removed and all holes filled with grout flush with the wall. Care shall be taken to use the same brand of cement and same mix proportions used in the wall to prevent color differences.

- Forms for walls and columns shall be provided with removable cleanout panels, to allow removal of chips and debris. All plywood forms must be new when first used on this job, but may be reused if kept in good condition. All forms shall be swept or flushed clean of shavings, debris, and other loose material. Loose earth and rock shall be scraped from footing trenches before pouring concrete.

- Provide 3/4" chamfer strips, unless noted otherwise on the drawings, at all exposed corners of columns, beams and walls where later finish is not to be applied.

- All forms and shores for floor and roof slabs and beams shall be "crowned" or "cambered" 1/4" for each 12 feet of span to eliminate dead load deflection. All forms shall be oiled with a non-staining mineral form oil before placing reinforcing.

- Build into forms all hangers, anchors, bolts, inserts, sleeves, etc., required to be set as part of this work, place and secure in exact position.

3.3.3 Form removal shall be as follows:

3.3.3.1 It shall be the Contractor's responsibility to determine the time at which forms may be removed without endangering the structure, subject to the following limitations, unless documentation is provided to modify these requirements:

Footing forms - 24 hours minimum; continue curing as specified.

Wall forms - 2 days minimum for ten (10) feet high. Add one (1) day for each additional five (5) feet of height; continue curing as specified.

Superstructure slabs, beams and columns shall not be stripped until the concrete attains at least 75% of its design strength as proven by test cylinders, and until a minimum of 14 days has elapsed.

Reshoring - immediately after stripping, fully reshore all slabs which are to be used to support shores for upper slabs. All forms for upper floor pours must be supported by shoring to at least two levels of full strength concrete.

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3.4 JOINTS FOR CONCRETE:

3.4.1 Joints for concrete shall include all expansion joints, construction joints and contraction joints.

3.4.2 All joints shall be constructed at locations shown on the drawings, or as directed by the Engineer. Additional joints may be constructed by the Contractor subject to the approval of the Engineer.

3.4.3 Expansion Joints

3.4.3.1 Expansion joints shall be constructed where shown and as directed. Reinforcement, corner protection angles or other fixed items embedded or bonded into concrete shall not be run continuously through expansion joints. Reinforcement shall be discontinued 2 inches from the joint face. A slightly rounded edging shall be provided to finish neatly all edges around expansion joints.

3.4.3.2 Preformed expansion joint filler material, sealant and waterstops, where shown on the drawings, shall be as specified in Paragraph 2.1.

3.4.4 Construction Joints

3.4.4.1 The location of construction joints shall be chosen by the Contractor and shall be subject to the Engineer's approval except where specifically located on the Plans.

3.4.4.2 Horizontal construction joints in walls will not be permitted, except with the approval of the Engineer. In order to minimize shrinkage, long continuous walls shall not be poured at one time. No more than 50 feet in horizontal direction shall be poured without a construction joint, unless prior approval is obtained from the Engineer.

3.4.4.3 Reinforcing shall be discontinuous through a construction joint, unless otherwise noted on drawings. As shown or specified on the drawings, additional No. 3 reinforcing bars spaced at 12-inches on center shall be placed horizontally in each construction joint at the center of the section. These bars shall be 4-feet long and shall extend 2-feet on each side of the joint. Reinforcement projecting through joint shall be kept clean.

3.4.4.4 If indicated on the drawings, all construction joints shall be provided with a keyway and a PVC waterstop as specified in Paragraph 2.1. The joint surface of the concrete previously placed shall be cleaned of all foreign matter and laitance by means of sandblasting with steam and sharp sand, or by other approved methods, until coarse aggregate is exposed. The concrete surface shall be saturated for a period of 6 hours and excess water then removed.

3.4.4.5 The new concrete shall be preceded by about 1/2-inch of soft mortar of the same proportions as that in the concrete. When accessible, this shall be scrubbed into the surface of the joint with wire brooms. Where waterproofing is required, the entire joint shall be parged with a grout of approved mixture as recommended by the manufacturer of the waterproofing admixture, or one composed of one part integral waterproofing, three parts water and sufficient Portland Cement to form a thick, creamy mixture. This grout shall be fresh when followed by the new concrete. In column forms and deep narrow forms, the concrete placement shall be started with an oversanded mix with 5/8-inch maximum aggregate, and extra sack of cement per cubic yard, and a 5-inch slump. This mix shall be placed maximum 2 inches deep on the construction joint. A mortar layer shall not be used.

3.4.4.6 If indicated on drawings, a metal keyed floor slab joint may be used in lieu of above method.

3.4.5 Contraction (Control) Joints.

3.4.5.1 Contraction joints shall be located as shown on the drawings or as directed. Reinforcement through the joint shall be continuous as shown on the drawings and/or as directed by the Engineer.

3.4.5.2 Sawcut contraction joints (Type "A") shall be made by cutting the concrete surface and filling with the sealant material as specified under paragraph 2.1. Cutting shall be done after the surface is firm enough not to be damaged by the cutting blade. Time of cutting shall be approved by the Engineer.

3.4.5.3 Formed contraction joints (Type "B") shall be made by tooling with a 1/4-inch radius edging tool and filled with the sealant material as specified under paragraph 2.1.

3.4.5.4 Premolded Contraction Joints (Type "C") shall be "Kold-Seal Zipper Strip" by Vinylex or "Zip Cap Control Joint" by Greenstreak Products, or equal.

3.4.5.5 As indicated on drawings, a metal keyed floor slab joint may be used in lieu of above method.

3.5 INSERTS AND SLEEVES:

3.5.1 The Contractor shall cooperate with all other Contractors in permitting the placing of all necessary sleeves, conduit, or inserts for hangers for their trades. The Contractor shall notify the trades of all pours in ample time for the responsible Contractor to place all embedded items, sleeves, slots, holes or chases.

3.5.2 Accurately set all slots, chases, anchor bolts, opening, etc. All inserts for hanging mechanical equipment shall be provided and set by the Contractor for the trade involved. All sleeves for piping passing through floors and walls shall be provided by the Contractor for the trade involved and set by the General Contractor.

3.5.3 All conduit which must be placed in concrete slabs shall be installed after, and above the bottom reinforcing, but before, and under the top reinforcing. Where conduit cross-overs are necessary, they shall be located so that reinforcing is not displaced from its specified position.

3.5.4 All anchor bolts for the structural steel shall be carefully set as shown on the fabricator's approved anchor bolt plan.

3.5.5 If, in the judgement of the Engineer, embedded items are located or grouped in a manner that will weaken the structure, the Contractor shall take the necessary corrective steps.

3.5.6 All inserts and sleeves where the outside diameter is greater than the spacing between the reinforcing steel, the reinforcing bars shall be warped around such inserts and sleeves. Unless shown otherwise on the drawings, provide, as a minimum, two #4 diagonal bars per face at 90 degrees to each other all around the inserts and sleeves.

3.5.7 Where openings are left in new concrete or are made in existing concrete for the insertion of wall castings, pipes or other fixtures, the space around these fixtures shall be made watertight by completely filling with a non-shrinking concrete containing an admixture of "SikaSet-C", "Anti-Hydro" Concrete Waterproofing Agent, or equal.

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3.6 CONVEYING AND PLACING CONCRETE:

3.6.1 The placing or depositing of all concrete shall be done in accordance with ACI 304, and as modified herein.

3.6.2 Preparation Prior to Placing Concrete:

a. Prepare previously placed concrete surfaces by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

b. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

c. Before placing concrete, all debris, water, snow and ice shall be removed from places to be occupied by concrete. Wood forms shall be wetted except in freezing weather or oiled, and the reinforcement cleaned of ice or other coatings.

3.6.3 Conveying, transporting, and placing shall be done as rapidly as practicable and without segregation, loss of ingredients, and without unnecessary rehandling. The tempering of concrete will not be permitted.

3.6.4 Concrete shall be deposited as nearly as practical to its final position to avoid segregation due to rehandling or flowing. The concreting shall be carried on at such a rate that the concrete is at all times plastic and workable and flows readily into the spaces between the reinforcing bars. No concrete that has partially hardened or been contaminated by foreign material shall be deposited on the work, nor shall retempered concrete be used. Once the concreting is started, it shall be carried on as a continuous operation until the placing of the panel or section is completed. All concrete shall be compacted by suitable means during the placing operation, and thoroughly worked around reinforcement and embedded fixtures and into corners of the forms. Tremies shall be used for deep forms, and concrete shall not be dropped more than 6'-0".

3.6.5 Vibrating:

3.6.5.1 During and immediately after depositing, all concrete shall be thoroughly compacted by vibrating the concrete internally with mechanical vibrating equipment. Care must be taken not to over-vibrate the concrete. Maintain spare vibrator(s) at the site for use in the event of breakdowns.

3.6.5.2 Spade and work the coarse aggregate away from forms, and work concrete around reinforcement to avoid air pockets, voids, and honeycombed sections. Hand spading slabs will be required in addition to mechanical vibration.

3.6.6 During concreting, check shoring frequently with level. Strengthen or adjust shoring as required. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

3.6.7 Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic and has been in place at least two hours.

3.6.8 Screed all work to level surfaces at the proper elevations. Rake surfaces to provide bond for floor finishes where specified.

3.6.9 No concrete shall be deposited under water without written permission of the Engineer and then only in accordance with his directions. Proper tremie equipment and techniques must be used, should the need arise.

3.6.10 The Contractor shall have available at all times sufficient approved materials such that, when started, concrete shall be continuous operation until placement of panel or section is complete. Should placing of concrete be suspended or unavoidably interrupted once a pour has been started, provide bulkheads and keyways at formed surface at which to stop pour.

3.6.11 All laitance shall be removed from previous pours before additional concrete is placed.

3.6.12 Place concrete continuously between predetermined expansion, control and construction joints.

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3.7 PROTECTION AND CURING:

3.7.1 All concrete shall be protected against injury by sun, rain, freezing, mechanical damage, or premature drying. All concrete shall be maintained above 50°F in a moist or wet condition for at least the first 7 days after placement.

3.7.2 On vertical surfaces keep forms on, or cover with burlap blankets, kept wet. When forms are exposed to the sun, minimize moisture loss by keeping the forms wet until they can be removed safety.

3.7.2.1 For the preservation of moisture, apply one of the following procedures to concrete not in contact with forms, immediately after completion of placement and finishing:

a. continuous sprinkling
b. application of absorptive mats or fabric kept continuously wet
c. application of waterproof sheet materials as specified in Part 2, herein
d. application of the curing agent specified in Part 2, herein

3.7.3 On horizontal surfaces and floors to receive later finishes, cover with wet burlap, wet sand, or curing paper and keep saturated. Cement finish floors shall be covered with protective covering material with lapped and sealed edges after the concrete has set sufficiently to carry worker's weight. Covering shall remain in place until floor is cleaned. Weight covering with planks as required to hold it in place.

3.7.4 Cold weather protection shall conform to A.C.I. 306R, except as modified herein.

3.7.4.1 Prior to pouring, it shall be the Contractor's responsibility to keep the forms free from snow, ice, mud or debris at all times, by means of covers, enclosures, live steam or heating below the forms, as necessary. Use of torches, open flames, salts, straw, hay or chemical is prohibited.

3.7.4.2 When air temperature is 40°F, or less, use only heated concrete, delivered to the forms at temperatures between 65°F and 85°F. All portions of freshly poured concrete shall be continually maintained at a temperature of not less than 50°F for seven days. Specified temperature shall be maintained by heated enclosures, insulating blankets, insulated forms, or whatever approved methods are required to attain the specified result.

3.7.4.3 Concrete shall not be poured on frozen soil. After pouring, protect against freezing and heaving of subgrade. Any frozen concrete will be rejected and removed at the Contractor's expense. Accelerating admixtures shall not be accepted in lieu of winter protection.

3.7.5 Hot weather protection shall conform to ACI 305R, except as modified herein.

3.7.5.1 During warm dry weather special care and precautions should be taken to prevent premature setting which may cause shrinkage and surface checking. No concrete shall be placed at temperatures above 90°F without approval of the Engineer.

3.7.6 No water (except curing spray) shall be allowed to come in contact with the concrete or masonry surface for a minimum of 24 hours. Should the rising water place a stress on the concrete, proper bracing shall be provided. Loading shall not occur without prior approval by the Engineer, and proper safety precautions shall be the responsibility of the Contractor.

3.7.7 Curing compound may be used as specified in Paragraph 2.1 provided discoloration does not occur and application is in accordance with manufacturer's direction and is compatible with concrete finish.

3.8 FOOTINGS AND MATS:

3.8.1 Hand trim excavation to required levels.

3.8.2 Where shown on the drawings provide concrete mud mat to the thickness indicated.

3.8.3 Support reinforcing on bricks or precast blocks, or where mud mat is used, on chairs or bolsters, 3" clear of soil.

3.8.4 Columns and wall dowels shall be positioned, supported and tied in place before concrete is poured. Footing bottoms shall be inspected and approved by the Engineer before placing mud mat or footings.

SECTION 03300

CAST-IN-PLACE CONCRETE

3.9 SUPPORTED SLABS ON FORMS:

3.9.1 Forms shall be built to required dimensions and camber as specified above. Reinforcing shall be located as shown on approved placing plans. Support bars at specified heights with bolsters, chairs, etc., so that reinforcing will not be moved from the specified position during placing of concrete.

3.9.2 Refer to paragraph 3.5 for installation of conduits.

3.10 SLABS ON GROUND:

3.10.1 Subgrade and base to be prepared as specified in Contract Documents.

3.10.2 Form depressed ribs under partitions as required by sloping gravel, or provide permanent side forms to retain gravel.

3.10.3 Trench subgrade for electric conduit as detailed on Plans. All reinforcing shall be above electric conduit.

3.10.4 Place slabs of thickness shown on Plans, vibrate, screed, float level, and finish as specified below.

3.11 CONCRETE FINISHES - FORMED SURFACES:

3.11.1 After the forms are removed, all concrete surfaces shall be inspected, and any poor joints, voids, stone pockets or other defective areas noted by the Engineer shall be repaired immediately at the Contractor's expense by cutting away the unsound area to a minimum depth of 1 inch, and refilling with mortar mixed using the same brand of cement as the original pour. Edges of the patch shall be square with the face, with feather-edging prohibited. Obtain approval of corrective action prior to repair.

3.11.2 Care shall be taken to saturate the patched area and holes shall be filled in 1/2-inch layers with a delay for an initial set to take place before the succeeding layer is applied. If, in the opinion of the Engineer, improper consolidation is too extensive, or if the structure appears weakened by the voids, complete removal of the concrete in question may be required. Patches shall be kept moist for a minimum of three days.

3.11.3 Rubbed finishes shall be as follows:

a. Type A: Surfaces shall be rubbed until all marks are obliterated and a uniformly smooth finish is obtained.

b. Type B: Surfaces shall be rubbed until they are uniformly smooth, but the complete obliteration of all marks is not required.

c. Type C: All fins, burrs and projections shall be removed, any honey-comb or tie-holes shall be filled and patched.

3.11.4 The type of finish to be used shall be as scheduled or as noted on the Plans. Where the type of finish is not shown or scheduled, exposed faces shall be given a Type B finish and unexposed faces shall be given Type C finish.

3.11.5 Rubbing shall begin as soon as practicable after removal of forms and shall be expedited to completion as rapidly as practicable.

3.11.6 Surfaces shall be rubbed with carborundum and water until all fins, bubbles, hollows and other defects are removed. Grout or mortar shall not be used in the rubbing process, and plastering of surfaces will not be permitted. Power tools shall be used for rubbing with hand work limited to inaccessible corners or very small areas.

3.12 FLOOR AND SLAB FINISHING:

3.12.1 Finished floors and slabs shall be level to within 1/8" of finish floor elevation in ten feet. If this variation occurs, it must not be abrupt, but must taper so that the 1/8" variation takes place in not under 4 feet. Areas with drains shall have the surfaces sloped uniformly and true to the effect that no surface ponding occurs. If required by the Engineer, replace, grind or furnish underlayment to correct the variation, at the Contractor's expense. All floors and slabs shall be cured and protected as specified.

3.12.2 Trowelled Finish: Provide a floated finish, followed by a power troweling and then a hand troweling thoroughly consolidating the surface. Provide a finished surface essentially free from trowel marks and uniform in texture and appearance.

3.12.2.1 Where exposed concrete finish is specified, provide a steel trowelled finish.

3.12.2.2 Under quarry tile and ceramic tile screed to accurate lines and levels as required to receive these materials. Floors receiving tile are to be steel trowelled finished and are indicated on the Plans.

3.12.3 Float Finish: A float finish shall be applied to all exterior concrete and those areas not intended for occupancy, such as culvert inverts, bottoms of manholes and catch basins, pads, etc.

3.12.4 Broom Finish: Provide a floated finish. While the surface is still plastic, provide a textured finish by drawing a fiber bustle broom uniformly over the surface in one direction only. Provide "medium" texturing unless noted otherwise on the Contract Drawings. Sidewalks, walkways, or exterior ramps shall be given a broom finish, perpendicular to traffic, sufficient to leave marks without appreciable disturbance of the surface.

3.12.5 Dusting with dry cement or cement sand mixtures, to hasten drying, is prohibited. Dry time shall be controlled by controlling the water content and slump of the concrete when placed.

3.13 BONDING:

3.13.1 For the bonding of new and old concrete, such provisions shall be made by means of steps, dovetails, bonding agents as specified in Paragraph 2.1, or other devices as shown, or directed.

3.13.2 When placing of concrete is suspended or unavoidably interrupted, all necessary grooves for bonding future work shall be made before the concrete has attained its initial set. When the work is resumed, concrete previously placed shall be roughened, cleaned of all foreign material and laitance by means of sandblasting with steam and sharp sand or other approved methods, until coarse aggregate is exposed, and thoroughly wetted and slushed with mortar containing the same proportion of cement and fine aggregate as used in the concrete to be placed. Follow manufacturer's preparation recommendations when using a bonding agent.

3.14 MISCELLANEOUS CONCRETE WORK:

3.14.1 Pour all sump pits, canopies, copings and provide all other miscellaneous concrete and cement work shown on the drawings. All such concrete shall be reinforced as shown. Provide all cement filled stair treads as detailed. Place bottoms and walls of pits and trenches monolithically or provide waterstops and keys.

3.14.2 Concrete Walks: Provide 4 inches thick minimum. Provide contraction joints spaced every 5 linear feet, unless otherwise indicated. Cut contraction joints 3/4-inch deep with a jointing tool after the surface has been finished. Provide 1/2-inch thick transverse expansion joints at changes in direction, where sidewalk abuts curb, steps, rigid pavement, or other similar structures. Provide a transverse slope of 1/4-inch per foot, and limit variation in cross section to 1/4-inch in 5 feet unless otherwise indicated.

3.14.3 Curbs and Gutters: Provide contraction joints spaced every 10 feet maximum, unless otherwise indicated. Cut contraction joints 3/4-inch deep with a jointing tool after the surface has been finished. Provide expansion joints 1/2-inch thick and spaced every 100 feet maximum, unless otherwise indicated. Provide a broom finish.

3.14.4 Equipment Bases: Unless otherwise shown, all equipment shall be erected on bases of Class "B" concrete. Thickness shall be as noted on the Plans, but at no time shall it measure less than 1 inch.

3.14.5 Concrete Stairs, Steps and Platforms: Stairs, steps and platforms shall be formed to required profiles shown on the Plans. Place reinforcing as required. Finish of stairs and steps shall be monolithic. Where shown on Plans, provide for nosings. Exterior stairs, steps and platforms shall have a non-slip finish. Before final troweling, embed abrasive grits, as specified in Paragraph 2.1, in the surface.

SECTION 03300

CAST-IN-PLACE CONCRETE

3.15 CEMENTITIOUS COATING:

3.15.1 Cementitious Coating shall be applied to all exposed exterior and interior Cast-In-Place Concrete surfaces except concrete floors and walking surfaces in accordance with the schedule shown on the Plans, or otherwise directed.

3.15.2 The surfaces to be coated shall be clean, free of all laitance, dirt, grease, curing compound, form treatments, efflorescence, paint and other foreign matter. All formed tie-rod holes and honeycombed areas shall be patched flush with the surrounding area using mortar as recommended by cementitious coating manufacturer.

3.15.3 All areas scheduled to be coated will receive two coats of cementitious coating as specified in Paragraph 2.1, applied at a minimum rate of 2 pounds per square yard per coat. The first coat shall be allowed to set before the second coat is applied. Sufficient materials shall be applied to fully seal all pores and voids. All coatings shall be done strictly in accordance with the manufacturer's recommendations.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - CAST-IN-PLACE CONCRETE:

4.1.1 The quantity of Cast-In-Place Concrete for which payment will be made will be the actual number of cubic yards measured in place within the lines shown, specified, or ordered.

4.2 PAYMENT - CAST-IN-PLACE CONCRETE:

4.2.1 For Cast-In-Place Concrete, not included in other unit or lump sum price items, payment for Cast-In-Place Concrete will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 15053

FLEXIBLE PIPE COUPLINGS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Flexible Pipe Couplings as shown on the Plans, as specified, and/or directed.

1.1.2 Related work specified elsewhere:

Section 02616 - Ductile Iron Pipe and Fittings.

1.2 SUBMITTALS:

1.2.1 Submit shop drawings and/or bulletins showing the equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

a. Dresser Industries Style No. 153
b. Ford Style FC1
c. Smith-Blair Series 441
d. Romac Style 501
e. Approved equal

2.2 SLEEVE TYPE COUPLINGS:

2.2.1 Couplings shall be complete with middle ring, followers, gaskets, bolts and nuts.

2.2.2 Body and follower flanges shall be ductile iron ASTM A536. Ends shall have smooth inside taper for uniform gasket seating.

SECTION 15053

FLEXIBLE PIPE COUPLINGS

2.2.3 Gasket Material: Nitrile (Buna-N) or SBR, unless another material is specified. Select appropriate gasket for outside diameter of pipes to be joined.

2.2.4 Bolts: Unless otherwise specified, stainless steel with rolled threads and track-heads.

2.2.5 Shop Coating: Epoxy prime and finish coat, or equal corrosion-resistant coating system.

2.2.6 The lengths of pipe to be joined by sleeve type couplings shall be furnished with plain ends in accordance with American Water Works Association Specifications for steel, cast iron and ductile iron water pipe.

2.3 COUPLING HARNESSES:

2.3.1 Sleeve type couplings shall be harnessed where shown with number and size of rods indicated.

2.3.2 Rods, nuts and lugs shall be made from ASTM Des: A36 steel. Lug strength shall be equivalent to rod strength.

PART 3 - EXECUTION

3.1 INSTALLATION AND TESTS:

3.1.1 The couplings shall be installed in accordance with the Manufacturer's instructions. Each coupling shall be tested for water-tightness or air-tightness at the pressure specified for testing the completed pipeline.

PART 4 - MEASUREMENT & PAYMENT - FLEXIBLE PIPE COUPLINGS:

4.1 MEASUREMENT - FLEXIBLE PIPE COUPLINGS:

4.1.1 Measurement for Flexible Pipe Couplings shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section, and shall be the actual number of Flexible Pipe Couplings installed in accordance with the Contract Drawings and Specifications.

SECTION 15053

FLEXIBLE PIPE COUPLINGS

4.2 PAYMENT: FLEXIBLE PIPE COUPLINGS:

4.2.1 For Flexible Pipe Couplings, not included in other unit or lump sum price items, payment for Flexible Pipe Couplings will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 15055

HYDRANT ASSEMBLY – COMPLETE

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Hydrant Assembly - Complete as shown on the Plans, as specified, and/or directed.

1.2 SUMMARY:

1.2.1 The work under this Item shall include, but not necessarily be limited to, the following:

- Excavation, Backfill and Restoration
- Hydrant
- Hydrant Extensions
- 6-Inch Gate Valve and Valve Box
- Polyethylene Encasement
- Tie Rods and Fasteners
- Lining and Special Backfill
- 6-Inch Ductile Iron Pipe and Fittings (allowance of 10 feet, unless otherwise directed)

PART 2 - PRODUCTS

2.1 HYDRANTS:

2.1.1 Hydrant shall be Kennedy K81, Mueller Centurion 250, or approved equal. Hydrants shall conform in all respects to AWWA Specification C-502 latest edition and manufacturer's most recent improved design including hydrant extension pieces complete.

SECTION 15055

HYDRANT ASSEMBLY – COMPLETE

2.1.2 The hydrant main valve shall have a minimum size of 5 inches and shall be open counterclockwise. Each hydrant shall be equipped with two 2-1/2 inch hose nozzles and one 4-1/2 inch pumper nozzle. The one (1) 4 1/2-inch hose nozzle shall have threads in conformance with National Standard as found in APPA No. 194. The two 2-1/2 inch hose nozzles shall be National Standard Thread. The inlet shall be 6-inch mechanical joint type with accessories. Nozzle caps, gaskets, and chains shall be provided.

2.1.3 Stainless steel bolts shall be used on the mechanical joint of the inlet.

2.1.4 All hydrants shall be painted in accordance with Town of Volney requirements.

2.1.5 Hydrant markers shall be installed on each hydrant. Hydrant markers shall consist of a minimum 4-foot high pole with a flag on top. The pole shall be made of galvanized steel, fiberglass, or carbon steel with a polyster finish for corrosion resistance. The pole shall be mounted by an integral 1/2" diameter loop for mounting behind the cap of a standard 2-1/2 inch NST barrel. The pole shall also have a heavy coil spring at the base for flexibility. The flag shall be a minimum 16 square inches and shall be faced with reflective tape.

PART 3 - EXECUTION

3.1 HYDRANT INSTALLATION:

3.1.1 The Contractor shall construct and install hydrants in the locations shown on the Contract Drawings and/or as directed.

3.1.2 Complete hydrant installation shall include a minimum 1 cubic yard crushed stone for drainage.

3.1.3 The hydrant shall be harnessed to the 6-inch pipe using tie rods and lug fasteners as shown in the Contract Drawings.

3.1.4 Hydrants shall be installed plumb and with proper barrel length so as to locate the safety flange not more than six (6) inches, above the level of the edge of the highway on which it fronts, unless otherwise directed. The Contractor shall furnish and install, where necessary, hydrant extensions manufactured for use with the hydrants installed. Where installation of a hydrant results in the nozzles being more than six (6) inches above existing grade, the Contractor shall fill, dress and seed an access area around the hydrant as directed. The Contractor shall provide the fill material unless suitable spoil is available from the work. In cases where the finished grade in the area around the hydrant is above or below the level of the finished highway on which it fronts, the safety flange shall be no more than six (6) inches above finished grade.

SECTION 15055

HYDRANT ASSEMBLY – COMPLETE

3.1.5 All hydrants of the same class shall be the product of one manufacturer and shall have the name, monogram or initials of the manufacturer cast thereon. They shall be built and equipped for the type of operation shown, specified or directed. All iron work, after being thoroughly cleaned, shall be coated with asphaltum varnish.

3.1.6 Where the hydrant assembly is to be located between the existing drainage swale and right-of-way boundary, the Contractor shall install a 20-foot section of 12-inch corrugated metal pipe with end in the existing swale and backfill. Where an upstream culvert exists and is larger than 12 inches in diameter, install culvert with diameter equal to the existing upstream culvert.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - HYDRANT ASSEMBLY - COMPLETE:

4.1.1 The quantities for Hydrant Assembly - Complete, measured for payment, shall be the actual number of hydrants placed and incorporated in the work in accordance with the Contract Drawings and orders. The price bid to furnish and install each hydrant shall include the cost of all materials and work incidental to providing the hydrant.

4.2 PAYMENT - HYDRANT ASSEMBLY - COMPLETE:

4.2.1 For Hydrant Assembly - Complete, not included in other unit or lump sum price items, payment for Hydrant Assembly - Complete, will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 15064

FURNISH & INSTALL WATER SERVICE

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Furnish & Install Water Service, as shown on the Plans, all necessary fittings, tubing and appurtenances to install new water service, as specified, and/or directed.

PART 2 - PRODUCTS

2.1 CORPORATION STOPS:

2.1.1 Corporation stops shall be Mueller 300 "B-25008" ball corporation valves, Ford Ball Corp Corporation Stop, or approved equal, and shall be equipped with the standard AWWA C800-66 inlet thread.

2.1.2 The maximum size corporation stop permitted in the barrel of Gray-Iron or Ductile-Iron Pipe, without the use of service clamps, shall be as follows:

Pipe Size (inches)	4	6	8	10	12	16
Tap Size (inches)	3/4	3/4	1	1-1/2	1-1/2	2

2.1.3 Connections larger than those appearing in the above table or connections into PVC pipe shall be made with a service clamp.

2.1.4 Service clamps for ductile iron and PVC water main shall be Mueller "DR1S Series Single Strap Ductile Iron Service Saddles", Smith-Blair, Inc. Series 315, or equal, for services 1-inch and smaller and Mueller "DR2S Series Double Strap Ductile Iron Service Saddle", Smith-Blair, Inc. Series 317, or equal, for service 1-1/4 inch and larger. All service clamps shall feature ASTM A395 ductile iron body, 304L stainless steel straps and hardware, and Nitrile O-ring gasket.

2.1.5 The maximum size tap with or without service clamps in Ductile Iron, PVC or HDPE Pipe shall be 2 inches. Connections larger than 2 inches shall be made with tapping sleeves and valves.

SECTION 15064

FURNISH & INSTALL WATER SERVICE

2.2 COPPER TUBING:

2.2.1 A continuous length of copper tubing shall be used between the corporation and curb stop, between curb stops, or between the curb stop and the blowoff, unless specifically permitted by the Engineer.

2.2.2 Copper Tubing shall be seamless, Type K, soft drawn, conforming to ASTM B88, and shall be used for all general water service connections in the nominal sizes of 3/4", 1", 1-1/2" and 2" unless otherwise specified.

2.2.3 Couplings for joining copper tubing shall be a Mueller "H15400", Ford "C22-11 through C22-77", or approved equal.

2.3 SERVICE BOXES:

2.3.1 Service boxes shall be Bingham & Taylor, Size #94-E, Mueller H-10310, or approved equal, and shall be 2-1/2 inch shaft size (2) piece screw type. The service box shall extend from 42 inch to 60 inch in height. The castings shall be made of light gray cast iron and true to pattern.

2.3.2 Service box shall include a water cover which shall be of the (old style) type and shall have the word "Water" cast into the water cover, and shall include a brass pentagon screw.

2.3.3 Service box extensions shall be of a screw type and fit the 2-1/2 inch service box and shall be made of light gray cast iron and true to pattern.

PART 3 - EXECUTION

3.1 After installation, testing, chlorination, flushing and approval of the new water main, the new corporation stop shall be installed on the new water main.

3.2 The Contractor shall furnish and install Type K copper tubing as directed or as shown on the Contract Drawings. The curb stops and boxes shall be located as shown on the Contract Drawings or as directed. All copper tubing shall be laid at a minimum depth of 5 feet from final grade. All joints shall be watertight.

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FURNISH & INSTALL WATER SERVICE

3.3 HIGHWAY CROSSING:

3.3.1 All water services crossing public highways, roads or streets shall be installed by jacking, boring or rodding. Installation by use of water jets is prohibited except by written permission of the authority having jurisdiction.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - FURNISH & INSTALL 3/4-INCH WATER SERVICE (NEAR SIDE):

4.1.1 The quantity of 3/4-inch water services, for which payment will be made shall be the actual number of units on the near side of the road as the proposed water main placed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

4.2 PAYMENT - FURNISH & INSTALL 3/4-INCH WATER SERVICE (NEAR SIDE):

4.2.1 For Furnish & Install 3/4-Inch Water Service (Near Side), not included in other unit or lump sum price items, payment for Furnish & Install 3/4-Inch Water Service will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of furnishing and installing the corporation and curb stop with box, excavation, backfilling, cleaning up the site, and pavement repairs, if necessary, and the cost of all work incidental to a complete installation as specified including flushing, testing and chlorinating. Copper tubing is paid for as 3/4-inch Type K copper tubing.

4.3 MEASUREMENT - FURNISH & INSTALL 3/4-INCH WATER SERVICE (FAR SIDE):

4.3.1 The quantity of 3/4-inch water services, for which payment will be made shall be the actual number of units on the far side of the road as the proposed water main placed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

SECTION 15064

FURNISH & INSTALL WATER SERVICE

4.4 PAYMENT - FURNISH & INSTALL 3/4-INCH WATER SERVICE (FAR SIDE):

4.4.1 For Furnish & Install 3/4-Inch Water Service (Far Side), not included in other unit or lump sum price items, payment for Furnish & Install 3/4-Inch Water Service will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of furnishing and installing the corporation and curb stop with box, excavation, backfilling, cleaning up the site, and pavement repairs, if necessary, and the cost of all work incidental to a complete installation as specified including flushing, testing and chlorinating. Copper tubing is paid for as 3/4-inch Type K copper tubing.

4.5 MEASUREMENT - FURNISH & INSTALL 1-INCH WATER SERVICE (NEAR SIDE):

4.5.1 The quantity of 1-inch water service, for which payment will be made shall be the actual number of units on the near side of the road as the proposed water main placed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

4.6 PAYMENT - FURNISH & INSTALL 1-INCH WATER SERVICE (NEAR SIDE):

4.6.1 For Furnish & Install 1-Inch Water Service (Near Side), not included in other unit or lump sum price items, payment for Furnish & Install 1-Inch Water Service (Near Side) will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of furnishing and installing the corporation and curb stop with box, excavation, backfilling, cleaning up the site, and pavement repairs, if necessary, and the cost of all work incidental to a complete installation as specified including flushing, testing and chlorinating. Copper tubing is paid for as 1-inch Type K copper tubing.

4.7 MEASUREMENT - FURNISH & INSTALL 1-INCH WATER SERVICE (FAR SIDE):

4.7.1 The quantity of 1-inch water service, for which payment will be made shall be the actual number of units on the far side of the road as the proposed water main placed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

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FURNISH & INSTALL WATER SERVICE

4.8 PAYMENT - FURNISH & INSTALL 1-INCH WATER SERVICE (FAR SIDE):

4.8.1 For Furnish & Install 1-Inch Water Service (Far Side), not included in other unit or lump sum price items, payment for Furnish & Install 1-Inch Water Service (Far Side) will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of furnishing and installing the corporation and curb stop with box, excavation, backfilling, cleaning up the site, and pavement repairs, if necessary, and the cost of all work incidental to a complete installation as specified including flushing, testing and chlorinating. Copper tubing is paid for as 1-inch Type K copper tubing.

4.9 MEASUREMENT - FURNISH & INSTALL 1-1/2-INCH WATER SERVICE (FAR SIDE):

4.9.1 The quantity of 1-1/2-inch water service, for which payment will be made shall be the actual number of units on the far side of the road as the proposed water main placed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

4.10 PAYMENT - FURNISH & INSTALL 1-1/2-INCH WATER SERVICE (FAR SIDE):

4.10.1 For Furnish & Install 1-1/2-Inch Water Service (Far Side), not included in other unit or lump sum price items, payment for Furnish & Install 1-1/2-Inch Water Service (Far Side) will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of furnishing and installing the corporation and curb stop with box, excavation, backfilling, cleaning up the site, and pavement repairs, if necessary, and the cost of all work incidental to a complete installation as specified including flushing, testing and chlorinating. Copper tubing is paid for as 1-1/2-inch Type K copper tubing.

4.11 MEASUREMENT - 3/4-INCH TYPE K COPPER TUBING:

4.11.1 The quantity of 3/4-Inch Type K Copper Tubing furnished and laid, for which payment will be made shall be the actual number of linear feet of tubing installed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

SECTION 15064

FURNISH & INSTALL WATER SERVICE

4.12 PAYMENT - 3/4-INCH TYPE K COPPER TUBING:

4.12.1 For 3/4-Inch Type K Copper Tubing, not included in other unit or lump sum price items, payment for 3/4-Inch Type K Copper Tubing will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of all work incidental to furnishing, laying and jointing the tubing complete in place as specified including flushing, testing, chlorinating, excavation, backfill and restoration.

4.13 MEASUREMENT - 1-INCH TYPE K COPPER TUBING:

4.13.1 The quantity of 1-Inch Type K Copper Tubing furnished and laid, for which payment will be made shall be the actual number of linear feet of tubing installed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

4.14 PAYMENT - 1-INCH TYPE K COPPER TUBING:

4.14.1 For 1-Inch Type K Copper Tubing, not included in other unit or lump sum price items, payment for 1-1/2-Inch Type K Copper Tubing will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of all work incidental to furnishing, laying and jointing the tubing complete in place as specified, including flushing, testing, chlorinating, excavation, backfill and restoration.

4.15 MEASUREMENT – 1-1/2-INCH TYPE K COPPER TUBING:

4.15.1 The quantity of 1-1/2-Inch Type K Copper Tubing furnished and laid, for which payment will be made shall be the actual number of linear feet of tubing installed and incorporated in the work in accordance with the Contract Drawings, specified and/or ordered.

4.16 PAYMENT – 1-1/2-INCH TYPE K COPPER TUBING:

4.16.1 For 1-1/2-Inch Type K Copper Tubing, not included in other unit or lump sum price items, payment for 1-1/2-Inch Type K Copper Tubing will be made at the applicable price stated in the Bid. The payment shall include and cover the cost of all work incidental to furnishing, laying and jointing the tubing complete in place as specified, including flushing, testing, chlorinating, excavation, backfill and restoration.

END OF SECTION

SPECIFICATIONS

SECTION 15077

WATER MAIN CONNECTION – METROPOLITAN WATER BOARD (MWB)
54-INCH TRANSMISSION MAIN

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials, and equipment for Water Main Connection – Metropolitan Water Board (MWB) 54-Inch Transmission main as shown on the Plans, as specified, and/or directed.

1.2 WORK INCLUDED:

1.2.1 The work shall include, but not necessarily be limited to:

- Excavation, Backfill and Restoration
- Lining and Special Backfill
- Testing, Cleaning, Chlorinating and Dechlorinating Water Main
- General Excavation Required to Confirm Connection Location
- Polyethylene Encasement
- All other work necessary for a complete operating, valved connection

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION FOR CONNECTION:

3.1.1 The Contractor shall give the Engineer, MWB, OCWA, and the Town of Volney at least three (3) days' notice prior to the intended connection.

3.1.2 No work on any connection shall be permitted to start on a Friday.

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WATER MAIN CONNECTION – METROPOLITAN WATER BOARD (MWB)
54-INCH TRANSMISSION MAIN

3.2 CHLORINATION:

3.2.1 The pipe, valves, fittings and appurtenances to be installed shall be disinfected in accordance with Section 9 of the AWWA C651.

3.3 CONNECTION TO EXISTING MWB MAIN:

3.3.1 The Contractor shall install all piping, valves, fittings and appurtenances necessary to complete the connection, as shown on the Contract Drawings, in accordance with applicable sections of the Contract Specifications.

3.3.2 The installation shall be in accordance with Section 4 of the AWWA C651 to keep connections free of dirt, debris, trench water, tools, clothing and other foreign matter.

3.4 FINAL FLUSHING:

3.4.1 After the Contractor has installed all piping such that service can be restored, the piping shall be flushed in accordance with Section 6 of the AWWA C651.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - WATER MAIN CONNECTION – METROPOLITAN WATER BOARD (MWB) 54-INCH TRANSMISSION MAIN:

4.1.1 Measurement for Water Main Connection - Metropolitan Water Board (MWB) 54-Inch Transmission Main shall be the actual number of water main connections constructed in accordance with the Contract Drawings and Specifications, and shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section within the payment limits shown on the Contract Drawings.

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WATER MAIN CONNECTION – METROPOLITAN WATER BOARD (MWB)
54-INCH TRANSMISSION MAIN

4.2 PAYMENT: WATER MAIN CONNECTION – METROPOLITAN WATER BOARD (MWB) 54-INCH TRANSMISSION MAIN:

4.2.1 For Water Main Connection – Metropolitan Water Board (MWB) 54-Inch Transmission Main, not included in other unit or lump sum price items, payment for Water Main Connection – Metropolitan Water Board (MWB) 54-Inch Transmission Main, will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 15441

COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish and install all labor, materials and equipment for the County Route 176 Packaged Booster Pumping Station, with all the necessary piping, controls and appurtenances as shown on the plans, as specified and/or directed.

1.1.2 The County Route 176 Packaged Booster Pumping Station shall be manufactured by Engineered Fluid, Inc., Flowtronex PSI, Inc., or approved equal.

1.2 SUBMITTALS: Submit the following in accordance with Section 01340 - Submittals.

1.2.1 Equipment submittals shall be bound and in a minimum of six (6) copies. The submittals shall contain a minimum of two (2) full size drawings, (size 24" x 36"); one (1) each covering the booster pump station and the electrical control schematic. The booster pump station drawing shall be specific to this project, in at least three (3) different views, be to scale and illustrate the National Electrical Code (NEC) clearances as required. The submittal booklets shall be complete with data sheets covering all individual components that make up the booster pump station and the UL file number under which the manufacturer is listed, service department personnel statement as detailed in the specifications and be complete with the manufacturer's formal warranty policy.

1.2.2 Shop Drawings:

a. Shop Drawings and structural design calculations shall be signed and sealed by a Professional Engineer registered in the State of New York.
b. Before starting work, submit completely detailed Shop Drawings showing dimensions, sizes, thickness, gauges, materials, finishes, connections and erection procedure.
c. Show location and details of anchorage devices that are to be embedded in concrete.
d. Indicate maximum shear and tension loads at base due to design loads.
e. Certified head/capacity curve.
f. Electrical schematics and diagrams.

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COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

1.2.3 Manufacturer's Data:

a. Manufacturer's standard guarantee and manufacturer's experience requirements.
b. Letter of certification signed and sealed by a Professional Engineer registered in the State of New York, confirming that the pre-engineered building is in full compliance with the Contract Specifications and Drawings and the New York State Uniform Fire Prevention & Building Code.
c. Fabricator approval. Special inspections required by the Building Code are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved special inspection agency. Approval shall be obtained prior to commencing fabrication. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the Engineer and the Code Enforcement official stating that the work was performed in accordance with the approved construction documents.

1.2.4 Test Results:

a. Pressure testing report.

1.2.5 Two (2) submittal reviews of this item will be completed at no cost to the Contractor. However, all subsequent reviews will be charged to the Contractor at the Engineer's standard hourly billing rate.

PART 2 – PRODUCTS

2.1 EQUIPMENT ENCLOSURE:

2.1.1 The equipment enclosure and equipment layout shall be designed to meet all applicable requirements of the New York State Fire Prevention and Building Code, Building Officials & Code Administrators International, Inc. (BOCA) National Building Code, National Electric Code (NEC) (latest edition), and any other applicable requirements.

2.1.2 Equipment hatches shall be provided and sized to allow removal and replacement of any component within the station without altering the station structure to accomplish that task.

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COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

2.1.3 The Contract Drawings for this equipment illustrate centerline and clearance/maintenance dimensions about major equipment items. These dimensions are minimum. Dimensions less than those shown will not be accepted.

2.2 MODULAR STRUCTURES:

2.2.1 Building Enclosure:

2.2.1.1 The County Route 176 Packaged Booster Pumping Station shall be complete with a factory assembled modular building affixed to a steel deck base skid structure supporting the booster pumps as shown on the Plans. Dimensions of base skid and building shall be as shown on the Plans. The building shall be designed to meet all applicable requirements of the New York State Fire Prevention and Building Code, Building Officials & Code Administrators International, Inc. (BOCA) National Building Code, National Electric Code (NEC) (latest edition), and any other applicable requirements.

2.2.1.2 The polyurethane foam core shall be classified by Underwriters Laboratories as having flame spread of 75 or lower and smoke generation of less than 450 when tested in accordance with ASTM E84.

2.2.1.3 Insulation values for the walls and roof structure shall be a minimum R-21 in the walls and R-28 in the roof. Insulation within the roof and wall panels shall be foam-in-place polyurethane material applied between the interior and exterior sheathing forming a closed cell bounded by the steel framing.

2.2.1.4 Building framing materials shall comply with the A.I.S.I. Specification for the Design of Cold-formed Steel Structural Members and to Standards ASTM C955, ASTM C1007, ASTM C645, ASTM C754 and ICBO 4782P. and 4784P. A framing design incorporating the members covered by the listed specifications and standards shall develop a structure meeting or exceeding the building design criteria.

2.2.1.5 The building structure shall be fabricated using steel C-studs as wall framing members and C-joists as roof trusses. The size, placement and spacing of studs and joists shall be in accordance with the design criteria and material standards. The wall C-studs shall be a minimum 2" x 3 5/8" size of 20 gauge material minimum. The roof C-joists shall be a minimum 2" x 8" size of 16 gauge material minimum.

2.2.2 Interior and Exterior Finishes:

2.2.2.1 The exterior wall sheathing shall be ½" thick, treated, C-C grade plywood.

2.2.2.2 The exterior roof sheathing shall be 5/8" thick, exterior, C-C grade plywood.

2.2.2.3 The interior wall sheathing shall be ½" thick, exterior, C-C grade plywood.

2.2.2.4 The interior roof/ceiling sheathing shall be 5/8" thick, exterior, C-C grade plywood.

2.2.2.5 OSB or particle board sheathing shall not be allowed.

2.2.2.6 All interior wall and ceiling surfaces shall be covered with FRP faced 5/8-inch Type "x" (fired rated) gypsum board. All interior floor surfaces shall be covered ½" DensDeck Roof Guard as manufactured by Georgia Pacific, or approved equal.

2.2.2.7 All joints and cracks in the exterior sheating shall be filled with polyester resin filler prior to fiberglassing. All exterior surfaces shall have a minimum of 1/8-inch of fiberglass, consisting of 50% chopped glass and 70% polyester resin, applied over the exterior plywood. The entire exterior surface shall be covered with a filled UV resistant gel-coat finish and shall be a color chosen by the Owner. Provide color options.

2.2.3 Openings:

2.2.3.1 Openings in the sidewalls and/or roof shall be as shown and be fully framed out and supported using single or multiple framing members sufficient to support and fasten those devices or equipment items requiring a framed opening, these being access hatches, HVAC equipment, pipe passages, conduit passages, door and window openings and other special purpose openings as might be shown and required.

2.2.3.2 The attaching of devices or equipment to the building at a framed opening shall be done fully according to the device manufacturers mounting instructions.

2.2.4 Hinged Entrance Doors.

2.2.4.1 Main Equipment Room Door: The heavy-duty steel door with door frame into the main equipment room shall be single opening equipment door of size 3'-0". Door shall be flush design of 16 gage, Grade III, Extra Heavy Duty steel panels with flush top channel and inverted bottom channel with a nominal 2-inch thick foam polyurethane insulation core to exceed R-15. Door shall have a 12" x 12" glass window in it. Hinge preparation shall be provided for three (3) 4½" x 0.134 full mortise hinges. Closer reinforcing plate are to be provided. The door frame shall be of 14 gage cold formed steel and be securely fastened to the framed opening. Outset

door to accommodate exterior finishes or treatments shall be used as necessary. With the door, provisions must be made for the station manufacturer to shim and align doors and frames to allow ease of closing and latching.

2.2.4.2 Chemical Feed Room Door: The Chemical Feed Room door and door frames shall be of size 3'-0" x 6'-8" and shall be constructed of FRP to be completely non-corroding. Door hardware shall be completely of aluminum including panic hardware, hinges, hinge pins, and screws and fasteners. The door shall have a 12" x 12" plexiglass window in it. The door shall be fitted and wired to an interlock microswitch to provide activation of the exhaust fan whenever the door is open.

2.2.4.3 Weatherproof Shields - All doors for outdoor structures shall be supplied with a metal shield above the door to divert rain and snow from the door opening.

2.2.4.4 Sillplates - An extruded aluminum sillplate shall be provided on outdoor buildings.

2.2.5 Base Skid: The base skid size for the County Route 176 Packaged Booster Pumping Station shall be as shown on the Plans. The skid shall be constructed of min. C8x11.5 ASTM A36 steel channels and 8 x 8 x 5/8 inch ASTM A500 Grade B steel structural tubing as shown on the skid plan. An anchor plate under a flat washer, lock washer and anchor bolt shall be used to fasten the building framing to the framing base as shown on the Plans. The base frame shall be grit blasted to a SP-6 finish and coated with the specified coating material. The base frame shall be provided with removable lifting eyes to facilitate handling of the building for placement on the base equipment skid. The building enclosure shall be firmly and securely attached to the steel base structure by lag bolting from inside the station, through evenly spaced holes pre-drilled into an angle piece that has been continuously welded to the steel floor, as shown on the Plans. The lag bolts shall screw into the tubular base frame upon which the building has been built. The lag bolts shall be plated steel. The number, size and location of the lag bolts shall be as determined by structural analysis so as to maintain the live load and wind load ratings as specified and to resist shearing and tearing in the process of transporting and placing the finished station. The steel floor plate of the base structure shall extend a full 3/8" beyond the outer edge of the building enclosure to allow for the application of silicone caulking completely around the building so as to make the base joint moisture proof and insect proof. The station manufacturer shall apply this caulking prior to shipment.

2.2.6 Safety Floor Matting: The walkway areas (that space from the entrance to the control panel and the entire NEC clearance area) shall be covered with a Nyracord (or equal) industrial safety matting. The mat shall be a heavy duty, 1/2 inch minimum thickness Nyracord (or equal) compound (rubber blend with fiber reinforcement) of open slot design with a ribbed safety

pattern (ribbed in two directions) to promote sure footing. The underside of the safety mat shall also be ribbed (in one direction only) to permit aeration and drainage. The safety mat shall not be glued to the floor surface.

2.2.7 Structural Design: The structural design shall incorporate the following loads and site-specific information for the Town of Volney, Oswego County, New York.

2.2.7.1 Live Load:

Floor Live Load = 100 psf
Roof Live Load, L_1 = 20 psf

2.2.7.2 Snow:

Ground Snow Load, p_g = 65 PSF
Importance Factor, I_s = 1.2

2.2.7.3 Wind:

Wind Speed(3 –second gust) = 90 MPH
Exposure Class C
Importance Factor, I_s = 1.15

2.2.7.4 Seismic:

Seismic Use Group III
Site Class D
Mapped Spectral Response Acceleration for Short Periods (.2s) = 20.77 %
Mapped Spectral Response Acceleration for a 1-second Period = 12.53%
Site Coefficient, Fa = 1.6
Site Coefficient, Fv = 2.4
Seismic Design Category C
Importance Factor, I_E = 1.5

2.2.8 Corrosion Protection: All surfaces of the exposed steel structure, interior and exterior, shall be gritblasted equal to commercial blast cleaning (SSPC-SP6). The protective coating shall be applied immediately after surface preparation if shop applied. The protective coating shall be 2 coats of Tnemec Series 66 Hi-Build Epoxoline, Ameron Amercoat 385, or equal, consisting of a two-component, high solids, amide-cured epoxy system formulated for high build application, or equal. The epoxy system shall be self-priming and require no intermediate coatings. The protective coating shall provide a total dry mil thickness of 8.0 mils. The floor area of the completed building, not protected by the floor matting shall receive an additional top of "non-skid" Tnemec Series 66 Hi-Build Epoxoline, Ameron Amercoat 385, or equal. The total dry mil thickness on the unprotected floor area shall provide a 14.0 mil coverage.

2.2.9 Delivery:

2.2.9.1 Lifting Device: An adjustable spreader type lifting device, built to lift the building structure without impinging the lifting chains/cables on the building sidewalls, shall be provided by the pumping station manufacturer for use by the installing contractor for the purpose of unloading the station from trailer.

2.2.9.2 Delivery - Building Protection: Each completed modular structure shall be completely encased (with the exception of the underneath portion of the base) in a shrink wrap, polyethylene plastic enclosure to protect the transported unit from adverse elements encountered during over the road shipment. The plastic enclosure shall fit over the roof and four (4) sides and be heat shrinked to tightly constrain the roof and sidewalls during shipment. The enclosure shall be of Griff-Shrink 5-ply VCI clear reinforced shrink film as manufactured by Reef Industries, Durashield™ as manufactured by CT Packaging Systems, Inc., or equal.

2.3 OPERATING CONDITIONS:

2.3.1 The pumping station shall be capable of delivering the fluid medium at the following capacities and heads:

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Design Criteria	County Route 176 Packaged Booster Pumping Station
Pump Operation - design capacity at specified head (100% speed) Point 1 Point 2 (Design Point) Point 3	 220 gpm @ 220 feet (70% eff.) 240 gpm @ 210 feet (72% eff.) 288 gpm @ 200 feet (76% eff.)
Pump Operation - design capacity at specified head (30% reduced speed) (2,425 rpm) Point 1 Point 2 (Design Point) Point 3	 220 gpm @ 105 feet (70% eff.) 240 gpm @ 100 feet (72% eff.) 280 gpm @ 99 feet (76% eff.)
Maximum Shut-off Head	240 feet
Pump Suction	4-inch
Pump Discharge	4-inch
Motor Speed	3525
Maximum Motor Horsepower	20
Motor Voltage	208 volt
Motor Phase	3
Motor Hertz	60 hertz
Number of Stages	2
Operation	Variable Speed

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2.4 BOOSTER PUMPS:

2.4.1 Pump: The two (2) identical pumps employed within the pump station shall be of the vertical multi-stage type. The pumps shall be of close grain cast iron construction. The pumps shall conform to the detailed specifications as set forth below:

2.4.1.1 Casing: The pump casing shall be ASTM A53, Grade B Schedule 40 welded steel pipe and shall be capable of withstanding maximum pressures of 450 psi.

2.4.1.2 Pump Body: Pump body shall be made of ASTM A48, Class 30 cast iron. Piping connections shall be in-line and shall be compatible with ANSI raised face flanges.

2.4.1.3 Impeller: The impellers shall be constructed from ASTM B584 Silicon Bronze and shall be the enclosed type. They shall be free from defects and must be accurately cast, machined and filed for optimum performance and minimum vibration. Impellers shall be balanced to grade G6.3 of ISO 1940 as minimum. They shall be securely fastened to the bowl shaft with taper locks of C1018 steel.

2.4.1.4 Diffuser Bowl: Each stage bowls shall be flanged type constructed of close grained cast iron conform to ASTM A48, Class 30. They shall be free from sand holes, blowholes, or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have enamel lined waterways for maximum efficiency and wear protection.

2.4.1.5 Bearings: Each stage of bowls shall be fitted with sleeve type bearings of bronze alloy C89835.

2.4.1.6 Shaft: The bowl shaft shall be constructed from ASTM 582 Type 416 stainless steel. It shall be precision ground and polished with surface finish better than 40 RMS.

2.4.1.7 Shaft Coupling: These shall be two-piece design to allow sufficient space between the motor shaft and the pump shaft so that seal can be removed and reinstalled without removing the motor.

2.4.1.8 Mechanical Seal: The pump shaft seal shall be cartridge type and shall be of the following material of constructions:

Rotary Face Carbon
Stationary Face Silicon Carbide
Elastomer Buna
Seal Parts 316 SS
Gland, Sleeve, Collar 316 SS

2.4.1.9 Electric Motor: The pump drive motor shall be NEMA C-face design TCZ frame suitable for vertical mounting and close coupled to the pump unit. Motor shall have trust bearing of ample capacity to carry the weight of all rotating parts plus the maximum hydraulic thrust load under all conditions of operation calculated L10 life shall be no less than 17,600 hours. The motor rating shall be:

20 HP, 3525 RPM, 3 phase, 60 Hz, 208 volts
TEFC Enclosure, 1.15 Service Factor

Pump frames and couplings shall be shed to accommodate the size motor specified and for each pump. Coordinate motors with variable frequency drives as specified in Article 2.5 of this Section.

2.4.1.10 Testing: Each pump shall be hydrostatically tested by the manufacturer in accordance with Hydraulic Institute Standards at a minimum of 350 psi.

2.4.1.11 Manufacture: The booster pump specified herein is Model SMA as manufactured by Goulds Pumps. The model is specified to establish the standard of quality. Other manufacturers such as Crane Deming, or approved equal, may be used.

2.5 VARIABLE FREQUENCY DRIVES (VFD):

2.5.1 Pump VFD's: Provide one (1) new VFD cabinet for each new pump. VFD panels shall be NEMA 1 rated enclosure constructed of 14 gauge cold rolled steel, with hinged locking cover, finished in baked enamel and shall be furnished installed. Panels shall be designed for 208 volt, 3 phase service and shall have main disconnect with door-mounted lockable operating handle.

2.5.2 Panel shall be integrated with variable frequency drive (VFD) with ambient compensated overloads, applicably sized heaters, cover mounted stop and start push buttons

2.5.3 Panel shall include the following:

a. Elapsed time meter (non-resettable), with indication down to one-tenth of an hour, cover mounted.
b. Heavy-duty pilot lights, cover mounted, with replaceable LED lamps shall be provided for:
   Pump Run
   Pump Stop
   Pump Trouble
   (Over Heat)
   Pump Cable Ground Fault
   Pump VFD Fault
   Loc Suction Shut-off
c. Pump cable ground fault protection with operational test capability for pump.
d. Pellet type distribution lightning arrestors for motors and controls.
e. Hand-Off-Auto selector switch in panel cover. When switch is in "hand" position, pump will start and stop manually by the cover-mounted start-stop push buttons. The cover-mounted push buttons shall only operate when the H-O-A switch is in the "hand" position. When H-O-A switch is in the "hand" position, pump shall be manually controlled by the control panel push-button controls. When the H-O-A switch is in the "auto" position, the pump shall start and stop automatically by the Booster Pumping Station PLC located in the Telemetering Panel also located in the Booster Pumping Station.
f. Provide appropriate contacts for interface with remote PLC to provide for all I/O required.
g. V.F.D. digital keypad in panel cover.

2.5.4 Variable Frequency Drive (VFD): Drive shall be for use with 208 volt, 3 phase, pump motors.

2.5.5 Drives shall have the following functions:

a. isolation transformer – shipped loose for external field mounting
b. variable torque application
c. minimum power factor of .95
d. maximum allowable voltage fluctuation of ±10%
e. sine wave PWM output
f. 15,000 hz carrier frequency
g. insulated gate bipolar transistors (IGBT's)

h. 100% rated torque at 1.5 hz and 150% rated torque at 3 hz
i. local display and digital keypad with extension cable for cover mounting
j. 4-20 mA speed control input
k. fault indications for under voltage, over voltage, over temperature, instantaneous over current, ground fault, overload threshold exceeded, overload shutdown, processor fault
l. start/stop by remote contact closure/opening
m. any drive fault shall actuate a common output contact for actuating a drive fault pilot light, also contact for remote indication
n. drive shall be adjustable to limit minimum pump motor speed to no less than 60% of full speed
o. drive shall provide overload protection for the pump motor
p. drive shall have provisions to shut down if remote non-powered contact in stop/lock-out push-button station opens
q. drive shall be capable of starting a motor "on the fly"
r. non-powered contact to indicate to the remote PLC when the drive is running
s. drive shall provide 4-20mA signal out put in relation to motors speed for indication to remote PLC
t. fast-acting fused disconnects

2.5.6 Magnetic Motor Starter Bypass: Provide a redundant three (3) contactor magnetic motor starter VFD bypass for each pump motor such that pump motors are operational in the event of VFD failure. Contactors shall be placed such that both the input and output of the VFD is isolated during bypass operation. Provide current transformer based electronic bypass overload protection.

a. Provide the following door mounted equipment for each pump:
    i. Green run and bypass lights
    ii. VFD/Bypass selector switches

b. The PCP shall be configured to control the pumps in response to the Owner's existing telemetry system. The following input and output shall be provided to meet this requirement:

    i. Local/Off/Remote Selector Wwitch Position (24 volt contact)
    ii. VFD/Bypass Selector Switch Position (24 volt contact)

2.5.7 Drive manufacture shall be ABB, G.E., Allen Bradley; Siemens, or approved equal.

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2.6 PUMP/MOTOR VIBRATION ISOLATION PADS: The pump/motor assembly shall be mounted to a fabricated steel base built specifically for the pump/motor to be mounted. Each mounting or attachment point shall be complete with a vibration isolation pad. The pad shall be in two (2) parts, a 1/4" base layer followed by a 5/8" upper layer and be a nominal 2" x 2" square size for pump/motor combinations weighing up to 1500 pounds.

2.7 ELASTOMER PIPE CONNECTOR: The inlet side of each booster pump shall include an elastomer connector to help isolate vibration and noise in the piping system. The elastomer connector shall pass through the plate steel flanges designed to grip the connector so the connector seals without gaskets when the flange bolts are drawn up. A control joint limiting pipe connector movement shall be supplied with each pipe connector.

2.8 PIPING:

2.8.1 Piping shall be steel and conform to material specification ASTM A53 (CW) for nominal pipe size four (4) inch and smaller and ASTM A53(ERW) Grade B for nominal pipe size five (5) inches and larger. Steel butt-welding fittings shall conform to material specification ASTM A-234 Grade WPB and to the dimensions and tolerances of ANSI Standards B16.9 and B16.28 respectively.

2.8.2 Forged steel welding neck flanges or slip on welding flanges, with plain face and smooth surface shall be used and shall conform to material specification ASTM A-105 Class 60 and/or ASTM A-181 for carbon steel forgings and to the dimensions and tolerances of ANSI Standards B16.5 as amended in 1992 for Class 150 and Class 300 flanges. All fittings shall be by the same manufacturers. The piping shall be Schedule 40; sizes shall be as shown on the drawing.

2.8.3 All pipe welds shall be performed by certified welders. As part of the equipment submittal, the Contractor shall provide copies of the welding certificates of the welders who are to perform the pipe welds either in the factory or in the field.

2.8.4 All piping surfaces shall be prepared by gritblasting, or other abrasive blasting, prior to any welds being made. Piping of 5" diameter and smaller may be cut by saw.

2.8.5 In all cases, short circuit transfer, spray transfer or pulse-arc transfer modes of the gas metal arc welding process shall be applied semi-automatically. When utilizing the short circuit mode, shielding gas consisting of 50% carbon dioxide and 50% argon gas shall be used. When utilizing the spray or pulse-arc transfer modes, a shielding gas consisting of 5% carbon dioxide

and 95% argon shall be used. In all cases, welding wire with a minimum tensile strength of 70,000 psi shall be employed. All flange welds and butt welds of equal size pipe shall be a single continuous nonstop weld around the complete circumference of the pipe. Whenever possible, vertical up weld passes will be applied to all pipe welds. No vertical down weld passes will be allowed. Completed welding assemblies shall create no internal obstruction, restriction or create any unintended sources of water deflection.

2.9 PIPE SUPPORTS:

2.9.1 Pipe supports by minimum sizing for:

- 8" and smaller piping shall be 2" x 3" x 3/16" wall rectangular tubing
- 10" and larger piping shall be 3" x 4" x 1/4" wall rectangular tubing

- 6" and larger piping shall be provided with "kick" bracing projecting fully from the underside of the pipe to the floor at an angle of no less than 15 degrees from vertical out at a right angle to the run of the pipe being supported. These "kick" braces shall be in addition to the vertical pipe supports called out above.

2.9.2 Pipe supports are to be fully welded at both end points to the pipe and steel floor where required.

2.9.3 Simple pipe stands made of pipe welded only at the floor and upholding a yoke or bracket with or without a threaded jack bolt or a U-bolt are not acceptable, as no lateral or transverse support is provided.

2.10 FUSION BONDED EPOXY COATING - STEEL PIPING:

2.10.1 Steel piping shall have applied to it a Fusion Bonded Epoxy Coating on the interior pipe surface that conforms to AWWA C-213-91 for steel water pipelines. The powder coating product shall be National Sanitation Foundation (NSF) Standard 61 certified material. The final product shall be capable of meeting Salt Spray Resistance ASTM B117 (1000 hr) and Humidity Resistance ASTM D2247 (1000 hr) with no blistering, undercutting, or rust bleed, and Impact Resistance of ASTM G14-72 (160 in-lbs). The Fusion Bonded Epoxy Coating shall provide a minimum total dry mil thickness of 12.0 to 16.0 mils. The epoxy powder coating shall be Pipe Clad® 1500 Red latest revision from Lilly Industries, Inc., Scotch Kote 206N as manufactured by 3M Corrosion Protection Products, or approved equal.

2.10.2 The Contractor shall provide in writing to the Engineer, certification that the fusion bonded epoxy coating has been applied to all internal surfaces of the steel piping using the proper method. Said certification shall include the following:

- Date of application;
- Material manufacturer and product designation including a product data sheet for the coating;
- Applier of the fusion bonded coating, name, address and phone number;
- Statement that the fusion bonded epoxy coating was applied to AWWA Standard C213-91 or the latest revision.

2.11 SERVICE CONNECTIONS ON INTERNAL PIPING:

2.11.1 All plumbed devices within the station eventually requiring service, such as meters, valves, pumps and other equipment, shall be easily removed from the piping by the presence of appropriately placed and sufficient quantity of adaptors and couplings as shown on the drawings and as may otherwise be required.

2.12 RESTRAINING POINTS:

2.12.1 The main inlet and outlet piping to the station shall each be provided with two (2) or four (4) restraining points as welded on "eyes" or similar device welded to the framing to facilitate the attachment of joint restraint tie rods or other device to be used in retarding any pipe movement at the connections.

2.13 COUPLINGS:

2.13.1 The booster station piping shall include a compression type, flexible coupling to prevent binding and facilitate removal of associated equipment where shown on the plans for this item. In lieu of a compression coupling, a Uni-Flange or a flanged coupling adapter (FCA) may be used.

2.13.2 All couplings, Uni-Flanges, flanged coupling adapters (FCA), and flexible connectors/expansion joints shall include a minimum of two (2) control joint rods with appropriate restraining points.

2.14 COMBINATION PRESSURE GAUGES:

2.14.1 Combination pressure gauges shall be glycerine filled with a built-in pressure snubber and have 4-1/2 inch minimum diameter faces and be turret style, black phenolic case with clear glass face. The movement shall be rotary, of 400 Series stainless steel with teflon coated pinion gear and segment. The gauge shall be bottom connected and accept a 1/4" NPT female thread. Combination pressure gauge range and scale graduations shall be in psi and feet of water as follows:

SUCTION PRESSURE - 0 to 100 psi, 5 psi figure intervals, with graduating marks every 0.5 psi (0-138 feet).

DISCHARGE PRESSURE - 0 to 160 psi, 20 psi figure intervals, with graduating marks every 1 psi (0-368 feet).

2.14.2 All gauges shall be panel mounted off the pipeline and be flexible connected to their respective sensing point. The gauge trim tubing shall be complete with both isolating and vent valves and the tubing shall be so arranged as to easily vent air and facilitate gauge removal. Gauges shall be Ashcroft Model 1279ASL, or approved equal.

2.15 SAMPLE TAP: A chrome plated, right angle outlet, smooth nose, brass sample tap shall be affixed to the station piping where shown on the Plans.

2.16 HOSE BIBBS: Provide two (2) angle type copper alloy hose bibbs with lockshield and hand wheel where shown on the Plans. Outlet shall have vacuum breaker with 0.75-inch external hose threads. The hose bib connectors shall be through a pressure regulator if the header pressure exceeds 35 psi.

2.17 BUTTERFLY VALVES: The butterfly valves shall be AWWA Class 150B, wafer design. The body shall be cast iron ASTM A126, Class B. The valve disc shall be cast iron ASTM A48, Class 40 with a Type 316 stainless steel seating edge. Valve shaft shall be stainless steel Type 304, one piece through design with self-compensating split-U Chevron style packing. The valve seat shall be Buna-N rubber simultaneously bonded and vulcanized within a recessed cavity in the valve body. Butterfly valve designs mounting the seat on the disc are unacceptable. Manually operated butterfly valves size 6" and smaller shall be equipped with Pratt lever style operators capable of withstanding 450 ft. lbs. of input torque and mounted to the valve trunnion with 4 bolts. Manually operated butterfly valves size 8" and larger shall be equipped with Pratt MDT traveling nut style handwheel operators capable of withstanding 450 foot pounds of input torque and mounted to the valve trunnion with 4 bolts.

2.17.1 Butterfly valves shall be Henry Pratt Model MKII, or approved equal.

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2.18 NON-SLAM CHECK VALVES:

2.18.1 Each pump discharge pipe run shall include a wafer-type, non-slam check valve. The body of the check valve shall be cast iron. The plug and seat shall be bronze and conform to ASTM Designation B-584. The seat shall contain a Buna-N seal to provide zero leakage. The guide bushings shall be bronze copper alloy and conform to ASTM Designation B584. The valve spring and seat retainers shall be stainless steel and conform to ASTM Designation A313. The valve plug shall be guided at both ends by a center shaft integral with the valve plug. Alignment of the center shaft shall be provided by guide bushings.

2.18.2 Non-slam check valves shall be Val-Matic Series 1400-BN, or approved equal.

2.19 RELIEF VALVE:

2.19.1 The relief valve shall open rapidly when the valve incoming pressure exceeds the pilot valve setting. It shall be a flanged, globe type valve with a rugged internal bronze piston. The valve shall be operated with external controls. The valve body shall be of ANSI 250# design and thickness, supplied with ANSI 125# flanges. The iron valve parts shall be constructed of first class grey iron free from cold shuts, defective or spongy sports, and shall conform to ASTM specification A-126 Class B. All iron castings shall be coated on all sides with at least two coats of Tnemec Series 20FC NSF approved epoxy coating system. The bronze valve parts including the piston shall conform to ASTM specification B-62. The seat trim shall be stainless steel. Where external controls are used, the piping shall be brass. Brass isolation ball valves, strainer and stainless steel speed control valves shall be sued in external control circuits.

2.19.2 The relief valve specified herein is based on Ross Valve Model 23 RWR. Model is specified to establish the standard of quality. Other manufacturers matching same specifications such as Singer Valves, or approved equal, may be used.

2.20 GATE VALVE:

2.20.1 The meter inlet isolating valve where shown and as sized on the plan sheet covering this item shall be a gate valve meeting or exceeding AWWA Standard C-500. The gate valve shall be cast iron body, bronze mounted, resilient seat, NRS (non-rising stem). The valve shall be flanged pattern with flange and drilling complying to ANSI B16.1, Class 125. The valve shall be constructed so as to open left (counterclockwise). Maximum working pressure shall be 200 psi.

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2.20.2 The gate valve shall be M&H Valve Model 4067-02, or approved equal.

2.21 4-INCH TURBINE METER WITH STRAINER:

2.21.1 The water meter shall be a 4-inch turbine meter with an operating range of 15 to 1,000 gallons per minute with registration accuracy of 100%± 1.5% actual throughput. The meter shall comply with ANSI/AWWA Standard C701, latest revision. The meter main case, register box and lid shall be of Waterworks bronze. Meter shall include a built-in strainer on the inlet end. Meter registration shall be in increments of 1,000 gallons per sweep hand revolution and a total of 1,000,000,000 gallons. The meter and strainer shall be Model W-1000 DR as manufactured by Invensys, Inc.

2.21.2 The water meter shall be equipped with a high speed pickup register which utilizes solid-state electric circuitry to develop and transmit a high frequency pulse signal. The register shall be Act-Pak as manufactured by Invensys, Inc., or approved equal.

2.21.3 The meter installation shall be complete with a meter test port as shown on the Plans for this item. The test port shall be installed a minimum of two (2) diameters, downstream of the meter. The test port shall consist of a 2-1/2" NPT coupling in the pipe downstream of the meter capable of accommodating a threaded by hose connection adapter. The connection shall be plugged.

2.22 FLOW RATE INDICATOR/TRANSMITTER:

2.22.1 The flow meter shall be furnished with a flow rate indicator/transmitter which shall provide two (2) isolated 4-20 mA output signals proportional to the input pulse rate. The indicator shall display, in 3 digits, the instantaneous flow rate through the metering device in units of gallons per minute. The flow rate indicator shall be Act-Pak as manufactured by Invensys Metering Systems, Inc.

2.22.2 The General Contractor shall furnish the flow rate indicator/transmitter to the Owner for future installation and wiring by the Onondaga County Water Authority (OCWA). Once installed by others, the single 4-20 mA output shall be used to pace the chemical feed pumps and one 4-20 mA output shall be used as a process input to the station PLC.

2.23 CHEMICAL METERING EQUIPMENT:

2.23.1 All materials, equipment and accessories for the chemical feed system shall be furnished and installed by OCWA, including all anchor bolts, nuts, washer and sleeves.

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2.23.3 Chemical Metering Pumps:

2.23.3.1 All materials, equipment and accessories for chemical metering pumps shall be furnished and installed by OCWA.

2.24 PRESSURE TESTING:

2.24.1 All pressure piping within the station, including valves, pumps, control valves, fittings, connections as make up the entire system shall be hydrostatically tested at a pressure of 150 psi or a pressure equal to the lowest test pressure rating of the equipment within the tested system, whichever is greater pressure. The test pressure shall be applied for a minimum of 2 hours, during which time all joints, connections and seams shall be checked for leaking. Any deficiencies found shall be repaired and the system shall be retested.

2.24.2 The results of this testing shall be transmitted in writing to the Engineer prior to shipment of the station and shall note test pressure, and time at full pressure.

2.25 ELECTRICAL APPARATUS - DESIGN, ASSEMBLY & TEST:

2.25.1 The electrical apparatus and control panel design, assembly, and installation, and the integration of component parts shall be the responsibility of the manufacturer of record for this booster pumping equipment. That manufacturer shall maintain at his regular place of business a complete electrical design, assembly and test facility to assure continuity of electrical design with equipment application. Control panels designed, assembled or tested at other than the regular production facilities or by other than the regular production employees of the manufacturer of record for this booster pumping equipment will not be approved.

2.26 CONFORMANCE TO BASIC ELECTRICAL STANDARDS:

2.26.1 The electrical control panels including mounting and installation, shall be done in strict accordance with the requirements of UL Standard 508 and the National Electrical Code (NEC) latest revision. No exceptions to the requirements of these codes and standards will be allowed; failure to meet these requirements will be cause to remove the equipment and correct the violation.

2.27 U.L. LISTING:

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2.27.1 All service entrance, power distribution, control and starting equipment panels shall be constructed and installed in strict accordance with Underwriters Laboratories (UL) Standard 508 "Industrial Control Equipment." The UL label shall also include an SE "Service Entrance" rating stating that the main distribution panel is suitable for use as service entrance equipment. The panels shall be shop inspected by UL, or constructed in a UL recognized facility. All panels shall bear a serialized UL label indicating acceptance under Standard 508 and under Enclosed Industrial Control Panel or Service Equipment Panel.

2.28 EQUIPMENT GROUNDING:

2.28.1 Each electrical equipment item in the station shall be properly grounded per Section 250 of the National Electrical Code. Items to be grounded include, but are not limited to, pump motor frames, control panel, transformer, convenience receptacles, heater, dehumidifier, lights, light switch, exhaust fans and pressure switches.

2.28.2 All ground wires from installed equipment shall be in conduit and shall lead back to the control panel to a copper ground buss specific for grounding purposes and so labeled. The ground buss shall be complete with a lug large enough to accept the installing electrician's bare copper earth ground wire. The buss shall serve as a bond between the earth ground and the equipment ground wires.

2.29 PANEL MOUNTING HARDWARE: Metal framing channel shall be used exclusively for mounting of all electrical panels and electrical components except for those specifically designated otherwise.

2.30 PUMP STARTING EQUIPMENT: Pump starting equipment shall be three (3) phase, full voltage, non-reversing starters as manufactured by Allen-Bradley Square D, General Electric, or equal. The starters shall be complete with a manually reset overload relay. The relay shall be complete with a correctly sized heater element on each line. Starters and overloads shall be UL listed.

2.31 DISTRIBUTION AND CONTROL PANEL:

2.31.1 All circuit breakers, motor starters, and time delay relays and control relays shall be incorporated into one (1) NEMA 12 control panel. The electrical service provided for this station will be 208 volt, 3 phase, 60 cycle, 3 wire.

2.31.2 There shall be provided, thermal-magnetic trip circuit breakers as follows:

One (1) Main Breaker, 200 amps;
Two (2) Branch Breakers, one each per pump, 90 amps;
One (1) Transformer Breaker, Primary Side, 60 amps;
One (1) Phase Monitor Breaker, 15 amps;
Ten (10) Auxiliary Circuit Breakers, size per equipment requirement, as follows:

1. Controls
2. Lights
3. HVAC Unit
4. Dehumidifier
5. Heater
6. Convenience Outlets
7. Telemetry
8. Spare
9. Chemical Equipment
10. Exhaust Fan/Louver

2.32 RUNNING TIME METER: A running time meter shall be supplied for each pump to show the number of hours of operation. The meter shall be enclosed in a dust and moisture proof molded plastic case, suitable for flush mounting on the main control panel. The meter dial shall register in hours and tenths of hours up to 99999.9 hours before repeating. The meter shall be suitable for operation from a 115 volt, 60 cycle supply.

2.33 PHASE MONITOR: A phase monitor shall be supplied to protect three-phase equipment against phase loss, undervoltage and phase reversal conditions. When a fault is sensed, the monitor output relay opens within two (2) seconds or less to turn the equipment off and/or cause an audio or visual alarm. Both Delta and Wye systems may be monitored. The monitor shall have an automatic reset and shall also include an adjustable voltage delay. The monitor shall have an indicator LED (glows when all conditions are normal and shall monitor phase sequence: ABC operate (will not operate CBA). The phase monitor shall be UL approved and CSA certified.

2.34 SURGE ARRESTOR: A secondary surge arrestor shall be provided. Housing shall be Noryl and be ultrasonically sealed. Valve blocks shall be metal oxide with an insulating ceramic collar. Gap design shall be annular. The lead wire shall be permanently crimped to the upper electrode forming part of the gap structure. Arrestors shall be UL and CSA listed Lightning Protective Devices.

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2.34.1 Telemetry Panel Installation – Water Storage Tank Site: The RTU panel shall be mounted at the site in a location as shown. The panel shall be mounted on two (2) 36" long horizontal pieces of pre-drilled unistrut. Mounting channel shall be hot dipped galvanized meeting ASTM A-123 and A-153 with a thickness grade of 65. Mounting channel shall be manufactured from 12 GA steel. Mounting channel shall be Kindorff Model B-995-HD galvanized channel mount spring loaded. Stud nuts shall be used, such as Kindorff Model B-911-3/8SH-2, and Kindorff Model B-911-3/8 channel nuts.

2.34.2 Water Storage Tank Level Sensor (Tank Level Sensor): The Tank Level Sensor shall be a pressure transmitter and shall provide an industry standard 4-20 mA full-scale output signal in direct proportion to the input pressure (tank level). Static pressure sensor (SPT) shall be calibrated to the following: 4 mA corresponding to the elevation of the floor of the tank, and 20 mA corresponding to the tank overflow elevation. Provide a minimum of 8 feet of polyurethane jacketed vented cable. Provide one complete SPT and cable for use as a spare. Sensor shall be manufactured by Bristol Teletran 3508-106, or approved equal.

2.34.3 Booster Pump Station Pressure Transmitters: Pressure transmitters shall be supplied to measure booster pump suction pressure and booster pump discharge pressure. The pressure transmitter shall be furnished by OCWA.

2.34.4 P.L.C. Data Modem: Modem shall be furnished and installed by OCWA.

2.34.5 Telemetry Control - Design, Assembly & Test: The telemetry panel design, assembly, installation and startup, and the integration of component parts will be the responsibility of OCWA.

2.35 PROGRAMMABLE LOGIC CONTROLLER:

2.35.1 Provide a microprocessor based programmable logic controller that can be used in a stand-alone configuration and can be networked into a larger system. It shall be suitable for telemetry applications performing as an intelligent RTU. The unit shall be fully programmable and capable of performing control relay logic, including timing, counting, sequencing, and interlocking.

2.35.2 The PLC/RTU shall have a modular chassis design which allows for ease of future expansion. The processor module shall be easily removed from the I/O chassis for treatment or repair. The I/O chassis shall have slots for installing I/O cards, communications, or other special function modules.

2.35.3 All I/O cards and modules, with the exception of the CPU, shall be capable of being installed in any open slot in the chassis.

2.35.4 The PLC/RTU shall have a modular power supply which mounts directly to the I/O chassis and can be easily serviced or replaced. The system shall be capable of being powered on 120VAC or 24VDC, by simply choosing different power supply modules.

2.35.5 The processor shall have solid-state RAM memory to store the application program, process data, and alarm status. This memory shall have both capacitor and battery backup in the event that input power to the processor is lost. It shall also have EEPROM backup, which automatically reloads the memory on a power cycle. The processor shall have the ability to automatically go into the RUN mode on a power cycle, provided there are no major or unrecoverable processor faults.

2.35.6 The PLC/RTU shall be rated to operate from 0 to 60 Degrees C, with a humidity rating of 5% to 95% (non-condensing). The PLC/RTU must be UL listed and CSA certified. All module circuit boards shall be encased and protected such that, when properly installed, they are not exposed to accidental contact by personnel or other objects.

2.35.7 The PLC/RTU shall be of high quality and reliability with replacement processors, power supplies, chassis, I/O and specialty modules that are readily available on an urgent or emergency basis. All PLC/RTU products shall be fully supported and available for purchase for up to seven (7) years from the date of the original system purchase.

2.35.8 The PLC shall be as manufactured by Allen-Bradley Company of 1201 South Second Street, Milwaukee, WI 53204. Model number shall be a 1746-L531. All required communication modules and accessories shall be included for a complete and functional system. The model number is mentioned to establish a standard of quality. Other manufacturers matching the specifications such as ABB, or approved equal, may be used.

2.35.9 Operator Interface/Man Machine Interface (MMI): The PLC control system shall include a front panel mounted operator interface. The operator interface shall have a LCD graphic screen with a 16 key keypad. The text shall be in easy to read English and be displayed in easy to understand presentation. All station names and alarms shall be spelled out in full and not abbreviated acronyms. The display shall be Panelview™ 300 Monochrome as manufactured by Allen-Bradley Company, Milwaukee, WI 53204, Model #2711-K3A. The model is mentioned to establish a standard of quality. Other manufacturers matching the specifications such as ABB, or approved equal, may be used.

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2.36 TELEMETRY CONTROL – INTERFACE PANEL:

2.36.1 It shall be the responsibility of the booster station manufacturer to provide the following as an adjunct to the supplied telemetry equipment (by OCWA):

1. 3/4 inch telemetry entrance conduit complete to telemetry panel
2. Size 12" x 12" NEMA 1 telemetry interface panel
3. Separate 120 volt single phase power circuit in conduit to the telemetry interface panel
4. Telemetry control circuits made up and in conduit from main control panel to telemetry interface panel terminal strip
5. Metal framing channel to mount telemetry equipment

2.37 OPERATION DESCRIPTION - BOOSTER PUMP STATION (BPS) TELEMETRY:

2.37.1 Function: Instrumentation and control, and telemetry equipment shall be furnished, installed, started-up and tested by OCWA, following station installation by the Contractor and acceptance by the Owner. The OCWA installed PLC/telemetry systems shall control the booster pump operation for two (2) booster pumps with VFD. Both the suction and discharge pressures of the station shall be monitored by solid state pressure transmitters. All functions requiring set points, time out, etc. shall be fully adjustable at the MMI without program modification. All input/output data shall be accessible via the MMI without program modification.

2.37.2 The PLC-VFD system shall operate automatically to adjust the output of the selected service pump (lead/lag) in order to maintain a constant output pressure from the station. The pump output shall be adjusted by varying the speed at which it operates. The speed shall be controlled by a variable frequency drive (VFD), as specified in this document, and the calculation of needed pump speed shall be performed by a programmable logic controller (PLC) which shall have input to it a signal directly proportional to the outlet pressure. The PLC shall employ a standard Proportional Integral and Derivative algorithm to calculate the speed output needed to maintain the constant outlet pressure.

2.37.3 Lead Pump Call: The site operation shall have logic that shall call for a lead pump based upon the level of water in the remote water storage tank. The lead pump call shall energize when the level of the remote tank site falls to a point equal to or less than the lead pump call setpoint. The lead pump call shall be turned off when the level of the remote storage tank rises to a point equal to or greater than the lead pump call off setpoint. In the event of a low suction alarm condition or a high discharge alarm condition the call for lead pump shall be suspended until the condition clears.

2.37.4 Lag Pump Call: The site operation shall have logic that shall call for a lag pump based upon the level of water in the remote water storage tank. The lag pump call shall energize when the level of the remote tank site falls to a point equal to or less than the lag pump call setpoint. The lag pump call shall be turned off when the level of the remote storage tank rises to a point equal to or greater than the lag pump call off setpoint. In the event of a low suction alarm condition or a high discharge alarm condition the call for lag pump shall be suspended until the condition clears.

2.37.5 Low Suction Pressure Alarm/Cutout: The site operation shall have logic that shall suspend the operation of pump calls and activate alarm indicators and outputs in the event the suction pressure of the station falls to a point equal to or less than the low suction cutout setpoint. The pressure must remain equal to or less than the low suction alarm setpoint for a period of no less than 60 seconds, after which the low suction alarm/cutout will latch on. The low level alarm/cutout will turn off when the suction pressure of the station rises to a point equal to or greater than the low suction cutout/alarm restore setpoint and a period of no less than 120 seconds has elapsed.

2.37.6 High Discharge Pressure Alarm/Cutoff: The site operation shall have logic that shall suspend the operation of pump calls and activate alarm indicators and outputs when the discharge pressure of the station rises to a point equal to or greater than the high discharge alarm setpoint and a minimum of 120 seconds has elapsed. The high discharge alarm/cutout will turn off when the station discharge pressure falls to a point equal to or less than the high discharge alarm reset setpoint and at least 120 seconds has elapsed.

2.37.7 Pump Failure: The site operation shall have logic that shall activate alarm indicators and outputs when a pump is called to operate, is in the automatic mode of operation, and fails to provide a positive motor engaged indication or if an input from the called pump's motor starter overload indicates a thermal overload trip.

2.37.8 Automatic Transfer Of Pump Call Upon Failure: The site operation shall have logic that shall transfer the pump call of a failed pump to the next available pump. This shall override the alternation logic.

2.37.9 Alternation of Pumps: The site operation shall have logic that shall alternate the pump call after each pump cycle. The operator shall be able to manually select the lead pump or automatic.

2.37.10 Local Pressure Control Back-Up: The site operation shall have logic that shall, upon a failure of communications with either the master site or the tank site which is being served by this station, transfer to a local pressure control mode. The local pressure control shall call for a lead pump in the event the station discharge pressure falls to a point equal to or less than the local pressure pump call setpoint and stays so for a minimum of 180 seconds. The local pressure call for lead pump shall be turned off when the station discharge pressure rises to a point equal to or greater than the local pressure pump off setpoint and stays so for a period of no less than 300 seconds.

2.37.11 Generator Running System Logic: In the event of a power failure, an uninterruptible power supply PLC (UPS) will engage and the PLC shall, upon restoration of power either by generator or line power, time delay the starting of all motor loads. NO LOAD shall start within 30 seconds of restoration of power or generator power up. All loads shall be time delayed such that they cannot start at the same time. This applies even to the HAND position. Upon transfer from generator to utility power no modification should be necessary as that transfer should be without power fault (no outage).

2.37.12 Setpoints At this Operator Interface:

Note: EST = Elevated Storage Tank; BPS = Booster Pump Station; BP = Booster Pump; HALM = high alarm; LALM = Low Alarm; PFAIL = Pump Failed; BU = Backup.

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#	Description	Units	Range	Comment
1.	EST HALM	ft	0 - 46	setpoint
2.	EST HALM Reset	ft	0 - 46	setpoint
3.	EST LALM	ft	0 - 46	setpoint
4.	EST LALM Reset	ft	0 - 46	setpoint
5.	Lead Pump Call OFF - EST	ft	0 - 46	setpoint
6.	Lead Pump Call ON - EST	ft	0 - 46	setpoint
7.	Lag #1 Pump Call OFF - EST	ft	0 - 46	setpoint
8.	Lag #1 Pump Call ON - EST	ft	0 - 46	setpoint
9.	BPS BP Alternate Selector Automatic/Manual	none	0 - 1	OFF/ON
10.	BPS Manual Alternation Pump Selector Switches Lead/Lag	none	1 - 2 - 3	Selects pump # for lead/lag
11.	Low Suction Cutoff	psig	0 - 100	setpoint
12.	Low Suction Cutoff Reset	psig	0 - 100	setpoint
13.	High Discharge Cutoff	psig	0 - 250	setpoint
14.	High Discharge Cutoff Reset	psig	0 - 250	setpoint
15.	Press BU Lead Call	psig	0 - 250	setpoint
16.	Press BU Lead Call OFF	psig	0 - 250	setpoint
17.	Press BU Lag Call	psig	0 - 250	setpoint
18.	Press BU Lag Call OFF	psig	0 - 250	setpoint

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2.37.13 Indicators & Operators On this Panel And Touchscreen:

#	DESCRIPTION	TYPE	COLOR	COMMENT
1.	BP #1 H-O-A	3 pos	Black	Pilot Duty
2.	BP #2 H-O-A	3 pos	Black	Pilot Duty
3.	Low Suction Light	light	Red	Panel View
4.	High Discharge Light	light	Red	Panel View
5.	Pump 1 Running	light	Green	Panel View
6.	Pump 2 Running	light	Green	Panel View
7.	Pump 1 Failed	light	Red	Panel View
8.	Pump 2 Failed	light	Red	Panel View
9.	Communication Failed	light	Red	Panel View
10.	Low EST Level	light	Red	Panel View
11.	High EST Level	light	Red	Panel View
12.	In Local Pressure Control Mode	light	Red	Panel View
13.	Intrusion Alarm	light	Red	Panel View
14.	EST Level	ft	Black	Panel View
15.	Suction Pressure	psi	Black	Panel View
16.	Discharge Pressure	psi	Black	Panel View
17.	Flow Rate	gpm	Black	Panel View

2.37.14 PLC I/O at this Site (by OCWA):

1. 12 or 24 Vac inputs... 16
2. Relay outputs..... 16
3. Analog inputs..... 4
4. Analog outputs..... 0
5. Digital input/output (RS-232)

2.37.15 Discrete Inputs (by OCWA):

#	DESCRIPTION	TYPE	COMMENT
1.	BP #1 Running	From Starter	
2.	BP #1 Starter Failure	From Starter	
3.	BP #1 H-O-A Switch HAND	Switch control	From panel switch
4.	BP #1 H-O-A Switch OFF	Switch control	From panel switch
5.	BP #2 Running	From Starter	
6.	BP #2 Starter Failure	From Starter	
7.	BP #2 H-O-A Switch HAND	Switch control	From panel switch
8.	BP #2 H-O-A Switch OFF	Switch control	From panel switch
9.	Intrusion Alarm	Switch	From switch
10.	Power Failure	Relay Input	Power Fail Relay

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2.37.16 Discrete Outputs (by OCWA):

#	DESCRIPTION	TYPE	COMMENT
1.	BP #1 Call	Cont.	Pump 1 Starter
2.	BP #2 Call	Cont.	Pump 2 Starter
3.	Call for Chemical Feed	Cont.	Chemical Feed Pump Relay
4.	Intrusion Alarm	Cont.	Alarm Dialer
5.	Pump/Starter Fault	Cont.	Alarm Dialer
6.	High/Low Pressure alarm	Cont.	Alarm Dialer
7.	Communications Fault	Cont.	Alarm Dialer
8.	Spare		
9.	Spare		

2.37.17 Analog Inputs (by OCWA):

#	DESCRIPTION	CAL. RANGE	INST. RANGE	COMMENT
1.	Suction pressure	0 - 100 psig	0 - 100 psig	xmtr in station
2.	Discharge pressure	0 - 250 psig	0 - 250 psig	xmtr in station
3.	Flow transmitter	0 - 1000 gpm	0 - 1000 gpm	flow mtr in station
4.	EST level	0-35 gpm	0-35 gpm	tank level

2.37.18 Analog Outputs:

4-20 to chemical feed pumps.

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2.38 OPERATION DESCRIPTION – ELEVATED STORAGE TANK (EST) SITE TELEMETRY:

2.38.1 Function: This site measures the pressure/level of the water located in the Elevated Storage Tank (EST) Site. This level is maintained by the County Route 176 Booster Pump Station via radio telemetry (provided by OCWA).

2.38.2 Level/Pressure Measurement: The level/pressure measurement is accomplished through the use of a solid state smart pressure transmitter located on the inlet/outlet pipe of the storage tank. The measured level/pressure shall be converted by the PLC to engineering units of feet of water. The range of level/pressure to be measured is standardized 35 feet of water. An offset shall be added to levels/ pressures where the pressure sensing unit is above grade level. An average offset of minus four and one half (4.5) feet is added to compensate for the transmitter being mounted that height below grade.

2.38.3 Low Level Alarm: Logic shall be provided in the system to provide a low alarm for this tank level. The low alarm logic shall be such that if the measured level of the tank falls below an operator entered low alarm set point, a low alarm will latch on and be displayed as described elsewhere in this Specification. If the measured level of the tank rises above an operator entered low alarm reset set point, the alarm shall unlatch.

2.38.4 High Level Alarm: Logic shall be provided in the system to provide a high alarm for this tank level. The high alarm logic shall be such that if the measured level of the tank rises above an operator entered high alarm set point, a high alarm will latch on and be displayed as described elsewhere in this specification. If the measured level of the tank falls below the operator entered high alarm reset set point, the high alarm shall unlatch.

2.38.5 Uninterruptible Power system shall be as shown on the Contract Drawings.

2.39 MAIN PUMP STATION CONTROL PANEL DEVICES:

2.39.1 Hand-Off-Automatic (H-O-A) switches shall be oil tight, 3-position maintained and be located on the main control panel door. H-O-A switches shall be provided for the following:

a. Pump #1
b. Pump #2
c. Chemical Pump #1 (future pump F&I by OCWA)
d. Chemical Pump #2 (future pump F&I by OCWA)
e. Exhaust Fan/Louver
f. Telemetry Test (future system F&I by OCWA)

2.39.2 Indicating lights shall be oil tight, with a full voltage pilot light and be provided as follows:

a. Red - Low Suction Pressure
b. Green - Pump #1 in Operation
c. Green - Pump #2 in Operation
d. Green - Chemical Pump #1 in Operation (future pump F&I by OCWA)
e. Green - Chemical Pump #2 in Operation (future pump F&I by OCWA)

2.39.3 Nameplates shall be furnished on all panel front mounted switches and lights.

2.39.4 The control panel door shall be complete on the interior with a stick-on transparency containing an "as-built" reproduction of the electrical control panel schematic. The wiring diagram shall be a corrected "as-built" copy and contain individual wire numbers, circuit breaker numbers, switch designations and control function explanations.

2.40 MANUAL TRANSFER SWITCH:

2.40.1 A double throw switch shall be furnished to transfer the electrical load from one supply to another. The transfer switch shall be non-fusible, 3 pole, 208 VAC, 200 amp rated.

2.40.2 The manual transfer switch shall be a Class 3140 as manufactured by Square D, or approved equal.

2.40.3 Provide a 200A fusible disconnect on the emergency side of the manual transfer switch.

2.40.4 The manual transfer switch shall include a receptacle assembly with reversed contacts (receptacle male type and plug female type), Model AREA204226 with option S22 or Appleton ADH 20034 as manufactured by Crouse Hinds, or equal. Furnish a loose matching plug.

2.41 CONDUIT AND WIRING:

2.41.1 The service entrance conduits shall be rigid steel conduit (pre-coated above-ground), individually sized to accept the inbound service conductors and telemetry/telephone/radio cables, and shall be installed from the main distribution and control panel through the equipment enclosure floor and terminate exterior at the main distribution switch load side. The service entrance exterior conduit connection points shall be capped or plugged for shipment.

2.41.2 All wiring within the equipment enclosure and outside of the control panel or panels shall be run in conduit except for the watertight flexible conduit and fittings properly used to connect pump drivers, fan motors, solenoid valves, limit switches, etc., where flexible connections are best utilized. Only the dehumidifier where furnished by the original manufacturer with a UL approved rubber cord and plug, may be plugged into a receptacle.

2.41.3 Equipment Enclosure Conduit: Rigid, heavy wall, Schedule 80 PVC with solvent weld moisture-proof connections, in minimum size 3/4" or larger, sized to handle the type, number and size of equipment conductors to be carried - in compliance with Article 347 of the National Electrical Code and NEMA TC-2, Federal WC-1094A and UL-651 Underwriters Laboratory Specifications.

2.41.4 Flexible Connections: Where flexible conduit connections are necessary, the conduit used shall be liquid-tight, flexible, totally nonmetallic, corrosion resistant, nonconductive, U.L. listed conduit sized to handle the type, number and size of equipment conductors to be carried - in compliance with Article 351 of the National Electrical Code.

2.41.5 Motor Circuit Conductors: Sized for load. All branch circuit conductors supplying a single motor of one (1) horsepower or more shall have an ampacity of not less than 125 percent of the motor full load current rating, dual rated type THHN/THWN, as set forth in Article 310 and 430-B of the National Electrical Code, Schedule 310-13 for flame retardant, heat resistant thermoplastic, copper conductors in a nylon or equivalent outer covering.

2.41.6 Control and Accessory Wiring: Sized for load, type MTW/AWM (Machine tool wire/appliance wiring material) as set forth in Article 310 and 670 of the National Electrical Code, Schedule 310-13 and NFPA Standard 79 for flame retardant, moisture, heat and oil resistant thermoplastic, copper conductors in compliance with NMTBA and as listed by Underwriters Laboratories (AWM), except where accessories are furnished with a manufacturer supplied UL approved rubber cord and plug. All control and sensor wiring shall be numbered at both ends.

2.42 RECEPTACLES:

2.42.1 Four (4) duplex, ground fault circuit interrupter type receptacles shall be furnished about the periphery of the equipment enclosure, with one (1) receptacle adjacent to the main control panel.

2.43 LIGHTING:

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COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

2.43.1 Lighting shall consist of five two tube, 32 watt per tube, electronic start, enclosed and gasketed, forty-eight (48) inch minimum length fluorescent light fixtures installed within the equipment enclosure, as shown on the Plans. One (1) light fixture shall be located directly over the main control panel. The light switch shall be of the night glow type and be located conveniently adjacent to the door. Open fluorescent or incandescent fixtures will not be accepted. One fixture per room shall be equipped with an emergency ballast to provide light upon power failure.

2.44 HEATER:

1. Two (2) each wall mounted as shown.
2. Rating - 10,239 BTU/HR - 3000 watts, 208 volt, 1 phase.
3. Enclosed resistance wire within steel finned element.
4. Control - thermostat control.
5. UL listed.
6. Vane axial fan - floor flow discharge.
7. Hard wired in conduit per UL 400-1.

2.45 EXHAUST FAN (Chemical Feed Room):

a. One (1) each installed as shown.
b. Capacity each 800 cfm of free air.
c. Totally enclosed shaded pole motor, 1550 rpm, 1/30 HP.
d. Hard wired in conduit to conduit box on motor per UL 400-1.
e. 12" diameter aluminum 3-wing fan blades.
f. One (1) 12" x 12" aluminum fixed louver with insect screen mounted exterior opposite of fan.
g. Control of the Chemical Feed Room exhaust fan and lights shall be provided by manual pushbuttons. The NEMA 3R enclosure shall include a push-to-start button and a push-to-stop button, and be located on the building exterior adjacent to the chemical room entry door.
h. To insure no build up of vapors in the Chemical Feed Room, automatic fan activation shall be provided by time control, with a 24-hour dial, 96 self-contained trippers, single pole, double throw isolated contacts rated at 10 amps at 120 volts.
i. Door mounted limit switch shall activate the exhaust fan.
j. The exhaust fan discharge shall be a minimum 4-feet above floor elevation. An FRP plenum shall be installed such that the exhaust fan inlet is 4-inches above floor elevation.

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2.46 MOTORIZED AIR RETURN SHUTTER (CHEMICAL FEED ROOM):

a. One (1) each installed as shown.
b. 12" x 12" 16 gauge extruded aluminum frame.
c. Aluminum blades with stainless steel rivets.
d. 120 volt AC, 60 cycle, single phase electric motor.
e. Operation of shutter from start/stop of exhaust fan described above.
f. One (1) 12" x 12" aluminum fixed louver with insect screen mounted exterior opposite of shutter.

2.47 DEHUMIDIFIER:

a. One (1) each, installed as shown.
b. Capacity 25 pints per 24 hours (AHAM Standard DH-1).
c. Compressor rated 1/5 HP, 4.1 amps, 400 watts.
d. Condensate piped direct to floor drain.
e. 120 volt A.C. operation by dial-controlled adjustable humidistat.
f. UL listed rubber cord.

2.48 SHUTTER-MOUNTED EXHAUST FAN:

1. Two (2) each installed as shown.
2. Capacity each 800 cfm of free air at 0.0 inch static pressure.
3. 120 volt, 60 Hz, 1550 rpm, totally enclosed shaded pole sleeve bearing motors, with die cast aluminum housing, automatic thermal protection and heat resistance to 311°F, Class F insulation.
4. Zinc-plated intake guard meets OSHA regulations.
5. Solid cast aluminum frame; non-corrosive fasteners; non-combustible motor cap; and sound-absorbing, anti-vibration cast aluminum supports.
6. 12" diameter, aluminum, 3-wing impeller.
7. Hard wired in conduit to conduit box on motor per U.L. 400-1.
8. U.L. Listed and CSA Certified.
9. 120 volt AC operation from wall mount thermostat and HAND/AUTO switch on main control panel.
10. One (1) 15" x 15" aluminum fixed louver with insect screen mounted exterior opposite of fan.

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COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

2.49 FACTORY START-UP SERVICE:

a. Start-up service technician shall be a factory trained representative of the manufacturer of the Packaged Booster Pumping Station.
b. Provide a minimum one (1) full day at job site for start-up and training.
c. Start-up service to include five (5) bound O&M manuals.
d. Start-up service report attested to by start-up technician and representative of Owner and Engineer.

2.50 WARRANTY:

2.50.1 The warranty is the responsibility of the Contractor and that warranty shall be provided in written form to the Engineer for inclusion with the submittal and said warranty shall at a minimum cover:

a. A period of one (1) year commencing upon issuance of Notice of Substantial Completion.
b. The one (1) year period shall be inviolate regardless of any component manufacturer's warranty for equipment and components within the station.
c. The warranty shall cover all equipment, components and systems provided in or with the station.
d. The warranty shall provide for replacement and/or repair of faulty or defective components at no cost to the Owner during the warranty period.
e. Where deemed necessary, the Contractor will be responsible for the labor of removal and reinstalling the defective or faulty components without cost to the owner.
f. No assumption of contingent liabilities for any component failure during warranty is made.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 The County Route 176 Packaged Booster Pumping Station and components shall be installed in accordance with manufacturer's recommendations.

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COUNTY ROUTE 176 PACKAGED BOOSTER PUMPING STATION

PART 4 - MEASUREMENT AND PAYMENT:

4.1 MEASUREMENT: County Route 176 Packaged Booster Pumping Station:

4.1.1 Measurement for County Route 176 Packaged Booster Pumping Station shall include the cost of all materials, equipment, and labor for work indicated in this Section.

4.2 PAYMENT: County Route 176 Packaged Booster Pumping Station:

4.2.1 For County Route 176 Packaged Booster Pumping Station, not included in other unit or lump sum price items, payment for County Route 176 Packaged Booster Pumping Station will be made at the applicable price stated in the Bid. Payment shall include the costs for all labor, materials and equipment necessary to furnish and install County Route 176 Packaged Booster Pumping Station as shown within the Payment Limits on the Contract Documents, including concrete slab foundation, site work and all other items of work (including ductile iron water main installed within the Payment Limits shown) not included in other price or lump sum price items.

END OF SECTION

SPECIFICATIONS

SECTION 16011

ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Electrical General Requirements, as shown on the Plans, as specified and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 Federal Specification (Fed. Spec.):

L-P-387A	Plastic Sheet, Laminated, Thermosetting (for Design Plates)

1.2.2 American National Standards Institute (ANSI) Publications:

C37.20	Switchgear Assemblies, Including Metal-Enclosed Bus
Z35.1	Accident Prevention Signs

1.2.3 Institute of Electrical and Electronics Engineers (IEEE) Publication:

100	Standard Dictionary of Electrical and Electronics Terms

1.2.4 National Electrical Manufacturers Association (NEMA) Publication:

ICS 6	Enclosures for Industrial Controls and Systems

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1.2.5 National Fire Protection Association (NFPA) Publication:

70B	Electrical Equipment Maintenance
70	National Electrical Code

1.3 APPLICATION: This Section applies to all sections of Division 16, "Electrical", of this Project except as specified otherwise in each individual section.

1.4 DEFINITION OF ELECTRICAL TERMS: Unless otherwise specified or indicated, electrical terms used in these Specifications, and on the drawings, shall be as defined in IEEE Standard No. 100.

1.5 SUBMITTALS: Obtain approval before procurement, fabrication, or delivery of items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Military, industry, and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished. Furnish a minimum of six (6) copies of shop drawings for each major device specified.

1.5.1 Shop Drawings: In addition to the requirements specified elsewhere, shop drawings shall meet the following requirements. Drawings shall be a minimum of 8.5 inches by 11 inches in size, except as specified otherwise. Drawings shall include complete ratings information, wiring diagrams, and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to assure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, revise drawings to show acceptable equipment and resubmit.

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ELECTRICAL GENERAL REQUIREMENTS

1.5.2 Manufacturer's Data: Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.

1.5.3 Publication Compliance: Where equipment or materials are specified to conform to industry and technical society publications of organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and Underwriters' Laboratories Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Owner. In lieu of the label or listing, submit a certificate from an approved independent testing organization, adequately equipped and competent to perform such services, stating that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's publication.

1.5.4 Submittals Required: Supply shop drawing submittal information on the following equipment and as otherwise noted in each individual Section:

1.6 OPERATION AND MAINTENANCE MANUAL: Submit as required for systems and equipment indicated in the technical sections. Furnish three copies, bound in hardback binders or an approved equivalent. Furnish one complete manual prior to performance of systems or equipment tests, and furnish the remaining manuals prior to contract completion. Inscribe the following identification on the cover: the words "OPERATION AND MAINTENANCE MANUAL", the name and location of the system, equipment, building, name of Contractor, and contract number. Include in the manual the names, addresses, and telephone numbers of each subcontractor installing the system or equipment and the local representatives for the system or equipment. Include a table of contents and assemble the manual to conform to the table of contents, with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include:

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a. Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the system or equipment.

b. A control sequence describing startup, operation, and shutdown.

c. Description of the function of each principal item of equipment.

d. Installation and maintenance instructions.

e. Safety precautions.

f. Diagrams and illustrations.

g. Testing methods.

h. Performance data.

i. Lubrication schedule including type, grade, temperature range, and frequency.

j. Parts list. The list shall indicate sources of supply, recommended spare parts, and name of servicing organization.

k. Appendix: List qualified permanent servicing organizations for support of the equipment, including addresses and certified qualifications.

1.7 SPARE PARTS: Provide the following spare parts for all equipment installed under this Contract, unless indicated otherwise elsewhere.

a. Three (3) power fuses for each different size and type used.

b. Five (5) control fuses for each different size and type used.

c. Five (5) pilot lights for each different size and type used.

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ELECTRICAL GENERAL REQUIREMENTS

1.8 POSTED OPERATING INSTRUCTIONS: Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal system and equipment. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions as directed. Attach or post operating instructions adjacent to each principal system and equipment including startup, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction as recommended by the manufacturer of each system or equipment. Provide weather-resistant materials or weatherproof enclosures for operating instructions exposed to the weather. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.9 INSTRUCTION TO OWNER'S PERSONNEL: Where indicated in the technical sections, furnish the services of competent instructors to give full instruction to Owner's personnel in the adjustment, operation, and maintenance of systems and equipment, including pertinent safety requirements as required. Each instructor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Owner for regular operation. The number of man days (8 hours) of instruction furnished shall be as specified in each individual section.

1.10 DELIVERY AND STORAGE: Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B, Appendix I, titled "Equipment Storage and Maintenance During Construction". Replace damaged or defective items with new items.

1.11 CATALOGED PRODUCTS/SERVICE AVAILABILITY: Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a

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product for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the Contract.

1.12 MANUFACTURER'S RECOMMENDATIONS: Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material. Obtain manufacturer's recommendations from the Owner for equipment and/or material provided by the Owner.

1.13 MOTORS AND MOTOR CONTROLS FOR MECHANICAL EQUIPMENT: The electrical components of mechanical equipment, such as motors, motor starters, control or push button stations, float or pressure switches, solenoid valves, and other devices functioning to control mechanical equipment, and control wiring and conduit for circuits rated 100 volts or less, are specified in the section covering the associated mechanical equipment, rather than in Division 16, unless otherwise shown. The interconnecting power wiring and conduit, control wiring rated 120 volts (nominal) and conduit, and the electrical power circuits shall be furnished and installed under Division 16.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT: All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

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2.2 NAMEPLATES: Fed. Spec. L-P-387. Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch, and device. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25-inch high normal block style.

PART 3 - EXECUTION

3.1 NAMEPLATE MOUNTING: Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.2 PAINTING OF EQUIPMENT:

3.2.1 Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

3.3 TESTS:

3.3.1 General: Perform and record all tests in the presence of the Owner's authorized representative and/or the Engineer. Furnish all instruments and personnel. Perform preliminary tests and correct all defective material and/or workmanship prior to witness of tests. Perform tests as indicated and as otherwise noted in other Sections of the 1600 Division.

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ELECTRICAL GENERAL REQUIREMENTS

3.3.2 Conduct field tests in the sequence listed below:

3.3.2.1 Insulation Resistance Tests: Make tests after all wiring is completed and connected ready for the attachment of fixture and/or equipment. Repeat test when all fixtures and/or equipment are connected ready for use. Make tests with an instrument capable of measuring the resistance involved at a voltage of at least 500 volts DC for equipment rated 100 to 500 volts AC, 1500 volts DC for equipment rated 151 to 600 volts AC. Apply voltage continuously for one minute prior to taking reading. Measure insulation resistance between each pair of insulated conductor separately and between each insulated conductor and ground. Make tests at each panelboard distribution panel, and switchboard on every circuit with the circuit protective device open but connected. The minimum acceptable measured insulation resistance for wiring completed and ready for connection of fixtures and/or equipment is 1,000,000 ohms.

3.3.2.2 For wiring completed with all fixtures and/or equipment connected, the minimum acceptable insulation resistance is 500,000 ohms.

3.3.3 Load Balance Test: Make test by energizing all lighting, motors and other electrical equipment simultaneously for a three hour period. Alter fuses, circuit breakers, circuit connections, etc., as required for satisfactory performance. Take voltage and amperage readings on each circuit at all panels.

3.3.4 Check the amperage draw, voltage and direction of rotation of each motor in the presence of the equipment contractor and the Owner's representative. Make all necessary changes to obtain proper rotation, motor terminal voltage, motor protection, etc. Revise heater elements as necessary for proper motor protection. Similarly check all other electrically connected equipment.

Make the test at a time during the day or night that is mutually satisfactory to the Owner at least one week prior to substantial completion. Make all arrangements and notify all parties in writing at least seventy-two hours prior to the test.

3.3.5 Equipment Operation Test - Show by demonstration in service that all circuits are in good operating condition. Cycle all control equipment under load at least five times.

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3.3.6 Equipment and apparatus factory tests - Manufacturer's normal quality control tests are acceptable, unless specific factory witnessed tests are specified in other sections.

3.4 CLEANING:

3.4.1 When directed, just prior to final acceptance, clean all equipment including, but not limited to, the following:

- Lighting fixtures, panelboards, control centers, switchgear, receptacles and switch plates - Remove all tags and labels; leave ready for use - All equipment to be painted, removing all rust, etc., and leave ready for painting - Building, by removing all debris, conduits, wire, insulation, cartons, etc., left as a result of this work.

3.5 UTILITY COORDINATION:

3.5.1 Contractor shall provide and pay for inspection of electrical work by the New York Board of Fire Underwriters or other approved electrical inspection agency prior to connection to the utility service.

3.5.2 Contractor shall coordinate with Niagara Mohawk (Catherine Murray at 592-0194) regarding the building electric service. Contractor must submit a complete set of shop drawings of the new service entrance equipment for the utility's approval.

3.5.3 Contractor shall contact Telephone Company and coordinate telephone service for new Treatment Building.

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PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - ELECTRICAL GENERAL REQUIREMENTS:

4.1.1 Measurement for Electrical General Requirements shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - ELECTRICAL GENERAL REQUIREMENTS:

4.2.1 For Electrical General Requirements, not included in other unit or lump sum price items, payment for Electrical General Requirements will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 16301

UNDERGROUND ELECTRICAL WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Underground Electrical Work, as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 Federal Specification (Fed. Spec.):

RR-F-621C	Frame, Covers, Gratings, Steps, Sump and Catch Basin, Manhole

1.2.2 American Association of State Highway and Transportation Officials (AASHTO) Publications:

HB-12	Highway Bridges, Including Interim Specifications
M 198	Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets

1.2.3 American Concrete Institute (ACI) Publications:

315	Details and Detailing of Concrete Reinforcement
318	Building Code Requirements for Reinforced Concrete

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1.2.4 American National Standards Institute (ANSI) Publication:

C2	National Electrical Safety Code (NESC)

1.2.5 American Society for Testing and Materials (ASTM) Publications:

B1	Hard-Drawn Copper Wire
B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
C32	Sewer and Manhole Brick (Made from Clay or Shale)
C260	Air-Entraining Admixtures for Concrete
C309	Liquid Membrane-Forming Compounds for Curing Concrete
D698	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop
D1556	Density of Soil in Place by the Sand-Cone Method
D1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
D1682	Breaking Load and Elongation of Textile Fabrics

1.2.6 Association of Edison Illuminating Companies (AEIC) Publications:

1	Impregnated-Paper-Insulated Lead Covered Cable, Solid Type (10th Edition)

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UNDERGROUND ELECTRICAL WORK

CS5	Polyethylene and Crosslinked Polyethylene Insulated Shielded Power Cables Rated 5 through 69 KV (6th Edition)
CS6	Ethylene Propylene Rubber Insulated Shielded Power Cables Rated 5 through 69 KV (3rd Edition)

1.2.7 Institute of Electrical and Electronics Engineers (IEEE), Inc. Publication:

48	IEEE Standard Test Procedures and Requirements for High-Voltage Alternating-Current Cable Terminations

1.2.8 National Electrical Manufacturer's Association (NEMA) Publications:

RN 1	Polyvinyl-Chloride Externally Coated Galvanized Rigid Steel Conduit and Electrical Metallic Tubing
TC 2	Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
TC 3	PVC Fittings for Use With Rigid PVC Conduit and Tubing
TC 6	PVC and ABS Plastic Utilities Duct for Underground Installation
TC 9	Fittings for ABS and PVC Plastic Utilities Duct for Underground Installation
WC 7	Cross-Linked-Thermosetting- Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-66-524)
WC 8	Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-68-516)

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UNDERGROUND ELECTRICAL WORK

1.2.9 National Fire Protection Association (NFPA) Publication:

70	National Electrical Code (NEC)

1.2.10 U.S. Department of Agriculture, Rural Electrification Administration (REA) Bulletins:

344-2	List of Materials Acceptable for Use on Telephone Systems of REA Borrowers
345-6	Splicing Plastic-Insulated Cables (PC-2)
345-14	Direct Burial Telephone Cable (Air Core) (PE-23)
345-26	Buried Plant Housings (PE-35)
345-67	Filled Telephone Cables (PE-39)

1.2.11 Underwriters' Laboratories Inc. (UL) Publications:

6	Rigid Metal Conduit
467	Grounding and Bonding Equipment
510	Insulating Tape
514A	Metallic Outlet Boxes
514B	Fittings for Conduit and Outlet Boxes
854	Service-Entrance Cables
1242-83	Intermediate Metal Conduit

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UNDERGROUND ELECTRICAL WORK

1.3 GENERAL REQUIREMENTS: Section 16011, "Electrical General Requirements", applies to this Section with additions and modifications specified herein.

1.3.1 Underground Service: Terminate underground service into buildings at a point 5 feet outside the building and projections thereof, except that service conductors shall be continuous to the interior terminating point indicated. Connections of the underground service to the service switch, panelboard, or load center is included in Section 16402, "Interior Wiring Systems". Protect ends of underground conduit with threaded metal caps until connections are made.

1.3.2 Electrical Characteristics: Electrical characteristics for this project shall be: Pump Station Building – 120/208V, 3 phase; Tank – 240/120V, 1 phase.

1.3.3 Laboratory Tests:

1.3.3.1 Determine soil-density relationships as specified for soil tests in Section 02220, "Earthwork."

1.3.4 Arc-Proofing Test for Cable Fireproofing Materials: Test one sample assembly consisting of a straight lead tube 12 inches long with a 2-1/2 inch outside diameter, and a 1/8-inch thick wall, and covered with one-half lap layer of arc and fireproofing material per manufacturer's instructions. The arc and fireproofing tape shall withstand extreme temperature of a high-current fault arc 13,000 degrees K for 75 cycles as determined by using an argon directed plasma jet capable of constantly producing and maintaining an arc temperature of 13,000 degrees K. Temperature (13,000 degrees K) of the ignited arc between the cathode and anode shall be obtained from a dc power source of 305 (plus or minus 5) amperes and 20 (plus or minus 1) volts. The arc shall be directed toward the sample assembly accurately positioned 5 (plus or minus 1) millimeters downstream in the plasma from the anode orifice by fixed flow rate of argon gas (0.18 g per second). Each sample assembly shall be tested at three unrelated points with the arc striking the sample assembly at a same free location. Start time for tests shall be taken from recorded peak current when the specimen is exposed to the full test temperature. Surface heat on the specimen prior to that time shall be minimal. The end point is established when the plasma or conductive arc penetrates the protective tape and strikes the lead tube.

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UNDERGROUND ELECTRICAL WORK

1.4 SUBMITTALS:

1.4.1 Shop Drawings (S) or Manufacturer's Data (M):

Arc-proofing tape (M)
Conduit (M)
Splice box (M)
Insulating tape (M)
Terminator (M) (CO)
Manhole and hand hole, poured in place (S) (CO)
Manhole frame and cover (M) (CO)
Hand hole frame and cover (M) (CO)
Cable lubricants (M)
Sealing material for precast manhole and hand hole joints (M) (CO)
Telephone cable, splices, and pedestals (M) (CO)
Precast manholes and hand holes (S) (CO): Calculations and shop drawings for precast manholes and hand holes shall bear the seal of a registered professional engineer.

a. Material description (i.e., fc and fy)
b. Manufacturer's printed assembly and installation instructions
c. Design calculations
d. Reinforcing shop drawings prepared in accordance with ACI 315
e. Plans and elevations showing opening and pulling-in iron locations and details (M) (S)
f. Pulling-in iron (M) (S)

1.4.2 Manufacturer's Instructions:

a. Manufacturer's directions for use of ground megger with proposed method indicated
b. Terminator manufacturer's installation instructions

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UNDERGROUND ELECTRICAL WORK

1.4.3 Certificates of Compliance:

1.4.3.1 Material and Equipment: Provide manufacturer's statement certifying that the product supplied meets or exceeds contract requirements.

a. Hand hole and accessories
b. Hand hole frame and cover

1.4.3.2 Workmen's Competency: Thirty days before splicing is scheduled to begin, submit cable splicer's certificate of competency which shall include a certificate of completion from a splice/terminating kit manufacturer's instruction course, number of years of experience splicing high-voltage cable, and number of successful splices.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT: Provide materials and equipment listed by UL or approved by Factory Mutual (FM) System when such equipment is listed or approved.

2.1.1 Conduit: Shall be plastic coated rigid hot-dipped galvanized steel or plastic conforming to the following:

2.1.1.1 Rigid galvanized steel conduit or intermediate metal conduit (IMC) and fittings shall conform to the requirements of UL 6 and UL 1242, for threaded type, respectively , and shall be coated with a polyvinyl chloride (PVC) sheath bonded to the galvanized exterior surface, nominal 40 mils thick, conforming to NEMA RN 1, Type A40, except that hardness shall be nominal 85 Shore A durometer, dielectric strength shall be minimum 400 volts per mil at 60 Hz, tensile strength shall be minimum 3500 psi, and aging shall be minimum 1000 hours in an Atlas Weatherometer.

2.1.1.2 Plastic duct for concrete-encased burial shall be PVC and shall conform to NEMA TC 6, Type EB. Fittings shall conform to NEMA TC 9.

2.1.1.3 Plastic conduit for direct burial shall be PVC conforming to NEMA TC 2 (conduit) and NEMA TC 3 (fittings), Type EPC-80-PVC.

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2.1.1.4 Outlet boxes for use with rigid or flexible steel conduit shall be cast-metal cadmium or zinc-coated if of ferrous metal with gasketed closures and shall conform to UL 514A. Fittings for steel conduit and outlet boxes shall conform to UL 514B.

2.1.2 Plastic Insulating Tape: UL 510

2.1.3 Wire and Cable:

2.1.3.1 Wire and cable conductor sizes are designated by American Wire Gauge (AWG) and Thousands of Circular Mils (MCM). Conductor and conduit sizes indicated are for copper conductors, unless otherwise noted. Insulated conductors shall bear the date of manufacture imprinted on the wire insulation with other identification. Wire and cable manufactured more than 24 months before delivery to the job site shall not be used.

2.1.3.2 Conductors rated 600 volts and less, including service entrances, shall conform to UL 854, Type USE. Conductor size and number of conductors in each cable shall be as indicated. Cable shall be color coded. Conductor identification shall be provided within each enclosure where a tap, splice, or termination is made Conductor identification shall be by color-coded insulated conductors, plastic-coated self-sticking printed markers, colored nylon cable ties and plates, or heat shrink type sleeves. Control circuit terminations shall be properly identified. All conductors shall be stranded copper.

a. Colors for coding conductors shall be:

208-VOLT SYSTEM

Neutral - White
Phase A - Black
Phase B - Red
Phase C - Blue
Grounding Conductor - Green

2.1.3.3 Pull Wire: Shall be plastic, having a minimum tensile strength of 200 pounds.

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2.1.3.4 Connectors and Terminals: Shall be designed and approved for use with the associated conductor material, and shall provide a uniform compression over the entire contact surface. Solderless terminal lugs shall be used on stranded conductors. For connecting aluminum to copper, connectors shall be the circumferentially compressed, metallurgically bonded type.

2.1.4 Grounding and Bonding Equipment: UL 467. Ground rods shall be copperweld type copper clad steel with diameter adequate to permit driving to full length of the rod, but not less than 3/4 inch in diameter and 10 feet long unless otherwise indicated.

2.1.5 Materials for Manholes and Hand Holes: Referred to throughout this Section as "structures" or "underground structure".

2.1.5.1 Brick shall be sewer and manhole brick conforming to ASTM C32, Grade MS.

2.1.5.2 Metal Frames and Covers: Provide steel frames and covers conforming to Fed. Spec. RR-F-621 except where rolled steel floor plate is indicated.

2.1.5.3 Hand Holes: Split data/power pull box shall be constructed of polymer concrete with steel and/or fiberglass reinforcement. Load rating of 10k pound over 10" x 10" area. Hand holes shall be non-conductive, fire-retardant material, skid resistant cover. Provide Penta bolts. Provide logo on cover (electric). Provide complete assembly with cable entry openings. Minimum size shall be min. 24" wide, 36" long, 18" deep. Cover shall be capable of being locked into position. Manufactured by Highline Products. Polymer concrete/fiberglass pull boxes.

PART 3 - EXECUTION

3.1 INSTALLATION: Underground installation shall conform to ANSI C2 and NFPA 70 except as otherwise specified or indicated.

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3.1.1 Contractor Damage: The Contractor shall promptly repair any indicated utility lines or systems damaged by Contractor operations. Damage to lines or systems not indicated, which are caused by Contractor operations, shall be treated as "Changes" under the terms of the General Provisions of the Contract. If the Contractor is advised in writing of the location of a non-indicated line or system, such notice shall provide that portion of the line or system with "indicated" status in determining liability for damages. In any event, the Contractor shall immediately notify the Engineer of any such damage.

3.1.2 Underground Duct Without Concrete Encasement: Conduits shall be rigid galvanized steel or PVC as shown on drawings.

3.1.2.1 The top of the conduit shall be not less than 24 inches below grade, shall have a minimum slope of 3 inches in each 100 feet away from buildings and toward manholes and other necessary drainage points, and shall run in straight lines except where a change of direction is necessary. As each conduit run is completed, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the inside diameter of the conduit shall be drawn through each conduit, after which a stiff-bristled brush shall be drawn through until the conduit is clear of earth, sand, or gravel particles. Conduit plugs shall then immediately be installed. Ensure a minimum 3-inch clearance from the conduit to each side of the trench. Grade the bottom of the trenches smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches; fill with sand or earth, free from particles that would be retained on a 1/4-inch sieve; and tamp level with the original bottom.

3.1.2.2 Under roads, paved areas, and railroad tracks, install conduits in concrete encasement of rectangular cross-section providing a minimum of 3-inch concrete cover around ducts. The concrete encasement shall extend at least 5 feet beyond the edges of paved areas and roads, and 12 feet beyond the rails on each side of railroad tracks. Conduits to be installed under existing paved areas which are not to be disturbed, and under roads and railroad tracks, shall be zinc-coated, rigid steel, jacked into place.

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3.1.2.3 Separate multiple conduits with a minimum concrete thickness of 2 inches, except that light and power conduits shall be separated from control, signal, and telephone conduits by a minimum distance of 3 inches. Stagger the joints of the conduits by rows and layers to strengthen the conduit assembly. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of conduit assembly.

3.1.3 Underground Duct With Concrete Encasement: Shall be constructed of individual conduits encased in concrete. Except where rigid galvanized steel conduit is indicated or specified, the conduit shall conform to NEMA TC 6, Type EB. The type of conduit used shall not be mixed in any one duct bank. Ducts shall be a minimum of 4 inches in diameter unless otherwise indicated. The concrete encasement surrounding the bank shall be rectangular in cross-section and shall provide at least 3 inches of concrete cover around ducts. Separate conduit by a minimum concrete thickness of 2 inches, except separate light and power conduits from control, signal, and telephone conduits by a minimum concrete thickness of 3 inches.

3.1.3.1 The top of the concrete envelope shall be a minimum of 18 inches below grade except under roads and pavement, concrete envelope shall be a minimum of 24 inches below grade and under railroad tracks a minimum of 36 inches below grade.

3.1.3.2 Duct banks shall have a continuous slope downward toward underground structures and away from buildings with a minimum pitch of 3 inches in 100 feet. Except at conduit risers, changes in direction of runs exceeding a total of 10 degrees, either vertical or horizontal, shall be accomplished by long sweep bends having a minimum radius of curvature of 25 feet; sweep bends may be composed of one or more curved or straight sections or combinations thereof. Manufactured bends shall have a minimum radius of 18 inches for use with conduits of less than 3 inches in diameter and a minimum radius of 36 inches for ducts of 3 inches in diameter and larger. Excavate trenches along straight lines from structure to structure before ducts are laid or structure constructed so the elevation can be adjusted, if necessary, to avoid unseen obstruction.

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3.1.3.3 Terminate conduits in end-bells where ducts enter underground structures. Stagger the joints of the conduits by rows and layers to strengthen the duct bank. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in duct bank. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of duct bank. Before pouring concrete, anchor duct bank assemblies to prevent the assemblies from floating during concrete pouring. Anchoring shall be done by driving reinforcing rods adjacent to every other duct spacer assembly and attaching the rod to the spacer assembly.

3.1.3.4 As each section of a duct bank is completed from structure to structure, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the inside diameter of the conduit shall be drawn through each conduit, after which a stiff-bristled brush, having the diameter of the conduit shall be drawn through until the conduit is clear of earth, sand, and gravel particles. Conduit plugs shall then be immediately installed.

3.1.3.5 New conduit indicated as being unused or empty shall be provided with plugs on each end. Plugs shall contain a weep hole or screen to allow water drainage. Provide a plastic pull rope having 3 feet of slack at each end of unused or empty conduits.

3.1.3.6 Connections to Manholes: Duct bank envelopes connecting to underground structures shall be flared to have an enlarged cross-section at the manhole entrance to provide additional shear strength. The dimensions of the flared cross-section shall be larger than the corresponding manhole opening dimensions by no less than 12 inches in each direction. The perimeter of the duct bank opening in the underground structure shall be flared toward the inside or keyed to provide for a positive interlock between the duct bank and the wall of the structure. Vibrators shall be used when this portion of the envelope is poured to assure a seal between the envelope and the wall of the structure.

3.1.3.7 Partially Completed Duct Banks: During construction wherever a construction joint is necessary in a duct bank, prevent debris such as mud, sand, and dirt from entering ducts by providing suitable conduit plugs. Fit concrete envelope of a partially completed duct bank with reinforcing steel extending a minimum of 2 feet back into the envelope and a minimum of 2 feet beyond the end of the envelope. Provide one No. 4 bar in each corner, 3 inches from the edge of the envelope. Secure corner bars with two No. 3 ties, spaced approximately 1 foot apart. Restrain reinforcing assembly from moving during concrete pouring.

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3.1.4 Underground Conduit for Service Feeders Into Buildings: Shall be rigid steel from the service equipment to a point 5 feet beyond the building and projections thereof. Protect the ends of the conduit by threaded metal caps or bushings; coat the threads with graphite grease or other coating. Clean and plug conduit until conductors are installed. Encase the underground portion of the conduit in a concrete envelope and bury as specified for underground duct with concrete encasement.

3.1.5 Concrete for Electrical Requirements: Shall be composed of fine and coarse aggregate, Portland cement, and water proportioned and mixed to produce a plastic, workable mixture. Fine aggregate shall be of hard, dense, durable, clean, and uncoated sand. The coarse aggregate shall be 3/16 inch to 1 inch size. The fine and coarse aggregates shall not contain dirt, vegetable matter, soft fragments, or other deleterious substances. Water shall be fresh, clean, and free from salts, alkali, organic matter, and other impurities. Concrete shall be 4000 psi minimum ultimate 28-day compressive strength. Slump shall not exceed 4 inches. Retempering of concrete will not be permitted. Exposed, unformed concrete surfaces shall be given a smooth, wood float finish. Concrete shall be cured for a period of not less than 7 days, and concrete made with high early strength Portland cement shall be repaired by patching honeycombed or otherwise defective areas with cement mortar as directed. Air entrain concrete exposed to weather using an air-entraining admixture conforming to ASTM C260. Air content shall be between 4 and 6 percent.

3.1.6 Buried Utility Warning and Identification Tape: Provide detectable aluminum foil plastic-backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried cable and conduit. Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 2 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be CAUTION BURIED ELECTRIC CABLE BELOW or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with the printed side up at a depth of 12 inches below the top surface of earth or the top surface of the subgrade under pavements.

3.1.7 Reconditioning of Surfaces:

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3.1.7.1 Unpaved surfaces disturbed during the installation of duct or direct burial cable shall be restored to the original elevation and condition. Sod or topsoil shall be preserved carefully and replaced after the backfilling is completed. Replace damaged sod with sod of equal quality. Where the surface is disturbed in a newly seeded area, the disturbed surface shall be reseeded with the same quantity and formula of seed as that used in the original seeding.

3.1.7.2 Paving Repairs: Where trenches, pits, or other excavations are made in existing roadways and other areas of pavement where surface treatment of any kind exists, such surface treatment or pavement shall be restored to the same thickness and in the same kind as previously existed, except as otherwise specified, and to match and tie into the adjacent and surrounding existing surfaces in a neat and acceptable manner.

3.1.8 Cable Pulling: Cables shall be pulled down grade with the feed-in point at the manhole or buildings of the highest elevation. Flexible cable feeds shall be used to convey cables through the manhole opening and into the ducts. Cable lubricants shall be lubricants specifically recommended by the cable manufacturer. Cable-pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into switches, transformers, switchgear, switchboards, and other enclosures. Cable with tape shield shall have a bending radius not less than 12 times the overall diameter of the completed cable. Cable with wire shield shall have a bending radius not less than eight times the overall diameter of the completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

3.1.8.1 Secondary cable runs, 600 volts and less, shall include an insulated copper equipment grounding conductor sized as required by the rating of the overcurrent device supplying the phase conductors.

3.1.8.2 Installation of Cables in Manholes, Hand Holes, and Vaults: Route cables along walls providing the longest route and the maximum spare cable lengths. Form cables to closely parallel walls without interference to duct entrances. Support cables on brackets and cable insulators at a maximum of 4 feet. In existing manholes, hand holes, and vaults where new ducts are to be terminated, or where new cables are to be installed, the existing installation of cables, cable supports, and grounding shall be modified as required with cables arranged and supported

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as specified for new cables. Identify each cable by corrosion-resistant embossed metal tags attached in each underground structure in accordance with the cable schedule and as approved by the Engineer. Example: 11.5 KV cable, Circuit 4-Sub. NB - to SP. Identify each phase of the 34.5 KV cable.

3.1.9 Fireproofing (Arc Proofing) for Cables in Manholes, Hand Holes, and Vaults: Provide for individual cable conductors which will carry current at 2200 volts or more.

3.1.9.1 Lead-sheathed, other metallic-sheathed, or metallic-armored cables without a nonmetallic protective covering over the sheath or armor shall be tape-wrapped prior to application of the fireproofing. Tape wrap with two tightly applied, half-lapped layers of a pressure-sensitive 10-mil thick plastic tape, and extend wrap not less than 1 inch into the duct. Irregularities of the cable, such as at splices, shall be evened out with insulation putty before the tape is applied.

3.1.9.2 Tightly wrap strips of fireproofing tape approximately 30 mils thick by 3 inches wide around each cable spirally in half-lapped wrapping. The tape shall extend 1 inch into the ducts. To prevent unraveling, random wrap the fireproofing tape the entire length of the fireproofing with pressure-sensitive glass cloth tape. The fireproofing tape shall consist of a flexible, unsupported elastomer that expands in fire to provide a thick char buildup between the flame and the cable. The tape shall be noncorrosive to cable sheath. The tape shall not give off a smoke when subjected to flames or support combustion. The tape shall not deteriorate when subjected to oil, water, gases, salt water, sewage, and fungus.

3.1.10 Excavating, Backfilling, and Compacting: Excavate underground structures to depths indicated. If hard material is encountered, the provisions of the contract respecting an adjustment for changed conditions shall apply, subject to the requirements of notification thereunder being given. Hard material shall be defined as solid rock; firmly cemented unstratified masses; conglomerate deposits possessing the characteristics of solid rock not ordinarily removed without systematic drilling and blasting; or any boulder, masonry, or concrete (except pavement) exceeding 1/2 cubic yard in volume.

3.1.10.1 Excavated materials not required or suitable for backfill shall be removed from the project site. Provide sheeting and shoring as necessary for protection of work and safety of personnel. Remove water from excavation by pumping or other approved method.

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3.1.10.2 Backfilling around structures shall consist of earth, loam, sand-clay, or sand and gravel, free from large clods of earth or stones over 1 inch in size. Backfill materials shall be placed symmetrically on all sides in loose layers not more than 9 inches deep. Each layer shall be moistened, if necessary, and compacted with mechanical or hand tampers to 90 percent compaction.

3.1.10.3 Backfilling Trenches: Place backfill in layers not more than 6 inches thick, and compact each layer. Backfilling shall progress as rapidly as the construction, testing, and acceptance of the work permits. Backfill shall be free from roots, wood scrap material, and other vegetable matter and refuse. Compaction of backfill shall be to 80 percent of ASTM D698 density. The first layer shall be earth or sand, free from particles that would be retained on a 1/4-inch sieve and extending not less than 3 inches above the top of the conduit or cables. The succeeding layers shall be excavated material having stones no larger than would pass through a 4-inch ring. The backfill may be moistened. The backfill shall be level with the adjacent surface, except that in sodded areas, leave a space equal to the thickness of the sod.

3.1.11 Cable Terminating: Protect terminations of insulated power and lighting cables from accidental contact, deterioration of coverings, and moisture by the use of terminating devices and materials. Make terminations by using materials and methods indicated or specified herein or as designated by the written instruction of the cable manufacturer and termination kit manufacturer. Termination for high-voltage cables shall be rated, and be capable of withstanding test voltages, in accordance with IEEE 48. Terminations of single- and multiconductor cables shall include the securing and sealing of the sheath and insulation of the cable conductors, stress relief and grounding of cable shields of shielded cable, and grounding of neutral conductors, metallic sheaths, and armor. Adequately support cables and cable terminations to avoid any excessive strain on the termination and the conductor connection.

3.1.12 Splices for 600-Volt Class Cables: Splices in underground systems duct shall be made only in accessible locations such as manholes and hand holes, using a compression connector on the conductor and by insulating and waterproofing by one of the following methods suitable for continuous submersion in water.

3.1.12.1 Cast-type splice insulation shall be provided by means of a molded casting process employing a thermosetting epoxy resin insulating material which shall be applied by a gravity-poured method or by a pressure-injected method.

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The component materials of the resin insulation shall be in a packaged form ready for convenient mixing without removing from the package. Do not allow the cables to be moved until after the splicing material has completely set.

3.1.12.2 Gravity-poured method shall employ materials and equipment contained in an approved commercial splicing kit which includes a mold suitable for the cables to be spliced. When the mold is in place around the joined conductors, prepare and pour the resin mix into the mold. Do not allow cables to be moved until after the splicing materials have completely set.

3.1.13 Grounding: Noncurrent-carrying metallic parts associated with electrical equipment shall have a maximum resistance to solid earth ground not exceeding the following values:

Ground in manholes, hand holes, and vaults	10 ohms
Grounding other metal enclosures of primary voltage electrical and electrically-operated equipment	10 ohms
Grounded secondary distribution system neutral and noncurrent-carrying metal parts associated with distribution systems and grounds not otherwise covered	25 ohms

When work in addition to that indicated or specified is directed in order to obtain the specified ground resistance, the provisions of the Contract covering "Changes" shall apply.

3.1.13.1 Grounding electrodes shall be cone-pointed ground rods, driven full depth plus 6 inches, installed when indicated to provide an earth ground of the appropriate value for the equipment being grounded.

3.1.13.2 Grounding connections which are buried or otherwise normally inaccessible, and excepting specifically those connections for which access for periodic testing is required, shall be made by exothermic weld or compression connector. Exothermic welds shall be made strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces, indicating improper cleaning, are not acceptable.

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Mechanical connectors are not required at exothermic weldments. Compression connector shall be the type which uses a hydraulic compression tool to provide the correct circumferential pressure. Tools and dies shall be as recommended by the manufacturer. An embossing die code or other standard method shall provide visible indication that a connector has been adequately compressed on the ground wire.

3.1.13.3 Grounding conductors shall be stranded-bare copper conforming to ASTM B8, Class B, for sizes No. 6 AWG and larger, and shall be solid-bare copper conforming to ASTM B1 for sizes No. 8 and smaller. Cable sheaths, cable shields, conduit, and equipment shall be grounded with No. 6 AWG. Surge arresters shall be grounded to ground rods with No. 4 AWG.

3.1.13.4 Ground Cable Crossing Expansion Joints: Protect ground cables crossing expansion joints or similar separations in structures and pavements by use of approved devices or methods of installation which provide the necessary slack in the cable across the joint to permit movement. Use stranded or other approved flexible copper cable run or jumper across such separations.

3.1.14 Special Conditions: During the construction of duct banks and underground structures located in streets, the streets shall remain open to traffic. Plan and execute the work to meet this condition. At locations where duct banks cross railroad tracks and the work requires closing of the tracks, secure permission from the Engineer for each track closure.

3.2 FIELD TESTS: As an exception to requirements that may be stated elsewhere in the Contract, notify the Engineer in writing at least 5 working days prior to each test. Furnish labor, equipment, and incidentals required for testing, except that the Owner will provide electric power required for the tests. Correct defects in the work provided by the Contractor and repeat tests until the work is in compliance with contract requirements. Show by demonstration in service that circuits and devices are in good operating condition. Tests shall be such that each item of control equipment will function not less than five times.

3.2.1 Distribution Conductors 500-Volt Class: After wiring is completed and connected ready for operation, but prior to placing systems in service and before any branch circuit breakers are closed, perform insulation resistance tests in all circuits. Measure the insulation resistance between conductors and between each conductor and ground. Use an instrument capable of making measurements at an applied potential of 500 volts. Take readings after the voltage has been applied for a minimum of 1 minute. The minimum insulation resistance for circuits of No. 12 AWG conductors shall be 1,000,000 ohms. For circuits of No. 10 AWG or larger conductors,

a resistance based on the allowable ampacity of the conductor as fixed by NFPA 70 shall be as follows:

Amperes	Ohms
25 through 50	250,000
51 through 100	100,000
101 through 200	50,000
201 through 400	25,000
401 through 800	12,000
Over 800	5,000

3.2.2 Ground Rods: Test ground rods for ground resistance value before any wire is connected. Perform ground resistance measurements in normally dry weather, not less than 48 hours after rainfall. Ground resistance shall also be measured for each piece of equipment to the ground electrode. Use a portable ground testing megger to test each ground or group of grounds. The instrument shall be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground electrode under test. Provide one copy of the ground megger manufacturer's directions, indicating the method to be used.

3.2.3 Compaction: Backfill shall be tested in accordance with ASTM D1556, one test per lift per 2000 square feet.

3.2.4 Test Report:

a. 600-Volt Cables: Identify each cable and test result.

b. High-Voltage Cables: Identify each cable and test result.

c. Grounding Electrodes and Systems: Identify electrodes and systems for each test, as well as the resistance and soil conditions at the time the measurements were made.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - UNDERGROUND ELECTRICAL WORK:

4.1.1 Measurement for Underground Electrical Work shall include the cost of all materials,

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equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - UNDERGROUND ELECTRICAL WORK:

4.2.1 For Underground Electrical Work, not included in other unit or lump sum price items, payment for Underground Electrical Work will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 16402

INTERIOR WIRING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Interior Wiring Systems, as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 American National Standards Institute, Inc. (ANSI) Publication:

C80.1	Rigid Steel Conduit, Zinc Coated

1.2.2 American Society for Testing and Materials (ASTM) Publications:

B1	Hard-Drawn Copper Wire
B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
E814	Fire Tests of Through-Penetration Fire Stops

1.2.3 Federal Specifications (FS):

L-P-387	Plastic Sheet, Laminated, Thermosetting (for Design Plates)
W-C-375	Circuit Breakers, Molded Case, Branch Circuit and Service
W-S-896	Switches, Toggle (Toggle and Lock), Flush Mounted

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1.2.4 National Electrical Manufacturers Association (NEMA) Publications:

FU1	Low Voltage Cartridge Fuses
ICS1	Industrial Control and Systems
ICS2	Industrial Control Devices, Controllers and Assemblies
ICS6	Enclosures for Industrial Controls and Systems
KS1	Enclosed Switches
MG1	Motors and Generators
RN1	Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
TC2	Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
TC3	PVC Fittings for Use with Rigid PVC Conduit and Tubing
TC14	Filament-Wound Reinforced Thermosetting Resin Conduit and Fittings
VE1	Metallic Cable Tray Systems
WD1	Wiring Devices

1.2.5 National Fire Protection Association (NFPA) Publication:

70	National Electrical Code

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1.2.6 Underwriters' Laboratories, Inc. (UL) Publications:

1	Flexible Metal Conduit
6	Rigid Metal Conduit
50	Cabinets and Boxes, Electrical
67	Panelboards
83	Thermoplastic-Insulated Wires and Cables
198C	High-Interrupting-Capacity Fuses, Current-Limiting Types
198E	Class R Fuses
198H	Class T Fuses
360	Liquid-Tight Flexible Steel Conduit
467	Grounding and Bonding Equipment
486A	Wire Connector and Soldering Lugs for Use with Copper Conductors
486B	Wire Connectors for Use with Aluminum Conductors
486C	Splicing Wire Connectors
489	Molded-Case Circuit Breakers and Circuit-Breaker Enclosures
498	Attachment Plugs and Receptacles
506	Specialty Transformers
508	Industrial Control Equipment
510	Insulating Tape

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514A	Metallic Outlet Boxes
514B	Fittings for Conduit and Outlet Boxes
514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
719	Nonmetallic-Sheathed Cables
869	Service Equipment
886	Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
943	Ground-Fault Circuit Interrupters
984	Hermetic Refrigerant Motor-Compressors
1242	Intermediate Metal Conduit
1569	Metal-Clad Cables

1.3 RELATED REQUIREMENTS: Section 16011, "Electrical General Requirements", applies to this Section with additions and modifications specified herein.

1.4 SUBMITTALS: Submit the following:

1.4.1 Manufacturer's Catalog Data:

a. Receptacles

b. Circuit breakers

c. Switches

d. Conduit and fittings (each type)

e. Surface metal raceway

f. Ground rods

g. Device plates

h. Insulated conductors

i. Outlet and junction boxes

1.4.2 Drawings:

a. Panelboards

b. Wireway

c. Cable trough

1.4.3 Statements:

a. Fuses

Submit coordination data as specified in article entitled, "Fuses" of this Section.

1.4.4 Field Test Reports:

a. Transformer tests

b. 600-volt wiring test

c. Grounding system test

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1.4.4.1 Format: Submit test results for approval in report form.

1.4.4.2 Transformer Tests: Submittal shall include routine NEMA ST20 transformer test results on each transformer and also contain the results of NEMA "design" and "prototype" tests that were made on transformers electrically and mechanically equal to those specified.

1.5 QUALITY ASSURANCE: In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or words of similar meaning, to mean Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT: Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70.

2.2 CONDUIT AND FITTINGS:

2.2.1 Rigid Steel Conduit (Zinc-coated): ANSI C80.1, UL 6.

2.2.2 Rigid Nonmetallic Conduit: PVC Type EPC-40, in accordance with NEMA TC2, or fiberglass conduit in accordance with NEMA TC14.

2.2.3 Plastic-coated Rigid Steel and IMC Conduit: NEMA RN1, Type 40 (40 mils thick).

2.2.4 Flexible Metal Conduit: UL 1.

2.2.4.1 Liquid-tight Flexible Metal Conduit, Steel: UL 360.

2.2.5 Fittings for Metal Conduit, EMT, and Flexible Metal Conduit: UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

2.2.5.1 Fittings for Rigid Metal Conduit and IMC: Threaded-type. Split couplings unacceptable.

2.2.5.2 Fittings for Use in Hazardous Locations: UL 886.

2.2.6 Fittings for Rigid Nonmetallic Conduit: NEMA TC3.

2.3 OUTLET BOXES AND COVERS: UL 514A, cadmium- or zinc-coated, if ferrous metal. UL 514C, if nonmetallic.

2.3.1 Outlet Boxes in Hazardous Locations: UL 886.

2.4 CABINETS, JUNCTION BOXES, AND PULL BOXES: Volume greater than 100 cubic inches, UL 50, hot dip, zinc-coated, if sheet steel.

2.5 WIRES AND CABLES: Wires and cables shall meet applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to site shall not be used.

2.5.1 Conductors: No. 10 AWG and smaller diameter shall be solid; No. 8 AWG and larger diameter shall be stranded. Conductor sizes and ampacities shown are based on copper, unless indicated otherwise. Conductors indicated to be No. 6 AWG or smaller diameter shall be copper; conductors indicated to be No. 4 AWG and larger diameter shall be either copper or aluminum, at Contractor's option, unless type of conductor material is specifically indicated, specified, or required by equipment manufacturer.

2.5.1.1 Equipment Manufacturer Requirements: If manufacturer's equipment requires copper conductors at the terminations or requires copper conductors to be provided between components of equipment, provide copper conductors or splices, splice boxes, and other work required to satisfy manufacturer's requirements.

2.5.1.2 Minimum Conductor Sizes: Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; and for Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.

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2.5.2 Color Coding: Provide for service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors and white for neutrals; except where neutrals of more than one system are installed in same raceway or box, other neutral shall be white with colored (not green) stripe. Color of ungrounded conductors in different voltage systems shall be as follows:

a. 120/208 volt, 3-phase:

(1) Phase A - black

(2) Phase B - red

(3) Phase C - blue.

b. 120/240 volt, single phase: red and black.

c. On 3-phase, 4-wire delta system, high leg shall be orange, as required by NFPA 70.

2.5.3 Insulation: Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, Type THW, THWN, XHHW, or RHW, except that grounding wire may be Type TW; remote-control, and signal circuits shall be Type TW, THW, or TF. Conductors shall conform to UL 83. Where lighting fixtures require 90-degree C conductors, provide only conductors with 90-degree C insulation or better.

2.5.4 Bonding Conductors: ASTM B1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

2.6 SPLICES AND TERMINATION COMPONENTS: UL 486A and UL 486B, as applicable, for wire connectors and UL 510 for insulating tapes. Connectors for No. 10 AWG and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

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2.7 DEVICE PLATES: Provide UL listed, one-piece device plates for outlets and fittings to suit the devices installed. For metal outlets and fittings, plates on unfinished walls and on fittings shall be of zinc-coated sheet steel or cast metal having round or beveled edges. For nonmetallic boxes and fittings, other suitable plates may be used. Plates on finished walls shall be satin finish stainless steel or brushed-finish aluminum, minimum 0.03-inch thick. Screws shall be machine-type with countersunk heads in color to match finish of plate. Use of sectional-type device plates will not be permitted. Plates installed in wet locations shall be gasketed and UL listed for "wet locations".

2.8 SWITCHES:

2.8.1 Toggle Switches: FS W-S-896, totally enclosed with bodies of thermosetting plastic and mounting strap. Handles shall be ivory. Wiring terminals shall be screw-type, side-wired. Switches shall be rated quiet-type ac only, 120/277 volts, with current rating and number of poles indicated.

2.8.2 Pilot Lights: Provide yoke-mounted, candelabra-base sockets rated 125 volts and fitted with glass or plastic jewels. Provide clear, 6-watt lamp in each pilot switch. Jewels for use with switches controlling motors shall be green; jewels for other purposes shall be red.

2.8.3 Disconnect Switches: NEMA KS1. Switches serving as motor-disconnect means shall be horsepower rated. Provide heavy duty-type switches where indicated, where switches are rated higher than 240 volts, and for double-throw switches.

Fused switches shall utilize Class R fuseholders and fuses, unless indicated otherwise. Provide switches in NEMA 1 enclosure, per NEMA ICS6.

2.8.4 Breakers Used as Switches: For 120- and 277-Volt fluorescent fixtures, mark breakers "SWD" in accordance with UL 489.

2.9 RECEPTACLES: UL 498 and NEMA WD1, heavy-duty, hospital grade, grounding-type. Ratings and configurations shall be as indicated. Wiring terminals shall be screw-type, side-wired. Connect grounding pole to mounting strap.

2.9.1 Weatherproof Receptacles: Provide in cast metal box with gasketed, weatherproof, cast-metal cover plate and gasketed cap over each receptacle opening. Caps shall be provided with a spring-hinged flap. Receptacle shall be UL listed for use in "wet locations".

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2.9.2 Ground-fault Circuit Interrupter (GFCI) Receptacles: UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFCI devices.

2.10 PANELBOARDS: UL 67 and UL 50. Panelboards for use as service disconnecting means shall additionally conform to UL 869. Panelboards shall be circuit breaker-equipped. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as required by UL. Where "space only" is indicated, make provisions for future installation of breaker sized as indicated. Panelboard locks shall be keyed same. Directories shall be typed to indicate load served by each circuit and mounted in holder behind transparent protective covering.

2.10.1 Panelboard Buses: Bus bars shall be copper. Support bus bars on bases independent of circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or tapping. Provide isolated neutral bus in each panel for connection of circuit neutral conductors. Provide separate ground bus identified as equipment grounding bus per UL 67 for connecting grounding conductors; bond to steel cabinet. In addition to equipment grounding bus, provide second "isolated" ground bus, where indicated.

2.10.2 Circuit Breakers: FS W-C-375 thermal magnetic-type with interrupting capacity of 10,000 amperes symmetrical minimum. Breaker terminals shall be UL listed as suitable for type of conductor provided. Plug-in circuit breakers unacceptable.

2.10.2.1 Multipole Breakers: Provide common trip-type with single operating handle. Breaker design shall be such that overload in one pole automatically causes poles to open. Maintain phase sequence throughout each panel so that any three adjacent breaker poles are connected to Phases A, B, and C, respectively.

2.10.2.2 Circuit Breaker With GFCI: UL 943 and NFPA 70. Provide with "push-to-test" button, visible indication of tripped condition, and ability to detect and trip on current imbalance of 6 milliamperes or greater per requirements of UL 943 for Class A GFCI devices.

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2.11 ENCLOSED CIRCUIT BREAKERS: UL 489. Individual molded case circuit breakers with voltage and continuous current ratings, number of poles, overload trip setting, and short circuit interrupting rating as indicated. Enclosure type as indicated.

2.12 FUSES: NEMA FU1. Provide complete set of fuses for each fusible switch. Time-current characteristics curves of fuses serving motors or connected in series with circuit breakers or other circuit protective devices shall be coordinated for proper operation. Fuses shall have voltage rating not less than circuit voltage.

2.12.1 Cartridge Fuses, Current Limiting Type (Class R): UL 198E, Class RK-1 time delay-type. Associated fuseholders shall be Class R only.

2.12.2 Cartridge Fuses, Current Limiting Type (Classes J, L, and CC): UL 198C, Class J for zero to 600 amps, Class L for 601 to 6,000 amps, and Class CC for zero to 30 amps.

2.12.3 Cartridge Fuses, Current Limiting Type (Class T): UL 198H, Class T for zero to 1,200 amps, 300 volts; and zero to 800 amps, 600 volts.

2.13 GROUNDING AND BONDING EQUIPMENT: UL 467. Ground rods shall be sectional type, copper-clad steel, with minimum diameter of 3/4 inch and minimum length of 10 feet.

2.14 NAMEPLATES: FS L-P-387. Provide as specified in Section 16011, "Electrical General Requirements".

2.15 SOURCE QUALITY CONTROL: Test opening around electrical penetrations through fire resistive-rated walls, partitions, floor or ceiling for fire resistive integrity in accordance with ASTM E814.

PART 3 - EXECUTION

3.1 INSTALLATION: Electrical installations shall conform to requirements of NFPA 70 and to requirements specified herein.

3.1.1 Underground Service: Underground service conductors and associated conduit shall be continuous from service entrance equipment to outdoor power system connection.

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3.1.2 Hazardous Locations: Work in hazardous locations, as defined by NFPA 70, shall be performed in strict accordance with NFPA 70 for particular "Class", "Division", and "Group" of hazardous locations involved. Provide conduit and cable seals where required by NFPA 70. Conduit shall have tapered threads.

3.1.3 Service Entrance Identification: Service entrance disconnect devices, switches, or enclosures shall be labeled or identified as such.

3.1.3.1 Labels: Wherever work results in service entrance disconnect devices in more than one enclosure, as permitted by NFPA 70, each enclosure, new and existing, shall be labeled as one of several enclosures containing service entrance disconnect devices. Label, at minimum, shall indicate number of service disconnect devices housed by enclosure and shall indicate total number of enclosures that contain service disconnect devices. Provide laminated plastic labels. Use lettering of at least 0.25 inch in height, and engrave on black-on-white matte finish. Service entrance disconnect devices in more than one enclosure shall be provided only as permitted by NFPA 70.

3.1.4 Wiring Methods: Provide insulated conductors installed in conduit, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Provide insulated, green equipment grounding conductor in feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit or raceways. Minimum conduit size shall be 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings shall be made with metal conduit in fire-rated shafts. Metal conduit shall extend through shafts for minimum distance of 6 inches. Conduit which penetrates fire walls, fire partitions, or floors shall be metallic on both sides of fire walls, fire partitions, or floors for minimum distance of 6 inches.

3.1.4.1 Nonmetallic Conduit: Conduit shall not penetrate fire walls, fire partitions, or floors.

3.1.4.2 Service Entrance Conduit, Underground: Above ground provide galvanized rigid steel or steel IMC.

3.1.4.3 Underground Conduit Other Than Service Entrance: Plastic-coated rigid steel; plastic-coated steel IMC; PVC, Type EPC-40; or fiberglass. Convert nonmetallic conduit, other than PVC Schedule 40 or 80, to plastic-coated rigid, or IMC, steel conduit before rising through floor slab; plastic coating shall extend minimum 6 inches above floor.

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3.1.4.4 Conduit in Floor Slabs: Rigid steel; steel IMC; fiberglass, or PVC, Type EPC-40.

3.1.4.5 Conduit for Circuits Rated Greater Than 600 Volts: Rigid metal conduit or IMC only.

3.1.5 Conduit Installation: Unless indicated otherwise, conceal conduit within finished walls, ceilings, and floors. Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.

3.1.5.1 Conduit Through Floor Slabs: Where conduits rise through floor slabs, curved portion of bends shall not be visible above finish slab.

3.1.5.2 Conduit Support: Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one-fourth proof test load. Fasteners attached to concrete ceiling shall be vibration-resistant and shock-resistant. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints shall not cut main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended-ceiling construction, run conduit above ceiling. Do not support conduit by ceiling support system. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. Where conduit crosses building expansion joints, provide suitable watertight expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means.

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3.1.5.3 Directional Changes in Conduit Runs: Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

3.1.5.4 Pull Wire: Install pull wires in empty conduits in which wire is to be installed by others. Pull wire shall be plastic having minimum 200-pound tensile strength. Leave minimum 12 inches of slack at each end of pull wire.

3.1.5.5 Conduit Installed in Concrete Floor Slabs: Locate so as not to adversely affect structural strength of slabs. Install conduit within middle one-third of concrete slab. Space conduits horizontally minimum three diameters, except at cabinet locations. Curved portions of bends shall not be visible above finish slab. Increase slab thickness as necessary to provide minimum one-inch cover over conduit. Where embedded conduits cross expansion joints, provide suitable watertight expansion fittings and bonding jumpers. Conduit larger than one-inch trade size shall be parallel with or at right angles to main reinforcement; when at right angles to reinforcement, conduit shall be close to one of supports of slab.

3.1.5.6 Locknuts and Bushings: Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by NFPA 70.

3.1.5.7 Stub-ups: Provide conduits stubbed up through concrete floor for connection to free-standing equipment with adjustable top or coupling threaded inside for plugs, set flush with finished floor. Extend conductors to equipment in rigid steel conduit, except that flexible metal conduit may be used 6 inches above floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.

3.1.5.8 Flexible Connections: Provide flexible connections of short length, 6-foot maximum, for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for motors. Provide liquid-tight flexible conduit in wet locations. Provide separate ground conductor across flexible connections.

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3.1.6 Boxes, Outlets, and Supports: Provide boxes in wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type when located in wet locations, when surface mounted on outside of exterior surfaces, when installed exposed up to 7 feet above interior floors and walkways, or when installed in hazardous areas. Boxes in other locations shall be sheet steel, except that aluminum boxes may be used with aluminum conduit; nonmetallic boxes may be used with nonmetallic sheathed cable conduit system. Each box shall have volume required by NFPA 70 for number of conductors enclosed in box. Boxes for mounting lighting fixtures shall be minimum 4 inches square, or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Boxes for use in masonry-block or tile walls shall be square-cornered, tile-type, or standard boxes having square-cornered, tile-type covers. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with outside of exterior surfaces. Provide separate boxes for flush or recessed fixtures when required by fixture terminal operating temperature; fixtures shall be readily removable for access to boxes unless ceiling access panels are provided. Support boxes and pendants for surface-mounted fixtures on suspended ceilings independently of ceiling supports, or make adequate provisions for distributing load over ceiling support members. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support; support sheet metal boxes directly from building structure or by bar hangers. Where bar hangers are used, attach bar to raceways on opposite sides of box, and support raceway with approved-type fastener maximum 24 inches from box. When penetrating reinforced concrete members, avoid cutting reinforcing steel.

3.1.6.1 Boxes: Boxes for use with raceway systems shall be minimum 1-1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets shall be minimum 4 inches square, except that 4-by-2-inch boxes may be used where only one raceway enters outlet. Telephone outlets shall be minimum of 4 inches square by 1-1/2 inches deep.

3.1.6.2 Pull Boxes: Construct of at least minimum size required by NFPA 70 of code-gauge aluminum or galvanized sheet steel, compatible with nonmetallic raceway systems, except where cast-metal boxes are required in locations specified herein. Furnish boxes with screw-fastened covers. Where several feeders pass through common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation.

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3.1.7 Mounting Heights: Mount panelboards, circuit breakers, and disconnecting switches so height of operating handle at its highest position is maximum 78 inches above floor. Mount lighting switches 48 inches above finished floor, receptacles 18 inches above finished floor, and other devices as indicated. Measure mounting heights of wiring devices and outlets to center of device or outlet.

3.1.8 Conductor Identification: Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, color coding shall be by factory-applied, color-impregnated insulation. For conductors No. 4 AWG and larger diameter, color coding shall be by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves. Identify control circuit terminations.

3.1.9 Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with insulated, pressure-type connector. Make splices in conductors No. 8 AWG and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

3.1.10 Covers and Device Plates: Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster fillings are not permitted. Plates shall be installed with alignment tolerance of 1/16 inch. Use of sectional-type device plates are not permitted. Plates installed in wet locations shall be gasketed.

3.1.11 Electrical Penetrations: Openings around electrical penetrations through fire resistance-rated walls, partitions, floors, or ceilings shall be sealed to maintain fire resistive integrity as tested per ASTM E814.

3.1.12 Grounding and Bonding: In accordance with NFPA 70. Ground-exposed, noncurrent-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, grounding conductor of nonmetallic sheathed cables, and neutral conductor of wiring systems. Make ground connection to driven ground rods on exterior of building. Where ground fault protection is employed, ensure that connection of ground and neutral does not interfere with correct operation of fault protection.

3.1.12.1 Grounding Conductor: Provide insulated, green equipment grounding conductor in feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit or raceways.

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3.1.12.2 Resistance: Maximum resistance-to-ground of grounding system shall not exceed 5 ohms under dry conditions. Where resistance obtained exceeds 5 ohms, contact Engineer for further instructions.

3.1.13 Owner-furnished Equipment: Contractor shall rough-in for Owner-furnished equipment to make equipment operate as intended, including providing miscellaneous items such as plugs, receptacles, wire, cable, conduit, flexible conduit, and outlet boxes or fittings.

3.1.14 Workmanship: Lay out work in advance. Exercise care where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary for proper installation, support, or anchorage of conduit, raceways, or other electrical work. Repair damage to buildings, piping, and equipment using skilled craftsmen of trades involved.

3.1.14.1 Existing Concealed Wiring to be Removed: Existing concealed wiring to be removed shall be disconnected from its source. Remove conductors; cut conduit flush with floor, underside of floor, and through walls; and seal openings.

3.2 FIELD QUALITY CONTROL: Furnish test equipment and personnel and submit written copies of test results. Give Engineer 5 working days notice prior to each test.

3.2.1 Devices Subject to Manual Operation: Each device subject to manual operation shall be operated at least five times, demonstrating satisfactory operation each time.

3.2.2 Transformer Tests: Perform tests classified as routine in accordance with NEMA ST20 on each transformer.

3.2.3 Test on 600-volt Wiring: Test 600-volt wiring to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms.

3.2.4 Grounding System Test: Test grounding system to ensure continuity and resistance to ground is not excessive. Test each ground rod for resistance to ground before making connections to rod; tie grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Submit written results of each test to Engineer, and indicate location of rods as well as resistance and soil conditions at time measurements were made.

SECTION 16402

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PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - INTERIOR WIRING SYSTEMS:

4.1.1 Measurement for Interior Wiring Systems shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - INTERIOR WIRING SYSTEMS:

4.2.1 For Interior Wiring Systems, not included in other unit or lump sum price items, payment for Interior Wiring Systems will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 16670

LIGHTNING PROTECTION SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Lightning Protection System for the Pump Station Building and the Tank.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 National Fire Protection Association (NFPA) Publications:

70	National Electrical Code
78	Lightning Protection Code

1.2.2 Lightning Protection Institute (LPI) Publications:

175	Installation Standard
176	Material Standard
177	Inspection Guide for LPI Certified Systems

1.2.3 Underwriters' Laboratories, Inc. (UL) Publication:

96A	Master Label Code

1.3 RELATED REQUIREMENTS: Section 16011, "Electrical General Requirements", applies to this Section with additions and modifications specified herein.

SECTION 16670

LIGHTNING PROTECTION SYSTEM

1.3.1 Manufacturers: The system to be furnished under this Specification shall be the standard product of a manufacturer regularly engaged in the production of lightning protection systems and shall be the manufacturer's latest approved design. The equipment manufacturer shall also be an UL listed and approved manufacturer and a fully certified manufacturer member in good standing of the Lightning Protection Institute. Acceptable manufacturers shall be Thompson Lightning Protection, Inc.; Independent Protection Co., Inc.; or equals.

1.4 SUBMITTALS:

1.4.1 Shop Drawings: Submit for the following:

a. Air terminal, grounding and bonding plans and details
b. Roof/wall penetration details

1.4.2 Manufacturer's Data: Submit for the following:

a. Air terminals and accessories
b. Conductors
c. Bonding plates
d. Lightning arrestors

1.4.3 System Certification: Submit the following:

a. UL Master Label
b. LPI System Certification

1.5 QUALITY ASSURANCE: In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 78. Materials shall be listed and labeled for lightning protection service.

SECTION 16670

LIGHTNING PROTECTION SYSTEM

2.2 CONDUIT AND FITTINGS:

2.2.1 Rigid Nonmetallic Conduit: PVC Type EPC-40 in accordance with NEMA TC 2.

2.2.2 Fittings for Rigid Nonmetallic Conduit: NEMA TC 3.

2.3 AIR TERMINALS: Air terminals shall be 5/8" x 24" aluminum and shall extend at least 24 inches above object to be protected.

2.4 AIR TERMINAL BASES: Terminal bases shall be suitable for installation on roofing systems.

2.4.1 Concealed Systems Air Terminal Bases: Terminal bases shall be thru-the-roof type for concealed systems. Terminal bases shall form a waterproof penetration of roof.

2.4.2 Exposed System Air Terminal Bases: Terminal bases shall be surface-mounted type for mounting on roof.

2.5 CONDUCTORS: Conductors shall be multi-stranded, UL listed, sized as scheduled in NFPA 78 for Class I materials.

2.6 FASTENERS: Cable fasteners shall be listed, noncorrosive metal with sufficient strength for support of the cable system used with. Adhesive type fasteners shall be used on roof systems of exposed systems.

2.7 CABLE CONNECTORS: Cable connectors shall be electrically compatible with cable, cast metal with screw pressure-type stainless steel bolts and nuts.

2.8 GROUND RODS: Ground rods shall be sectional type, copper clad steel with minimum diameter of 1/2 inch and minimum length of 10 feet.

2.9 SURGE ARRESTORS: Arrestors shall be rated for 208 volt, 200 ampere, three phase system.

SECTION 16670

LIGHTNING PROTECTION SYSTEM

PART 3 - EXECUTION

3.1 INSTALLATION: Lightning protection installation shall conform to requirements of NFPA 78, and to requirements specified herein.

3.1.1 The installation shall be accomplished by an experienced installer listed with Underwriters' Laboratories as qualified and who is also a Certified Master Installer of the LPI or working under the direct supervision of an LPI manufacturer as listed above or his authorized LPI Certified Master Installer representative.

3.1.1.1 All equipment shall be installed in a neat workmanlike manner in the most inconspicuous manner possible.

3.1 MAIN CONDUCTORS: Install listed main conductor, exposed along the ridge of the building roof only, with listed adhesive type connectors and route down to the at-grade ground system at each end. Install the exposed down conductors on the building face in protective, PVC conduit to approximately 6 inches below the existing grade.

3.3 VENTILATION EQUIPMENT BONDS: Install listed bond conductors from roof-mounted equipment to the below-the-roof main building steel.

3.4 GROUNDS: Install two (2) ground rods 1'-0" below grade and spaced 10'-0" apart at each indicated ground location. Bond rods to looped main conductor with thermite welds. Extend main conductor above grade and connect to bond plate bolted to the PEMB structural steel column or rigid frame. At the office area, extend and bond the main conductors to the down conductors from the roof terminal system.

3.5 SURGE ARRESTORS: Install surge arrestors on the main building service and bond to ground.

SECTION 16670

LIGHTNING PROTECTION SYSTEM

3.6 COMMON GROUNDING: Provide necessary bonds where required to bond the lightning protection system to the electric, telephone and water systems.

3.7 MASTER LABEL: Upon completion of the system, the installer shall install a UL Master Label at a location to be directed by the Owner and shall furnish the Owner with a LPI System Certification.

3.8 AS-BUILTS: Installer, after final acceptance of the system, shall furnish Owner two (2) copies of as-built shop drawings indicating all final details of the system as finally installed.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - LIGHTNING PROTECTION SYSTEM:

4.1.1 Measurement for Lightning Protection System shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - LIGHTNING PROTECTION SYSTEM:

4.2.1 For Lightning Protection System, not included in other unit or lump sum price items, payment for Lightning Protection System will be made at the applicable price stated in the Bid.

END OF SECTION

SPECIFICATIONS

SECTION 16999

PAYMENT ITEM FOR WATER MAINS AND PUMP STATION CONTRACT NO. 1B - ELECTRICAL CONSTRUCTION

PART 1 – DESCRIPTION

1.1 Under this Item, the Contractor shall furnish all labor, materials and equipment for the completion of the Town of Volney Airport Water District Water Mains and Pump Station, Contract No. 1B – Electrical Construction.

In addition to the applicable provisions of Section 001000 thru and including 01640, and other Divisions of this project, the following sections describe the principal items of work to be performed under this payment item:

SECTION	
16011	Electrical General Requirements
16301	Underground Electrical Work
16403	Interior/Exterior Wiring Systems
16670	Lightning Protection System

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – PAYMENT

4.1 Payment for Contract No. 1B – Electrical Construction will be included in the lump sum price stated in the Bid.

END OF SECTION