METRIC

D260694

F.A. PROJECT

PROPOSAL

Submitted in accordance with Standard Specifications officially adopted May 4, 2006 and the Highway Law.

Letting of March 6, 2008

10:30 A.M.

Book 2 of 2

50 WOLF ROAD
ALBANY, NEW YORK 12232

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

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NOTE: This form was developed for repetitive use throughout all contract proposals and may identify items not applicable to this specific project. The Contractor is responsible for review of this proposal containing the contract requirements.

SPECIAL NOTE - Special Specification Pay Item Numbers

The contractor's attention is directed to the special specification pay item formats used in this contract. Special specification pay items may be presented in three different formats:

Format 1. Pay items for a special specification will have five digits to the left of the decimal point and up to six digits to the right of the decimal point. The two left-most digits represent the origin of the specification. Reference Standard Specification §101-02 Specifications.

Format 2. Pay items for a special specification will have three digits to the left of the decimal point and up to eight digits to the right of the decimal. Spaces may appear in the third to sixth places after the decimal. The 7th and 8th digits to the right of the decimal will represent the origin of the specification.

Format 3. Pay items for a special specification will have three digits to the left of the decimal point and up to eight digits to the right of the decimal. Dashes may appear in the third to sixth places after the decimal. The 7th and 8th digits to the right of the decimal will represent the origin of the specification.

Where items in this contract appear in multiple formats, the formats shall be equated to each other as illustrated below:

Format 1	Format 2	Format 3
xxxxx.xx	xxx.xx xx	xxx.xx----xx
xxxxx.xxxx	xxx.xxxx xx	xxx.xxxx--xx
xxxxx.xxxxxx	xxx.xxxxxxxx	xxx.xxxxxxxx

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ITEM 17203.174102 M - PERFORMANCE TESTS FOR PERMANENT GROUTED TIEBACKS
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DESCRIPTION

A. General

The work shall consist of designing, furnishing, installing and testing permanent cement-grouted tiebacks at the locations indicated on the plans, or where ordered by the Engineer.

The Contractor or subcontractor performing the work shall submit his design and methods of construction to the Deputy Chief Engineer Technical Services (D.C.E.T.S.) for approval. The design shall be accomplished by a Professional Engineer licensed to practice in New York State. The D.C.E.T.S. will require 20 working days to approve the submission after receipt of all pertinent information. No further work shall begin prior to approval by the D.C.E.T.S.

The Contractor or subcontractor performing the work described in this specification shall submit proof of: 1.) two projects on which he has installed grouted tiebacks in the past two years and 2.) the foreman for this work having supervised the installation of grouted tiebacks on at least two projects in the past two years.

B. Definitions

The following definitions shall apply:

- Contractor.- The contractor or subcontractor performing the work described in this specification.

-Tieback. A system used to transfer tensile loads from a structure to soil or rock. A tieback includes all prestressing steel (tendon), the anchorage, grout, coatings, sheathing, couplers and encapsulation if used.

-Tendon. The steel used to transfer load from the anchorage to soil or rock.

-Anchorage. That portion of the tieback, including bearing plate, nuts and wedges, that is used to transfer load from the structure to a tendon.

-Bond Length. That portion of the tieback which is bonded to the soil or rock and transfers the tensile force from the tendon to the soil or rock.
-Tendon Bond Length. The length of the tendon which is bonded to the grout. This is usually, but not necessarily, the same as the Bond Length.

-Stressing Length. That portion of the tendon which is not bonded to grout.

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-Sheath. That portion of the tieback which encases the tendon in the stressing length only.

-Encapsulation. That portion of the tieback which encases or encapsulates the entire length of the tieback, including the sheath, to provide an additional barrier to corrosion.

-Total Movement. The total elongation of the tieback under load, measured at the anchor head.

-Residual Movement. The permanent set of the tieback resulting from stressing and releasing the tieback.

-Trumpet. A steel pipe or tube, integrally attached to the bearing plate, that surrounds the tendon in the vicinity of the structure.

-Creep Rate. The magnitude of total movement measured during a load hold per log cycle of time.

-Centralizer. A device used to center the bond length of the tieback in the hole to assure minimum grout cover over the tieback.

-Spacer. A device used in strand tendons to separate each strand in the bond length to permit the grout to bond with each strand.

-GUTS. The Guaranteed Ultimate Tensile Strength of the tendon.

MATERIALS

A. Tendons

The tendon shall consist of clean, straight, rust-free:

1. "Uncoated Seven-Wire Stress Relieved Strand for Prestressed Concrete" - ASTM A416, or "Uncoated Seven-Wire Compacted Stress Relieved Strand for Prestressed Concrete" - ASTM A779.

or

2. Continuously threaded "Uncoated High-Strength Steel Bar for Prestressing Concrete" - ASTM A722.

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The tendons shall be of such size that the design load does not exceed 53 percent of the GUTS of the tendons. At no time shall a test or temporary load on any tendon exceed 80 percent of the GUTS of the tendon.

B. Couplers

Couplers for tendons shall be capable of developing 100 percent of the GUTS of the tendon.

C. Anchorage

The anchorage shall be capable of developing 95 percent of the GUTS of the tendon and shall be set so that only axial loads are applied. Bar tiebacks shall be provided with spherical washers and spherical nuts at the anchorage.

D. Sheath

A sheath to provide corrosion protection shall encase the entire stressing length of the tendon. Acceptable sheaths for the stressing length shall be one of the following:

1. A polyethylene (PE) tube applied over a corrosion inhibiting grease coated strand. The polyethylene shall be Type II, III or IV as defined by ASTM D1248. The tubing shall have a minimum wall thickness of 1.5 mm.

2. A hot-melt extruded polypropylene tube applied over a corrosion inhibiting grease coated strand. The polypropylene shall be Type II 26500-D as defined by ASTM D2146. The tubing shall have a minimum wall thickness of 1.5 mm.

3. A heat shrinkable tube coated with an elastic adhesive applied over bar tendons. Prior to shrinking the tube shall have a nominal wall thickness of at least 0.6 mm and the elastic adhesive inside the tube shall have a nominal thickness of 0.5 mm . A smooth bond breaker shall be placed around the heat shrinkable tube in the free length.

E. Grease

A grease compounded to provide corrosion inhibiting and lubricating properties shall completely cover the steel in the stressing length. Acceptable greases for the stressing length shall be:

1. Exxon Rust Ban 326
2. Chevron Polyurea EP Grease, #2 Grade
3. Viscon Visconorust PT-1

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or equal as approved by the Director of the Geotechnical Engineering Bureau.

Greases other than those above shall be submitted to an independent laboratory for analysis at the Contractor's expense. The test results shall be submitted to the Geotechnical Engineering Bureau for approval or rejection and shall not exceed the maximum allowable quantity of the substances shown on the following table:

SUBSTANCE	MAXIMUM ALLOWABLE QUANTITY -ppm	TEST METHOD
Chlorides	10	ASTM D512
Nitrates	10	ASTM D992
Sulfides	10	APHA-"Test Methods: Sulfides in Water"

F. Encapsulation

When the Contract Plans require encapsulation for the tendons, the encapsulation shall consist of a tube of corrugated PVC, high density polyethylene or steel. The encapsulation shall have sufficient thickness to resist damage due to shipping, handling and installation.

G. Centralizers and Spacers

Centralizers and spacers shall consist of plastic, steel or any material not detrimental to the tendon. Wood shall not be used.

Centralizers and spacers shall permit free flow of grout.

Combination centralizer/spacers will be permitted.

H. Grout

The grout shall consist of materials meeting the following specification requirements:

MATERIAL	SUBSECTION
Portland Cement, Type 1, 2, or 3	701-01
Grout Sand	703-04
Water	712-01

Epoxy resin will not be allowed as a substitute for cement grout.

I. Additives

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Chemical additives to control bleeding or retard set, as approved by the Engineer may be used with the grout. Expansive additives shall not be used. Additives, if used, shall be mixed in accordance with the manufacturer's recommendations.

J. Trumpet

The trumpet shall be integral with the bearing plate. The trumpet shall consist of an epoxy coated steel pipe or tube conforming to the requirements of ASTM A53 for pipe or ASTM A500 for tubing.

The trumpet shall have an inside diameter equal to or larger than the hole in the bearing plate, and shall be long enough to accommodate movements of the structure during loading and testing. For encapsulated strand tendons, the trumpet shall be long enough to enable the tendon to make a transition from the diameter of the tendon in the stressing length to the diameter of the tendon at the anchor head without damaging the encapsulation.

A seal to retain grease or grout within the trumpet shall be provided between the trumpet and the stressing length corrosion protection. If grout is used to fill the trumpet, then the seal shall be a deformable seal. If grease is used to fill the trumpet, a description of the seal shall be submitted to the Engineer for approval.

CONSTRUCTION DETAILS

Shop drawings shall be submitted to the Engineer for written approval at least 30 working days prior to commencement of the work. Shop drawings shall conform to the size and type requirements of Subparagraph 2A- Working Drawings, Size and Type as given in Subsection 718-01 Prestressed Concrete Units (Structural), under Drawings. No work shall begin prior to receipt of the approval.

The shop drawings shall include, but not be limited to:

1. A tieback schedule giving:

   -tieback number;
   -design load for each tieback;
   -type and size of tendon;
   -total tendon length;
   -bond length, and tendon bond length if different from bond length;
   -stressing length.

2. A drawing of the tieback and corrosion protection including:

   -spacers and their location;
   -centralizers and their location;

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-stressing length corrosion protection;
-bond length corrosion protection;
-anchorage and trumpet;
-anchorage corrosion protection system.

The Contractor shall submit a report to the Engineer within 20 working days after completion of the tieback work. The report shall contain:

-as-built drawings showing the locations of the tiebacks, total tendon lengths, stressing lengths and bond lengths;
-prestressing steel manufacturer's mill test reports for the tendons;
-grouting records indicating the cement type, quantity injected and grout pressures;
-tieback test results and graphs.

The Contractor shall be responsible for determining the tieback type, size and bond length necessary to develop adequate load capacity to satisfy tieback testing Acceptance Criteria for the design loads shown on the plans. The minimum bond length shall be 3 m in rock and 5 m in soil. The minimum tendon bond length shall be 3 m. The minimum stressing length shall be 5 m or as shown in the Contract Plans, whichever is greater. The tieback hole shall remain inside the right-of-way or easement limits shown on the plans.

The holes for the tiebacks may be either driven or drilled. The hole shall not be progressed in a location that requires the tendon to be bent in order to enable the bearing plate to be connected to the supporting structure. Subsidence or physical damage to existing site conditions caused by such operations shall be cause for immediate cessation of operations and repair to the satisfaction of the State. The Contractor shall immediately revise his operations to prevent reoccurrence of such damage. Any and all costs incurred due to this subsidence or physical damage shall be borne by the Contractor. If the hole will not stand open, casing shall be installed as required to maintain a clean and open hole. The hole shall extend a minimum of 0.6 m beyond the tendon length. The holes shall be located in elevation as shown on the plans, within a 75 mm tolerance. The holes shall be progressed to the inclination and alignment as specified on the contract plans, within a 3± degree tolerance. Unless otherwise indicated by a Special Note in the Plans, all tieback holes shall be progressed perpendicular to the direction of the wall, as seen in the plan. Holes in rock shall be throughly cleaned of all dust, rock chips, grease or other material which may affect bond prior to inserting the tendon.

A watertightness test will be required for all tiebacks bonded in rock if grout is injected at a pressure of less than 345 kPa. If artesian or flowing water is encountered in the drilled hole, pressure shall be maintained on the grout until the grout has reached initial set. The watertightness test shall be performed by filling the entire hole in the rock with water and subjecting it to a pressure of 35 kPa as measured at the top of the hole. If the stressing length portion of hole is in soil or fractured rock, a packer or casing shall be used to allow the bond length to be pressure-tested. If the leakage rate from the hole, over a ten minute period, exceeds

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5 ml of water per millimeter of diameter per meter of length per minute, the hole shall be grouted, redrilled and retested. Should the subsequent watertightness test fail, the entire process shall be repeated until results are attained which are within leakage allowances.

The Contractor may eliminate the requirement for watertightness tests in rock by using pressure grouting techniques. Pressure grouting requires that the drill hole be sealed and that the grout be injected until a 345 kPa grout pressure, measured at the top of the hole, can be maintained on the grout for five (5) minutes without further grout injection.

In the bond length, centralizers and their installed locations shall be subject to approval by the Engineer. Centralizers shall be provided at a maximum of 3 m center to center spacing throughout the bond length so that not less than 13 mm of grout cover along the bond length is achieved. A centralizer shall be provided at the bottom end of the tendon. Sag of the tendon shall be taken into account when selecting centralizer diameter and spacing. Multi-element tendons shall also employ spacers at maximum 3 m intervals throughout the bond length to ensure grout cover on all elements.

When the Contract Plans require encapsulation to provide double-corrosion protection for the tendons:

-The tendon shall be encapsulated in a grout-filled corrugated tube of one of the types stated in the Materials section of this specification. The tendon may br grouted inside the encapsulation either before or after inserting the tendon into the drill hole. The bond length of the tendon shall be centralized to provide a minimum grout cover of 5 mm within the tube. Spacers shall be used along the tendon bond length for multi-element tendons to ensure good bond with the encapsulation grout.

-Centralizers shall be used to provide a minimum of 8 mm of grout cover over the tendon bond length encapsulation. Centralizers shall be securely attached to the encapsulation and shall be spaced at no more than 3 m. A centralizer shall be provided at the bottom end of the tendon bond length encapsulation. A centralizer shall also be located a maximum of 1.5 m from the top of the bond length.

The bond length of the tendon shall be degreased prior to installation by using Acetone, MEK, or MIBK. No residue shall be left on the tendon. Other substances may be used subject to approval by the Engineer.

The tendon shall be inserted in the casing or hole without difficulty. If the tendon cannot be completely inserted, the Contractor shall remove the tendon and clean or redrill the hole to permit insertion. Partially inserted tendons shall not be driven or otherwise forced into the hole. Tendons shall not be subject to sharp bends. Care shall be taken to prevent damage to the tendon's corrosion protection and centralizers during handling and installation.

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The grouting equipment shall be capable of continuous mixing and shall produce grout free of lumps. The grout pump shall be equipped with a grout pressure gage capable of measuring the highest working pressures attained plus 345 kPa.

The annular space between the tieback and the drilled hole up to the level of the trumpet and between the tendon and encapsulation shall be filled with grout. In order to prevent air voids in the grouting operation, the hole shall be filled with grout progressively from bottom to top. Grouting of the stressing length shall be done at low pressure. The trumpet shall not bear on the top of the stressing length grout column during testing, to ensure that load applied to the tieback during testing is not transferred to the anchorage via the grout column.

The tieback shall be centered in the trumpet so that there is no contact between the two. The corrosion protection surrounding the stressing length of the tendon shall extend up beyond the bottom seal of the trumpet but shall not contact the bearing plate or anchor head during stressing and testing.

The anchor head shall be protected from corrosion during the interim between tieback installation and final corrosion protection installation by installing a temporary cap and filling the trumpet and anchor head with corrosion-inhibiting grease. Any detrimental corrosion shall be caused for rejection.

After installation, testing and acceptance of each tieback, the trumpet shall be filled with grout or corrosion inhibiting grease and the permanent corrosion protection of the anchorage shall be installed. The Contractor shall either:

a. place a water-tight steel cap, filled with corrosion inhibiting grease or grout, over the anchor head, or

b. encase the anchor head in concrete.

TESTING

Each tieback shall be tested. The following tests are required:

-Performance Tests

Unless otherwise specified by a Special Note in the Plans, the first three anchors installed shall be performance tested. These tests are used to determine residual movements.

-Creep Tests

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Creep tests shall only be performed if and where specified by a Special Note in the Plans. These tests are performed to determine long term deformation behavior in plastic soils.

-Proof Tests

Proof tests shall be performed on all anchors not performance or creep tested. These tests are used to verify load capacity.

-Lift-Off Readings

Lift-off readings shall be taken on all tiebacks after the load has been transferred to the anchorage but prior to removing the jack.

-Lift-Off Tests

Lift-off tests shall only be performed on tiebacks in rock. If required, lift-off tests shall be performed on at least two (2) tiebacks at locations to be chosen by the Engineer. Additional tests, up to 10% of the total number of tiebacks may be ordered by the Engineer.

Copies of all test results and graphs shall be transmitted to the Director, Geotechnical Engineering Bureau as each test is completed.

Jacks shall have ram travel at least equal to the theoretical elastic elongation of the stressing length plus the bond length at the maximum test load, and be sufficient to accommodate wall movements. A pressure gauge shall be used with each jack. Gauges shall be calibrated with a single jack and shall not be used with any other jack. All gauges shall be accurate enough to read 690 kPa changes in pressure. For performance and creep tests, the jack used shall have two calibrated gauges; a master gauge and backup gauge. The pump shall be capable of applying each load increment in less than 60 seconds.

A load cell, which has been calibrated by an independent testing laboratory within 14 days prior to the start of testing, shall be used to measure the small changes in load during the load hold portion of the performance and creep tests. There will be no substitute for the load cell on testing of the performance and creep tests. Load cells are not required for proof tests. The Contractor shall provide the Engineer with the calibration curve for the load cell prior to testing.

For the performance and creep tests, the master gauge and backup gauge shall be connected to the same pressure hose between the pump and jack and be used to measure the applied loads. If the load measured by the master gauge and backup gauge differ by more than ten (10) percent, the jack, master gauge and backup gauge shall be recalibrated as a unit at no expense to the State.

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At the completion of the test the tieback load shall be adjusted to the lock-off load and transferred to the anchorage. Unless otherwise specified in the contract documents, the lock-off load shall be 80 percent of the design load (0.80 P).

The alignment load necessary to maintain position of the stressing and testing equipment shall not exceed 0.05 P. The movement of the tieback tendon at each load increment shall be recorded to the nearest 0.025 mm relative to an independent, fixed reference point.

A. Performance Tests

Performance tests shall be performed by incrementally loading and unloading the tieback in accordance with the schedule below. Residual movements shall be taken at the alignment load for each cycle. Total movement measurements shall be taken at the highest load in each cycle.

Cycle	Load
1	AL 0.25 P
2	AL 0.25 P 0.50 P
3	AL 0.25 P 0.50 P 0.75 P
4	AL 0.25 P 0.50 P 0.75 P 1.00 P
5	AL 0.25 P 0.50 P 1.00 P 1.25 P
6	AL 0.25 P 0.50 P

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1.00 P
1.25 P
1.50 P

Adjust to lock-off of 0.80 P
P = design load for the tieback
AL= alignment load

The load shall be held at each increment just long enough to obtain the total movement reading. Except for the residual movement at AL, no movement readings need to be taken during unloading of the tieback.

The test load of 1.50 P shall be held constant for 10 minutes. The load hold time shall start when the pump begins to load the anchor from the 1.25 P load to the test load. A load cell shall be used to monitor the constant load. Total movements with respect to an independent fixed reference point shall be recorded at 1 minute, 2, 3, 4, 5, 6, and 10 minutes. If the total movement between 1 minute and 10 minutes exceeds 1 mm , the test load shall be held for an additional 50 minutes. Total movements shall be recorded at 15, 20, 25, 30, 45 and 60 minutes.

The Contractor shall plot the tendon movement versus load for each load increment. He shall also plot the creep movement for the load hold as a function of the logarithm of time.

B. Creep Tests

The creep test shall be made by incrementally loading and unloading the tendon in accordance with the schedule given below. At the highest load in each cycle the load shall be held constant in accordance with the observation periods below. A load cell shall be used to monitor the constant load.

Cycle	Load	Observation Period (Min.)
1	AL	
	0.25 P	10
2	AL	
	0.25 P	
	0.50 P	30
3	AL	
	0.25 P	
	0.50 P	
	0.75 P	30

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4	AL	
	0.25 P	
	0.50 P	
	0.75 P	
	1.00 P	45
5	AL	
	0.25 P	
	0.50 P	
	1.00 P	
	1.25 P	60
6	AL	
	0.25 P	
	0.50 P	
	1.00 P	
	1.25 P	
	1.50 P	300

Residual movement measurements shall be taken at the alignment load for each cycle. Total movement readings shall be taken at the highest load in each cycle.

The times for reading the total movement during an observation period shall be 1 minute, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45, 60, 75, 90, 100, 120, 150, 180, 210, 240, 270, and 300 minutes.

The observation period shall begin when the pump starts to load the tieback from the next lower increment.

The Contractor shall plot the tendon movement and the residual movement measured in a creep test as described for the performance test. The Contractor shall also plot the creep movement for each load hold as a function of the logarithm of time.

If the creep rates are not acceptable as defined under Acceptance Criteria, the Contractor shall modify his installation method and perform creep tests until two successive acceptable creep tests on two different tiebacks have been performed.

C. Proof Tests

The proof tests shall be performed by loading the tieback in accordance with the following schedule:

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Load
AL
0.25 P
0.50 P
0.75 P
1.00 P
1.25 P
1.50 P
Reduce to lock-off load of 0.80 P

The load shall be held at each increment just long enough to obtain a total movement reading, but not more than 1 minute.

The test load of 1.50 P shall be held for at least ten (10) minutes. The load hold time shall start when the pump begins to load the tieback from 1.25 P to the test load. Total movements shall be recorded at 1, 2, 3, 4, 5, 6 and 10 minutes. If the movement between the one (1) and the ten (10) minute readings is 1 mm or more, the test load shall be maintained for an additional 50 minutes and the movement measured. The additional movement shall be recorded at 15 minutes, 20, 25, 30, 45 and 60 minutes.

The Contractor shall plot the tendon movement versus load for each load increment. He shall also plot the creep movement for the load hold as a function of the logarithm of time.

D. Lift-Off Readings

Lift-off readings shall be taken and recorded directly after testing on all tiebacks. The load required to relieve the load from the tieback head shall be measured and recorded. If the lift-off load is not within 5% of the lock-off load the anchorage shall be reset and another lift-off reading taken.

E. Lift-Off Tests

Lift-off tests shall be performed on rock tiebacks only. Locations for lift-off tests shall be selected randomly by the Engineer prior to the commencement of any tieback testing. For each tieback subjected to a lift-off test, the Contractor shall leave an adequate length of tendon protruding over the anchorage to permit jacking.

Lift-off tests shall be performed at least 24 hours but no more than 7 days after the tieback has been set to lock-off load. The results of all lift-off tests shall be recorded.

If the lift-off load is not within 10% of the lock-off load, the anchorage shall be reset and another lift-off test performed according to the requirements in this specification.

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F. Acceptance Criteria

For all tiebacks:

-All tiebacks and components shall be free of detrimental corrosion.

-Lift-off readings shall show a load within five (5) percent of the specified lock-off load.

-Lift-off tests shall show a load within ten (10) percent of the specified lock-off load.

-The total movement at the maximum test load shall exceed 80 percent of the theoretical elastic elongation of the unbonded length, from the alignment load to the test load.

For performance or proof tested tiebacks with a ten (10) minute load hold, the tieback shall also resist the maximum test load with a creep rate that does not exceed 1 mm between one (1) and ten (10) minutes.

For performance or proof tested tiebacks with a 60 minute load hold, the tieback shall also resist the maximum test load with a creep rate that does not exceed 2 mm per log cycle of time.

For creep tested tiebacks, the tieback shall also resist the maximum test load with a creep rate that does not exceed 2 mm per log cycle of time.

For tiebacks that the Engineer finds unacceptable, the Contractor shall submit a written proposal containing a suggested course of action. The action to be taken will be subject to written approval by the Engineer. Tiebacks which do not meet the total movement criteria shall not be permitted to carry any load.

Conditional Acceptance Criteria

Tiebacks which meet the total movement criteria but do not meet the creep rate criteria may be accepted by the Engineer and locked-off at a load equal to one half their failure load. To determine the failure load, allow the load to stabilize for ten (10) minutes after the tieback has failed. The load after stabilization is the failure load.

A supplemental tieback shall be installed and tested in accordance with this specification at a location approved by the Engineer. The combined test capacity of the tiebacks shall equal or exceed 1.5 times the original design load. That is:

$$1.5\ P = 1.5\ P_s + 0.5\ P_f$$

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Where: P = the design load for the original tieback

P_s = the design load for the supplemental tieback

P_f = the failure load for the original tieback

For tiebacks that do not meet the lift-off reading (or test) criteria, the anchorage shall be reset and another lift-off reading (or test) taken.

METHOD OF MEASUREMENT

For Item 17203.174101 M - Permanent Grouted Tiebacks, Furnished, Installed and Accepted, the quantity to be paid for shall be the number of tiebacks furnished, installed and accepted.

For tiebacks which do not meet all the acceptance criteria but do meet the conditional acceptance criteria, the original tieback and any required supplemental tiebacks(s) are, in sum, considered to be one tieback for payment purposes. The price of one tieback shall be paid upon acceptance of all the original and supplemental required tiebacks. No payment will be made for any additional wall connections required for installation of supplemental tiebacks.

For Item 17203.174102 M - Performance Tests for Permanent Grouted Tiebacks, and Item 17203.174103 M - Creep Tests for Permanent Grouted Tiebacks, the quantity to be paid for shall be the number of performance or creep tests performed, respectively.

BASIS OF PAYMENT

The unit price bid for Item 17203.174101 M - Permanent Grouted Tiebacks, Furnished, Installed and Accepted shall include the cost of furnishing all labor, equipment, and material required to satisfactorily complete the work. The cost for proof tests shall also be included.

The unit price bid for Item 17203.174102 M - Performance Tests for Permanent Grouted Tiebacks, and Item 17203.174103 M - Creep Tests for Permanent Grouted Tiebacks shall include the cost of furnishing all labor, equipment and material required to satisfactorily complete the tests.

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
17203.174101 M	Permanent Grouted Tiebacks, Furnished, Installed and Accepted	Each
17203.174102 M	Performance Tests for Permanent Grouted Tiebacks	Each
17203.174103 M	Creep Tests for Permanent Grouted Tiebacks	Each

04/19/88
Revised M 03/25/96
Revised 11/22/00

ITEM 17203.1750nn M - TEMPORARY ANCHOR TIEBACK SYSTEM

DESCRIPTION

A. General

Design, furnish, install and test a temporary, prestressed cement-grouted anchor tieback system at the locations indicated on the plans, or where ordered by the Engineer, including de-stressing and releasing the tiebacks.

Submit the design and methods of construction, prepared and stamped by a Professional Engineer licensed to practice in New York State, to the Deputy Chief Engineer Technical Services (DCETS) for approval. The DCETS review will be based upon the most current version of the publication titled: Recommendations for Prestressed Rock and Soil Anchors, published by the Post Tensioning Institute, except as modified in this specification. Take this into account when preparing the submission. If methods differ from those described in this specification, document the effectiveness of the methods in the submittal. The DCETS will require 20 working days to review the submission after receipt of all pertinent information. Perform no further work prior to the DCETS's approval.

Submit proof: 1) of two projects on which the Contractor or subcontractor performingf the work has installed anchor tiebacks in the past two years and 2) that the foreman for this work has at least one year of experience in the installation of anchor tiebacks.

B. Definitions

The following definitions apply:

Contractor - The contractor or subcontractor performing the work described in this specification.

Bond Length (Fixed Length). That portion of the prestressing tendon which is bonded to grout.

Stressing Length (Free Length). That portion of the prestressing tendon which is not bonded to grout. The stressing length is both greased and encased in a plastic sheathing tube.

Alignment Load. That load necessary to maintain position of the stressing and testing equipment. Do not allow the alignment load to exceed 0.05 P.

MATERIALS

Provide tension members consisting of clean, straight, rust-free:

04/16/85
Revised M 10/23/96
10/22/98
Revised 11/04/98
Revised 11/22/00
Revised 12/30/04

ITEM 17203.1750nn M - TEMPORARY ANCHOR TIEBACK SYSTEM

1. "Uncoated Seven-Wire Stress Relieved Strand for Prestressed Concrete" - ASTM Designation A416, or

2. Continuously threaded "Uncoated, High-Strength Steel Bar for Prestressing Concrete" - ASTM Designation A722, or

3. "Steel Strand, Seven-Wire, Uncoated, Compacted, Stress-Relieved for Prestressed Concrete" - ASTM Designation A779.

Provide tension members of such size that the design load does not exceed 60 percent of the guaranteed ultimate tensile strength of the tension member.

Provide couplers for tension members capable of developing 100 percent of the guaranteed ultimate tensile strength of the tension member.

Provide stressing anchorage capable of developing 95 percent of the guaranteed ultimate tensile strength of the anchor material when tested in an unbonded state. Provide bar tiebacks with spherical washers and spherical nuts at the anchorage.

Encase the entire free length of the tendon with a smooth plastic sheath having a minimum thickness of 0.5 mm. Completely cover the prestressing steel in the free length, with a corrosion inhibiting and lubricating grease compound that conforms to the following requirements:

SUBSTANCE	MAXIMUM ALLOWABLE QUANTITY - PPM	TEST METHOD
Chlorides	10	ASTM D512
Nitrates	10	ASTM D992
Sulfides	10	APHA - "Test Methods: Sulfides in Water"

Provide centralizers and spacers consisting of plastic, steel or any material not detrimental to the tendon, except wood.

Provide grout consisting of materials meeting the requirements of the following:

MATERIAL	SUBSECTION
Portland Cement, Type 1, 2 or 3	701-01
Grout Sand	703-04
Water	712-01

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Revised 12/30/04

ITEM 17203.1750nn M - TEMPORARY ANCHOR TIEBACK SYSTEM

Chemical additives to control bleeding or retard set, approved by the Engineer, may be used with the anchor grout. Do not use expansive additives. Mix additives, if used, in accordance with the manufacturer's recommendations. Do not use epoxy resin as a substitute for cement grout.

CONSTRUCTION DETAILS

Submit shop drawings conforming to the size and type requirements of Subparagraph 2A - Working Drawings, Size and Type as given in Subsection 718-01, Prestressed Concrete Units (Structural), under Drawings to the DCETS for written approval. Do not begin work prior to the receipt of the Engineer's approval.

Determine the anchor bond length necessary to develop adequate load capacity to satisfy anchor testing acceptance criteria for the design load shown on the plans. However, do not provide a bond length shorter than the minimum bond length, if such is shown on the plans. Do not extend the drilled anchor hole outside the right-of-way or easement limits shown on the plans. Determine tendon type, drilling method, grouting pressures, multiple grouting techniques, and bond length variations such as underreaming or belling. Cease operations if subsidence or physical damage to existing site conditions caused by such operations occurs and then repair to the satisfaction of the State or adjacent owners directly impacted. Immediately revise operations to prevent recurrence of such damage.

Drive or drill the holes for the anchors. Use core drilling, rotary drilling, auger drilling or percussion drilling. If the hole will not stand open, install casing as required to maintain a clean and open hole. Provide a hole diameter no less than 75 mm if using pressure grouting in the bond length and 100 mm if not using pressure grouting. (Pressure grouting is defined as grouting with a pressure greater than 415 kPa). Provide a drill bit with a diameter no less than the specified hole diameter minus 3 mm. Extend the hole a minimum of 0.6 m beyond the tendon length. Drill the holes to the inclination specified on the plans within a three degree tolerance. Prior to inserting the tendon, thoroughly clean holes in rock of all dust, rock chips, grease or other material which may affect bond.

Perform a water tightness test on all anchors bonded in rock if grout is injected at a pressure of 415 kPa or less.

Perform the water tightness test by filling the entire hole in the rock with water and subjecting it to a pressure of 35 kPa as measured at the top of the hole. If the stressing length portion of the hole is in soil or fractured rock, use a packer or casing to allow the bond length to be pressure-tested. If the leakage rate from the hole, over a ten minute period, exceeds 0.5 ml of water per millimeter of diameter per meter of length per minute, grout, redrill and retest the hole. Should the subsequent water tightness test fail, repeat the entire process until results are attained which are within leakage allowances. If artesian or flowing water is encountered in the drilled hole, maintain pressure on the grout until the grout has initially set.

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Provide centralizers at a maximum of 3 m center to center spacing throughout the bond length so as to provide that not less than 13 mm of grout cover along the bond length. Provide a centralizer at the bottom end of the tendon. Take into account sag of the tendon when selecting centralizer diameter and spacing.

Employ multi-element tendon spacers at 3 m intervals throughout the bond length to ensure grout cover on all elements. Combination centralizers and spacers will be permitted.

Degrease the bond length of the tendon prior to installation. Leave no residue on the tendon.

After a hole is drilled to the final depth and water tightness, if required, is attained, insert the tendon in the casing or hole. Do not subject anchor tendons to sharp bends. Do not damage the tendon's corrosion protection during handling or installation.

Provide grouting equipment capable of continuous mixing and producing grout free of lumps. Provide a grout pump equipped with a grout pressure gage capable of measuring 1050 kPa, or the highest working pressures attained, whichever is higher.

Perform the grouting operation after the tendon is inserted. In order to prevent air voids, fill the hole with grout progressively from bottom to top.

Fill the annular space between the anchor and the drilled hole with grout for its entire length. Grout the free length at low pressure. Leave sufficient clearance between the top of the free length grout column and the anchorage to ensure that load applied to the anchor during testing is not transferred to the anchorage via the grout column.

Extend a pipe or trumpet integral with the bearing plate from the anchor plate a sufficient distance to encapsulate the front portion of the sheath. Center the tieback in the trumpet so that there is no contact between the two. After installation and testing of each anchor, fill the trumpet with grout or grease and install the corrosion protection of the anchorage.

After the Engineer determines that the temporary tieback is no longer needed, de-stress and release the tieback. Leave the tendons and anchors in place, except that they may be cut to permit removal of sheeting or soldier beams.

TESTING

Incrementally load test each anchor. Performance test the first two anchors installed at each specified design load capacity and 5 percent of the remaining anchors (locations to be chosen by the Engineer). Proof test all anchors not performance tested.

Do not permit the maximum test load to exceed 80 percent of the guaranteed ultimate tensile strength of the tendon. Monitor the jack load with a load cell which has been calibrated by an

independent testing laboratory within 14 days prior to the start of testing. Provide the Engineer with the calibration curve before start of testing.

Hold each load increment, except the 1.33 P load, until the deflection stabilizes, but for a minimum of one minute. At each load increment, record the movement of the tendon to the nearest 0.025 mm with respect to an independent fixed reference point.

At the completion of the test, reduce the anchor load to 0.80 P and transfer the load to the permanent stressing anchorage.

A. Performance Tests

Conduct performance tests by incrementally loading and unloading the anchor in accordance with the following schedule:

Cycle	Load
1	AL 0.25 P
2	AL 0.25 P 0.50 P 0.25 P
3	AL 0.25 P 0.50 P 0.75 P 0.50 P 0.25 P
4	AL 0.25 P 0.50 P 0.75 P 1.00 P 0.75 P 0.50 P 0.25 P
5	AL 0.25 P

0.50 P
0.75 P
1.00 P
1.25 P
1.33 P (creep test)
0.80 P (transfer load)

P = Design Load for the Anchor
AL = Alignment Load

The creep test consists of holding the 1.33 P load for 50 minutes. While the load is maintained constant, record anchor movement (total movement) referenced to an independent fixed reference point at 0, ½, 1, 2, 5, 10, 30 and 50 minutes.

The Engineer will review all performance tests to determine if the anchor is acceptable. An anchor will be accepted if the following three criteria are met:

1. The total elastic movement obtained at the design load exceeds 80 percent of the theoretical elastic elongation of the stressing length.

2. The creep movement does not exceed 2 mm during the time increment between 5 and 50 minutes regardless of tendon length and load. However, if the creep movement of a rock anchor is found to be 1 mm or less during the time increment between 1 and 10 minutes, the anchor will be accepted and the test may be terminated without taking the 30 and 50 minute readings.

B. Proof Tests

Perform the proof tests by incrementally loading and unloading the anchor in accordance with the following schedule:

Load
AL
0.25 P
0.50 P
0.75 P
1.00 P
1.25 P
1.33 P (creep test)
0.80 P (transfer load)

The creep test consists of holding the 1.33 P load for 5 minutes. With the load held constant, record anchor movement (total movement) at 0, ½, 2 and 5 minutes. If the

movement between the ½ and the 5 minute readings is 2 mm or more, maintain the load for an additional 45 minutes and the movement measured. If the additional movement exceeds 2 mm, reject the anchor. Measure all movements in relation to an independent fixed reference point.

The Engineer will review all proof tests to determine if the anchor is acceptable. Acceptance criteria for an anchor which has been proof tested is the same as in the performance test except that the creep acceptable criterion is as given above.

Submit two copies of all test data to the Engineer.

For anchors that the Engineer finds unacceptable, submit a written proposal containing a suggested course of action. The action to be taken will be subject to written approval by the Engineer. If the total elastic movement is less than 80 percent of the theoretical elastic elongation of the stressing length, do not permit the anchor to carry any load. Anchors that meet criterion "1", but do not meet criteria "2", may be accepted by the Engineer for a reduced capacity, if the anchor is retested to determine the actual capacity which will meet the acceptance criteria, and a supplemental anchor is installed and tested in accordance with this specification at a location approved by the Engineer. Test any supplemental anchor to verify that the combined capacity of itself and the anchor it is supplementing equals or exceeds 1.33 times the original design load.

METHOD OF MEASUREMENT

The number of temporary anchor tieback system installed, successfully tested and accepted.

No payment will be made for anchors that do not meet the acceptance criteria but are accepted for a reduced capacity. Pay the bid price for each anchor tieback system upon installation and acceptance of the replacement or supplemental anchor necessitated by an anchor not being accepted for its design capacity. No payment will be made for any additional wall connections required for such replacement or supplemental anchors.

BASIS OF PAYMENT

Include in the unit price bid the cost of furnishing all labor, equipment, and material required to satisfactorily complete the work.

NOTE: nn denotes serialized pay item, see section 101-02 of Standard Specifications.
Serialized number identifies temporary anchor tieback system detailed on plans.

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10/22/98
Revised 11/04/98
Revised 11/22/00
Revised 12/30/04

ITEM 15203.24 M - SHOULDER BACKUP MATERIAL

DESCRIPTION:

This work shall consist of furnishing, placing, grading, compacting, and trimming shoulder backup material of the type indicated adjacent to shoulders to the lines, grades, and locations indicated in the contract documents or to the lines, grades, and locations directed by the Engineer, in accordance with these specifications and details shown in the plans.

MATERIALS:

General. Except as indicated below, §304-2 shall apply. Where the term "subbase course" is used in that subsection, "shoulder backup material" shall replace it.

Material incorporated into the work need not be stockpiled. The State may test for plasticity, soundness, and gradation at its discretion, or may decide not to test for these properties. Materials incorporated into the work shall consist of uncontaminated materials, free of glass, conforming with these specifications, the contract documents, and the directions of the Engineer.

Unless indicated otherwise in the contract documents, the Contractor may choose the type or types of material to use from the list of types given below. Intermixing of the permitted types, however, will be subject to the approval of the Engineer.

Material that proves to be, or that is determined by the Engineer to be impractical to place, grade, trim or compact as shown in the contract documents or as directed by the Engineer shall not be used.

Type A (Crusher-run, crushed gravel, or crushed stone.) Shoulder backup material of this type shall consist of well graded crusher-run material from a stone quarry or gravel source, or crushed Portland cement concrete. The material shall contain no organic, deleterious, hazardous or toxic material. Gradation shall be subject to the approval of the Engineer, but no material larger than 25 mm in greatest dimension will be allowed. Materials shall not show losses greater than 20% after four cycles of the Magnesium Sulfate Soundness test.

Type B (Subbase Course, Type 2.) Shoulder backup material of this type shall meet the material requirements of Subbase Course, Type 2. The Regional Geotechnical Engineer will examine each proposed source of material for compliance with these specification requirements, and submit an evaluation of the material including any limiting conditions to the Engineer.

Type C (Subbase Course, Type 4.) Shoulder backup material of this type shall meet the material requirements of Subbase Course, Type 4 of the Standard Specifications, except the material furnished shall consist of sand and gravel or a blend of sand and gravel and stone. The Regional Geotechnical Engineer will examine each proposed source of material for compliance with these specification requirements, and submit an evaluation of the material including any limiting conditions to the Engineer.

Type D (Recycled Asphalt Concrete.) Material provided under this option shall consist of uncontaminated recycled asphalt concrete pavement produced on the contract or from other sources as approved by the Engineer. Recycled asphalt concrete pavement shall be broken down into sizes no larger than 40 mm.

Type E (Select Structural or Granular Fill.) Material provided under this option shall consist of material conforming to the soundness, gradation, and pH requirements for Select Structural Fill or Select Granular Fill, except top size shall not exceed that for Type C.

CONSTRUCTION DETAILS:

The material shall be placed on the grade in a manner to minimize segregation using equipment and procedures approved by the Engineer. Uncontrolled spreading from piles dumped on the grade resulting

ITEM 15203.24 M - SHOULDER BACKUP MATERIAL

in segregation will not be permitted. Maximum loose lift thickness prior to compaction shall be 150 mm. The contractor's compaction methods and equipment shall be approved by the Engineer. After compaction, the finished surface of the compacted material at the shoulder edge shall not extend above the edge of the shoulder nor be more than 10 mm below the shoulder. Tolerance elsewhere shall be Å 40 mm, except the surface shall be graded to drain at every location.

If the final grade of the material is not in reasonable close conformity to the lines and grades indicated in the contract documents, or to those directed by the Engineer, the material shall be trimmed to achieve reasonably close conformance. Additional material shall be brought in to fill deficiencies, and excess material (trimmings) shall be removed. Trimmings may be incorporated into the shoulder backup work at other locations along the project if such opportunities exist and provided gradation of the resulting material remains in conformance with the gradation requirement for the selected option. When it is not possible to incorporate the trimmings in the shoulder backup work the trimmings shall be disposed of or used elsewhere in the contract in a manner approved by the Engineer.

METHOD OF MEASUREMENT:

Shoulder Backup Material will be measured for payment as the number of metric tons evidenced by delivery tickets, properly placed, graded, compacted, and trimmed along the edge of shoulder in accordance with these specifications and the directions of the Engineer.

When truck scales are not available within reasonable distance of the source of the material, as determined by the Engineer, the quantity paid for will be determined using conversion factors and the loose volume of shoulder backup material determined by measuring the dump truck bodies. The Contractor shall select the trucks to be used for delivery of the material with the approval of the Engineer. Once the trucks are selected and approved by the Engineer, no other trucks shall be used for delivery of this material. The trucks shall be uniformly loaded to the satisfaction of the Engineer.

Additional material brought in as part of the trimming operation to fill deficiencies will be measured for payment. The quantity of trimmings removed from the shoulder backup operation and not incorporated into the shoulder backup work elsewhere, however, will not be measured for payment under this pay item, and the Engineer will make an appropriate adjustment to the measured quantity.

Unless other conversion factors are indicated in the Contract Documents, the conversion factor shall be 1.68 metric tons per cubic meter, loose measure.

BASIS OF PAYMENT:

The unit price bid per metric ton for Shoulder Backup Material shall include the cost of all labor, materials, and equipment necessary to satisfactorily furnish, place, grade, compact, and trim Shoulder Backup Material.

ITEM 06203.5195 M - CLEANING EXISTING CONCRETE OR ASPHALT GUTTERS

DESCRIPTION

This work shall consist of the removal of all sod and other foreign materials from existing Portland Cement concrete or asphalt concrete gutters so that adequate, unobstructed free-flowing drainage is restored.

MATERIALS

None Specified

CONSTRUCTION DETAILS

The cleaning of gutters shall consist of the removal of all earth, sod, brush and debris to render the gutter free of obstructions. Excess earth immediately outside of the gutter shall also be removed so that the finished section does not contain vertical or excessively steep earth faces adjacent to the gutter. This work shall be as detailed on the plans or as directed by the Engineer.

METHOD OF MEASUREMENT

The quantity of this work to be measured for payment will be the number of linear meters of gutter along which the above described work is performed. The Engineer will determine the areas where this work is required.

BASIS OF PAYMENT

The unit price bid per linear meter for this work shall include the cost of furnishing all labor, materials and equipment necessary to satisfactorily complete the described work except that the following items of work will be paid for under their respective pay items:

A. Seeding and mulching of disturbed areas within the R.O.W..

B. Cleaning of culverts.

ITEM 04203.967001 M - REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION AND DISPOSAL OF FLUORESCENT LIGHT BALLASTS

ITEM 04203.967002 M - REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION AND DISPOSAL OF FLUORESCENT LIGHT BULBS

A. DESCRIPTION: This work shall consist of packaging, transportation and disposal of fluorescent light ballasts and bulbs. The light ballasts shall be handled and disposed of as a TSCA (Toxic Substance Control Act) PCB (polychlorinated biphenyl) waste. The bulbs shall be disposed of as a RCRA (Resource Recovery and Conservation Act) hazardous waste for mercury toxicity, waste code D009. Each container shall be labeled for shipment in accordance with US DOT regulations, 49 CFR Part 172-172.

B. MATERIALS: None specified.

C. EQUIPMENT: None specified.

D. CONSTRUCTION DETAILS:

General:

1. **Removal:** The fluorescent lights shall be removed from the bridge in a manner so that the ballasts and bulbs are not damaged during removal.

2. **Packaging for transport:** After the fluorescent lights have been removed from the bridge the Contractor shall separate the ballasts and bulbs from the light fixtures. After the ballasts and bulbs have been separated, the ballasts and bulbs shall be packaged for shipment. The Contractor shall provide all acceptable containers for shipment. Bulb waste shall be marked as hazardous waste in accordance with 40 CFR Part 262 and NYS 6 NYCRR Part 372. Ballasts shall be marked as PCB wastes in accordance with 40 CFR 761 and 6 NYCRR Part 372. All containers shall be closed during storage and transport. The Contractor shall inspect containers in storage, correct any deterioration, and document at least weekly inspection.

3. **Pre-construction requirements:** Prior to working with the fluorescent light ballasts and bulbs, the Contractor shall prepare a section for the Project Health & Safety Plan (HASP) for the protection of workers and the public during pre-construction and construction activities.

A copy of this section of the Project Health and Safety Plan shall be submitted to both the Engineer and the Regional Environmental Contact for review and approval.

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Ballasts (Item 04203.967001 M):

1. **Packaging:** The fluorescent light ballasts shall be packaged to the satisfaction of the proposed final disposal facility. Packaging shall meet any transport requirements which apply.

2. **Transportation and disposal:** The fluorescent light ballasts shall be transported off-site for disposal within 60 days of packaging for shipment. Transportation shall be by a NYSDEC Part 364 permitted Waste Transporter approved by the Engineer. Disposal shall be in accordance with 6 NYCRR Parts 371-374 and 40 CFR 761 at a TSCA approved facility for disposal of PCB wastes as approved by the Engineer. All necessary manifests, shipping papers and other required documentation shall be prepared by the Contractor and submitted to the Engineer for review prior to shipment.

3. **Documentation:** The Contractor shall provide the Engineer with documentation, as soon as it is available, from the NYSDEC permitted Waste Transporter and from the disposal facility which verifies that the fluorescent light ballasts have been transported and disposed of in accordance with all applicable Local, State and Federal rules and regulations.

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Bulbs (Item 04203.967002 M):

1. **Packaging:** The fluorescent light bulbs shall be packaged to the satisfaction of the proposed final disposal facility. Packaging shall meet any transport requirements which apply.

ITEM 04203.967001 M - REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION AND DISPOSAL OF FLUORESCENT LIGHT BALLASTS

ITEM 04203.967002 M - REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION AND DISPOSAL OF FLUORESCENT LIGHT BULBS

2. **Transportation and disposal:** The fluorescent light bulbs shall be transported off-site for disposal within 60 days of packaging for shipment. Transportation shall be by a NYSDEC Part 364 permitted Waste Transporter approved by the Engineer. Disposal shall be shall be in accordance with 6 NYCRR Parts 371-374 at a RCRA permitted hazardous waste disposal facility, RCRA permitted mercury bulb recycler and/or a RCRA universal waste destination facility as approved by the Engineer. All necessary manifests, shipping papers, land disposal restriction forms and other required documentation shall be prepared by the Contractor and submitted to the Engineer for review prior to shipment.

3. **Documentation:** The Contractor shall provide the Engineer with documentation, as soon as it is available, from the NYSDEC permitted Waste Transporter and from the disposal facility which verifies that the fluorescent light bulbs have been transported and disposed of in accordance with all applicable Local, State and Federal rules and regulations.

E. METHOD OF MEASUREMENT:

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Ballasts (Item 04203.967001 M):

This work will be measured as metric tons of fluorescent light ballasts accumulated, packaged, transported, and disposed of in accordance with the requirements of this item.

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Bulbs (Item 04203.967002 M):

This work will be measured as the linear meter of the fluorescent light bulbs accumulated, packaged, transported, and disposed of in accordance with the requirements of this item.

F. BASIS OF PAYMENT:

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Ballasts (Item 04203.967001 M):

The unit bid price per metric ton for this item shall include the cost of all labor, equipment and materials necessary to complete the work.

Removal, Packaging for Transport, Transportation and Disposal of Fluorescent Light Bulbs (Item 04203.967002 M):

The unit bid price per linear meter for this item shall include the cost of all labor, equipment and materials necessary to complete the work.

ITEM 10206.0312 M - CONDUIT INSTALLATION ON ABOVE GRADE STRUCTURES

Description:

The Contractor shall attach conduit to structures as shown on the plans and as directed by the Engineer including: overpasses, underpasses, retaining walls, bridge railings, and concrete barriers. The work shall include excavation and restoration in kind, as required and as shown by the Contract Documents and as directed by the Engineer.

Materials:

Galvanized steel clamps, u-bolts, and backplates shall be in accordance with subsection 723-20. PVC coating shall be in accordance with subsection 723-23. Stainless steel bolts shall be in accordance with subsection 715-16.

Construction Requirements:

The Contractor shall install conduit, at locations shown on the Contract Documents, utilizing one or more of the following attachment methods:

Conduit clamps with expansion anchors and bolts
Conduit clamps with bolts
U-bolts with backplates

Excavation and restoration of disturbed areas shall be performed in accordance with the details shown on the plans and as ordered by the Engineer.

Method of Measurement:

The work shall be measured by the number of linear meters of conduit actually installed in accordance with the Contract Documents and as directed by the Engineer.

Basis of Payment:

The unit price bid per meter shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work, as specified, including but not limited to: clamps, bolts, expansion anchors, u-bolts, excavation and restoration at conduit terminations.

ITEM 08304.019706 M - CRUSHED STONE AGGREGATE SUBBASE COURSE

DESCRIPTION

Under this item the Contractor shall furnish and place crushed stone aggregate subbase course as shown on the plans or as ordered by the Engineer.

MATERIALS

The material shall be crushed stone or crushed slag meeting the following requirements:

A. Gradation.

Sieve Size	Percent Passing by Weight
37.5 mm	100
12.5 mm	25-60
6.3 mm	10-35
75 µm	2-7

B. Soundness. Material will be accepted on the basis of a Magnesium Sulfate Soundness Loss after four (4) cycles of 20 percent or less.

C. Plasticity Index. The Plasticity Index of the material passing the 425 _m mesh sieve shall not exceed 5.0.

D. Elongated Particles. Not more than 30 percent, by weight, of the particles retained on a 12.5 mm sieve shall consist of flat or elongated particles. A flat or elongated particle is defined herein as one which has its greatest dimension more than three (3) times its least dimension. Acceptance for this requirement will normally be based on a visual inspection by the Engineer. When the State elects to test for this requirement, material with a percentage greater than 30 will be rejected.

CONSTRUCTION DETAILS

All material supplied for this Item shall be stockpiled unless waived as noted below. Stockpile construction, sampling and testing procedures shall be as stipulated in the appropriate current Departmental publications which are current on the date of advertisement for bids. These publications are available upon request to the Regional Director or the Deputy Chief Engineer (Technical Services). No material shall be removed for use from any stockpile until the stockpile has been sampled, tested and approved, in writing, by the Departmental Geotechnical Engineer.

Stockpiling will be waived by the Departmental Geotechnical Engineer provided manufacture and storing are as follows:

Processing shall be by a continuous belt system that is capable of accurately proportioning each size of aggregate.

This system shall have the capacity to blend the various aggregate sizes in the proportions as indicted in "Materials" above and the blend shall be directly deposited in acceptable storage bins or silos. Cone shaped piles placed on the ground will not be allowed.

The storage bins or silos shall have a discharge gate that will allow the material to be deposited directly into the delivery trucks.

Samples for testing purposes shall be obtained by discharging from the gate into a front end loader or similar equipment. Testing and approval shall conform to the requirements contained in the current appropriate Departmental publications. No material shall be removed for use from any bin or silo until it has been sampled, tested and approved in writing by the Departmental Geotechnical Engineer.

This waiver may be revoked if at any time, in the opinion of the Departmental Geotechnical Engineer, the requirements listed above have not been met. In the event of revocation of this waiver, subsequent material from this same source shall comply with the stockpiling, sampling and testing requirements of the current appropriate Department publications.

The crushed stone aggregate subbase course material shall be placed on the grade with a mechanical spreader box. The Departmental Geotechnical Engineer may waive this requirement, in writing, for locations where it is deemed not practical. In these situations, trucks shall be carefully unloaded on the grade at locations which minimize the distance the material must be moved. Uncontrolled spreading from piles dumped on the grade will not be permitted. The maximum layer thickness shall be 375 mm compacted. No highway or construction equipment traffic shall be permitted over the final finished subbase course surface except as necessary for the construction of the overlying pavement course at that location. Prior to final finishing of the course, however, traffic over the course may be permitted at locations designated by and under such restrictions as may be imposed by the Engineer.

The Contractor shall assume full responsibility for any contamination and/or degradation of any part of this course during construction and shall, at his own expense, remove any and all portions of this course which do not conform to the requirements of these specifications and replace these portions with specified material.

All compaction details shall be in accordance with Section 203.3.12, "Compaction." Compaction of any subbase course lift shall not lag spreading operations by more than 150 linear meters.

Any depressions that develop during rolling shall be filled with crushed stone aggregate subbase course material, and further rolled until the entire surface of the subbase course in true to grade and cross section. After compaction, the top surface of this course shall not extend more than 10 mm above, not more then 10 mm below, true grade and surface at any location. The course shall be compacted and completed to the above tolerance and approved by the Engineer before any pavement course is placed.

Minor rutting due to hauling equipment may occur during the paving operations. If, in the opinion of the Engineer, this rutting becomes excessive, corrective procedures shall be taken. Rutting shall be considered excessive when the depressions in the wheel tracks exceed 25 mm when measured from the bottom of the rut to the underside of a straight edge laid across the depression. Excessive rutting shall be eliminated by recompacting the rutted areas. Additional crushed stone aggregate subbase material shall be added as necessary to bring the course to within the tolerances noted above.

METHOD OF PAYMENT

The quantity shall be the number of cubic meters of material, placed and compacted in its final position, computed from payment lines shown on the plans, or where changes have been ordered, from payment lines established in writing by the Engineer.

BASIS OF PAYMENT

The unit price bid for this work shall include the cost of furnishing all labor, material and equipment necessary to complete the work. The cost of adding water shall be included in the price bid unless the items for furnishing and applying water are included in the contract. No direct payment will be made for losses of material resulting from compaction, foundation settlement, erosion or any other cause. The cost of such losses shall be included in the price bid for this item. No deductions shall be made for the volumes occupied by manholes, catch basins and other such objects.

Progress payments will be made after the subbase course has been properly placed and compacted. Payment will be made at the unit price bid for seventy-five percent (75%) of the quantity. The balance of the quantity will be paid for after the final finishing to the required tolerance and just prior to the placing of pavement.

ITEM 08304.11 M - SUBBASE COURSE (MODIFIED)

All specification requirements for Item 304.11 M shall apply with the following addition:

At his option, the contractor may substitute Type 2 material, as specified in Section 304-2.02 of the Standard Specifications. There will be no change in the price bid if the contractor elects to make this substitution.

ITEM 402.00004118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 1
ITEM 402.00005118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 2

DESCRIPTION

Measure the ride quality of the finished riding surface using a verified and properly calibrated inertial profiler. Report test results to the Engineer as an average International Roughness Index (IRI) for the right wheelpath of each pavement-ride-quality (PRQ) lot.

For the purposes of this specification, the following terms are defined below.

Calibration. All procedures contained in Materials Method 24.1 shall be followed to ensure that each individual data collection device is operating properly.

International Roughness Index (IRI). An index computed from a longitudinal profile measurement reported in m/km. IRI is computed according to the quarter-car model which indicates the amount of suspension travel that one wheel of a standard vehicle would experience when traveling over a longitudinal profile.

Measurement. A single determination of IRI along the reference line for the entire length of a single PRQ lot in the direction of traffic.

Multiple-Course. Two or more paving courses, excluding truing and leveling.

Pavement Ride Quality (PRQ) Lot. A PRQ lot is a continuous 200 m section of pavement one lane wide, in areas shown in the contract documents as requiring pavement ride quality testing. Ride Quality testing is performed and payment adjustments are made separately for each PRQ lot.

Quarter-car Model. A mathematical model of one wheel (one quarter) of a car of a standard weight with a standard tire, standard spring rate, and standard damping as established in NCHRP Report 228.

Reference Line. The imaginary line the noncontact-height sensor traces along the pavement surface. The intended reference line for all Quality Control (QC) and Quality Assurance (QA) tests is located 0.9 m to the left of the right edge of the PRQ lot (right wheelpath). The closer all tests are taken to the same reference line, the less variability will occur between the results.

Single-Course. One paving course, excluding truing and leveling.

Test. The average of three consecutive measurements taken on the same day in the same PRQ lot by the same inertial profiler and operator.

Verification. All procedures contained in Materials Method 24.1 to be followed to ensure the test results produced by a profiler are within an acceptable variation of the true profile.

MATERIALS None Specified

ITEM 402.00004118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 1
ITEM 402.00005118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 2

CONSTRUCTION DETAILS

Test and report the ride quality of all new flexible pavement and HMA overlays of pavement and bridge decks except: shoulders, gore areas, ramps shorter than 400 m, turn-outs, turn-arounds, driveways, parking areas, and other similar miscellaneous paving.

A. Inertial Profiler Requirements. A self-powered test vehicle conforming to ASTM E950 Class I and AASHTO PP 50-02 containing automated test initiation and data recording systems capable of providing the following information to the on-board display, on-board data storage device, and on-board printer.

- The date, time, contract number, route, location, test direction, lane, and operator for each test.
- The equipment parameters related to calibration.
- A general profile, using a scale of 1:300 horizontal and 1:1 vertical.
- The average IRI and range for the specified wheelpath for each PRQ lot.

Alternative equipment types may be used as approved by the Director, Materials Bureau. Submit requests to use alternative equipment at least 14 days prior to the start of QC testing. Alternative equipment must meet the inertial profiler requirements to be approved.

B. Equipment Verification, Calibration, and Daily Control Section Testing.

1. **Verification.** Prior to using an inertial profiler on a Department contract, verify the profiler according to Materials Method 24.1.

2. **Calibration.** Calibrate the inertial profiler according to frequency and procedures given in Materials Method 24.1.

3. **Daily Control Section Testing.** Create a control section at or near the contract site according to the procedures of Materials Method 24.1. Each day of quality control testing, perform one measurement on the control section. Record the results and track the performance of the inertial profiler according to the procedures of Materials Method 24.1.

C. Quality Control (QC) Measurements.

1. **Layout PRQ Lots.** Divide the surface-course pavement areas designated in the contract documents as requiring pavement ride quality testing into PRQ lots according to the following:
   - Divide pavement constructed into PRQ lots 200 m long and one lane wide. PRQ lots may include pavement placed on more than one day.
   - Each PRQ lot must be continuous. PRQ lots may not straddle areas not designated for ride quality testing.
   - Include pavement sections shorter than 100 m located between a PRQ lot and an area not designated for ride quality testing or the end of the contract in the adjacent PRQ lot.

- Create separate PRQ lot for pavement sections at least 100 m long, but less than 200 m, located between a PRQ lot and an area not designated for ride quality testing or the end of the contract.
- Remaining areas at the end of a day's paving which are less than 200 m long will be added to and tested with the adjacent pavement after it is constructed.

2. **Perform QC Testing.** Perform one test in every PRQ lot according to Test Method NY 402-01F. Perform QC testing after the final surface course has been paved and compacted.

   If any pavement repair is made in a PRQ lot under the provisions of §105-04 Conformity with Plans and Specifications or under the provisions for corrective action in this specification, repeat the QC testing for that PRQ lot after the repair. If repairs are made in the left wheelpath and not in the right wheelpath, establish the reference line and perform the repeat tests in the left wheelpath. The final tests will be used for payment.

3. **Report Results.** Provide the following information to the Engineer by the end of the next work day.

   a. **IRI Testing Summary Report.** Provide an IRI testing summary report, consisting of a header and results table, to the Engineer as a printout and a computer file. The computer file may be in spreadsheet or ASCII format.

      1. **Header.** Include the following information in the report header.
         - Contract D-number
         - Date
         - Filter Settings

      2. **Results Table.** Provide a table consisting of 9 columns labeled as shown below and one row for each PRQ lot tested. Report all results in units of m/km calculated to the nearest 0.01 m/km.

PRQ lot #	Direction	Lane/ Ramp	Begin Station	End Station	Measurement 1	Measurement 2	Measurement 3	Test

   b. **Profile Data.** Provide a copy of each profile in the electronic format specified in Test Method NY 402-01F. Name each file according to the following format.

      "XXXXXX_YYY_Z.ERD"

      XXXXXX - Reserve first six characters for the numerical portion of the contract number.
      YYY - Separated from the first six characters by an underscore. Reserve the next three characters for the first lot number represented by the file.
      Z - Separated from the previous three characters by an underscore. Reserve the last character for the number of the measurement (1, 2, or 3) represented by the file.
      .ERD - Denotes the file as being in the proper format for evaluation.

ITEM 402.00004118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 1
ITEM 402.00005118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 2

D. Corrective Action.

Present the proposed repair procedures to the Engineer for approval at least 48 hours before beginning the repair work. Pavement thickness, location of repair, level of ride quality, and effectiveness of a proposed procedure will be primary considerations in determining the proposed procedure's acceptability.

METHOD OF MEASUREMENT

Quality payment adjustments will be measured in Quality Units.

- Determine Quality Units for each PRQ lot by using Table 1.
- For PRQ lots of a length different from 200 m, adjust the number of Quality Units as follows:

$$\text{Quality Units} = \text{Quality Units from Table 1} \times \left(\frac{\text{length of PRQ lot (m)}}{200 \text{ m}} \right)$$

- Determine the total number of Quality Units by summing the Quality Units from all PRQ lots.
- Contract Quality Units will be rounded to the nearest whole unit.

Table 1
Determination of Quality Units

LEVEL 1		LEVEL 2		
PRQ lot IRI (m/km)	Quality Units	PRQ lot IRI (m/km)	Quality Units for Multiple-Course	Quality Units for Single-Course
< 0.60	10	< 0.75	10	5
0.61 – 0.85	5	0.76 – 1.00	5	2.5
0.86 - 1.10	0	1.01 - 1.25	0	0
1.11 - 1.30	-5	1.26 - 1.45	-5	-2.5
1.31 - 1.50	-10	1.46 - 1.65	-10	-5
> 1.50 (1)	-20	> 1.65 (1)	-20	-10

(1) The Department will evaluate the lot to determine if it will remain in place. The level of ride quality, location, traffic volume, and speed limit will be primary considerations in determining if the pavement will remain in place. If the pavement cannot remain in place, repair it according to the procedures under Corrective Action in this specification. If the pavement can remain in place, the Raw Quality Units will be calculated according to Table 1.

BASIS OF PAYMENT

Payment of Quality Units will be made based on the Index Price listed in the contract documents. The index price shown in the itemized proposal for each Quality Unit is considered the price bid. The unit (index) price is NOT to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

ITEM 402.00004118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 1
ITEM 402.00005118 PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 2

Include the cost for all labor, equipment and material to satisfactorily complete the work in the unit price bid for the appropriate surface course HMA Item.

Payment will be made under:

Item No.	Item	Pay Unit
402.00004118	Pavement Ride Quality Adjustment Level 1	Quality Units
402.00005118	Pavement Ride Quality Adjustment Level 2	Quality Units

ITEM 10520.09 M - SAW CUTTING ASPHALT CONCRETE

DESCRIPTION. This work shall consist of saw cutting existing asphalt concrete pavement or sidewalk at the locations indicated on the plans or where directed by the Engineer.

MATERIALS. All equipment proposed for this work shall be approved by the Engineer prior to actual use.

CONSTRUCTION DETAILS. Saw cutting shall be along a neat line as indicated on the plans or where directed by the Engineer. Saw cuts shall be made to the depth(s) indicated on the plans.

Any damage to material not indicated for removal, caused by the Contractor's operations shall be repaired by the Contractor. All repair shall be done in a manner satisfactory to the Engineer.

METHOD OF MEASUREMENT. This work will be measured by the number of meters of saw cutting done. No allowances will be made for saw cuts of different depths.

No saw cutting will be measured for payment under this item which the Contractor may choose to do for his own convenience.

BASIS OF PAYMENT. The unit price bid per meter of saw cutting shall include the cost of all labor, materials, and equipment necessary to complete the work.

Any repairs made necessary by the Contractor's operations shall be done to the satisfaction of the Engineer at no additional cost to the State.

ITEM 551.0460NN17 – HOLES IN EARTH FOR SOLDIER PILE AND LAGGING WALL
ITEM 551.0461NN17 – ROCK SOCKETS FOR SOLDIER PILE AND LAGGING WALL
ITEM 551.0462NN17 – INSTALLING SOLDIER PILES FOR SOLDIER PILE AND LAGGING WALL
ITEM 551.0463NN17 – INSTALLING LAGGING FOR SOLDIER PILE AND LAGGING WALL

DESCRIPTION

This work shall consist of furnishing, installing and maintaining a soldier pile and lagging wall in accordance with the contract documents and as directed by the Engineer. Cut off walls within the roadway limits and leave in place. Completely remove walls outside the roadway limits if noted on the plans. Dispose of removed material.

All proposed changes to details shown on the plans must be approved, in writing, by the Deputy Chief Engineer of the Technical Services Division.

MATERIALS

Structural Steel

Provide soldier piles, waling and bracing as shown on the plans conforming to the provisions of §715-01 Structural Steel.

Used material is permitted for walls unless otherwise noted on the plans, provided the material is in conformance with the specification and is acceptable to the Engineer.

Lagging

Provide the lagging type(s) shown on the plans:

Treated wood graded for an extreme fiber stress of at least 6.9 MPa conforming to the provisions of §712-14 Stress Graded Timber and Lumber with the full dimension thickness shown on the plans.

Provide preservative treatment conforming to the American Wood Preserves Institute (AWPA) Standard C-2, Soil Contact.

Untreated wood graded for an extreme fiber stress of at least 6.9 MPa conforming to the provisions of §712-14 Stress Graded Timber and Lumber with the full dimension thickness shown on the plans.

Precast concrete panels conforming to the provisions of §704-03 Precast Concrete-General.

Steel sheeting with a minimum section modulus conforming to the provisions of §552-2 Materials.

Backfill for Holes

Provide backfill material shown on the plans:

Concrete Backfill: Class G concrete conforming to the provisions of Section 555 - Structural Concrete.

Grout Backfill: Provide a workable mixture of cement, concrete sand and water capable of stabilizing the hole and being excavated. Use cement, concrete sand and water conforming to the following provisions:

ITEM 551.0460NN17 – HOLES IN EARTH FOR SOLDIER PILE AND LAGGING WALL
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Material	Subsection
Portland Cement Type 2	§701-01
Concrete Sand	§703-07
Water	§712-01

The current Departmental Controlled Low Strength Material specification is an acceptable alternative to the grout backfill.

CONSTRUCTION DETAILS

A. General

Perform work in a manner that causes no subsidence of the surrounding ground surface. If subsidence should occur, cease work and provide a written plan to prevent subsidence to the Engineer for review. Resume work after the Engineer has approved the plan in writing. Repair all damage that resulted from the subsidence at no additional cost to the State.

Provide splices for soldier piles conforming to the provisions of §551-3.01 C.2.a. Preparation of Piles, Splices, General.

Install the Soldier Piles either by driving or by placing them in holes as indicated on the plans in accordance with the following tolerances:

1. Plan tolerance of 75 mm at the top of pile, verified by survey methods.

2. Vertical tolerance of one (1) mm per 100 mm on each axis of the soldier pile shown on the plans. Verify the axes on the top 1.5 m of the soldier pile with a straight edge (1.5 m minimum length) and a level (1.2 m minimum length).

For each pile out of tolerance, provide a satisfactory replacement or provide a modification approved by the Engineer prior to proceeding.

B. Driving Piles

Equip soldier piles with shoes in conformance with provisions of §551-3.01 C.1.a. Preparation of Piles, Shoes, Steel Bearing Piles, and drive in conformance with provisions of §551-3.01 D. Equipment for Driving Piles, except that submission of Form BD 138 is not required.

C. Placing Piles in Holes

Provide equipment capable of establishing holes of the minimum diameter and to the depth or elevation shown on the plans. Temporary sleeves or casings are permitted and may be required as per the plans. Jetting is not permitted.

If the assumed top of socket elevation shown on the plans varies by more than 0.6 m, stop work and notify the Engineer. The Engineer will notify the Geotechnical Engineering Bureau and obtain written recommendations prior to allowing the work to proceed.

After placing the piles, backfill holes with the backfill(s) indicated on the plans.

D. Backfilling

Concrete Backfill: Place backfill in accordance with the provisions of §555-3.04 Handling and Placing Concrete and §555-3.05 Depositing Structural Concrete Under Water in all rock sockets shown on the plans. Provide a minimum curing time of one (1) day before placing any lagging.

Grout Backfill: Place backfill in accordance with the provisions of §555-3.04 Handling and Placing Concrete and §555-3.05 Depositing Structural Concrete Under Water. Provide a minimum curing time of one (1) day before placing any lagging.

E. Lagging

Install horizontal lagging in a manner approved by the Engineer so that the unsupported soil height is a maximum of one (1) meter at all times. If the method chosen for attaching the lagging to the soldier piles requires reattachment of lagging to the soldier piles due to planned excavation on both sides of the wall, reattach the lagging at no additional cost to the State.

Fabricate the precast concrete lagging to the shape and size shown on the plans.

Precast panels manufactured in strict conformance with the plans do not require shop drawings. When shop drawings are not required, notify the Engineer, in writing, of the Fabricator's intention to manufacture the panels in accordance with the plans. The Director of the Materials Bureau will be notified by the Engineer of the Contractor's/Fabricator's intention and will institute appropriate approval notifications.

If the precast panels are not fabricated in strict conformance with the plans, submit shop drawings through the Engineer to the Materials Bureau for written approval a minimum of 30 working days before beginning fabrication. Shop drawings must conform to the requirements of §704-03, Precast Concrete-General.

Panels manufactured without prior written approval from the Materials Bureau will not be accepted.

F. Wall Removal

Cut off soldier piles placed within the roadway limits at the subgrade surface unless otherwise noted on the plans.

Soldier piles placed outside the roadway limits may be removed or cut off a minimum of 0.6 m below final ground surface unless otherwise noted on the plans.

If lagging is to be removed, remove the lagging in a manner approved by the Engineer so that the unsupported soil height is a maximum of one (1) meter at all times. This maximum height may be reduced, based on specific site conditions, in order to prevent collapse and loss of ground.

METHOD OF MEASUREMENT

Holes in Earth

This work will be measured as the number of meters of holes in earth satisfactorily installed, as measured in the field, in accordance with the contract documents and as directed by the Engineer. The upper

payment limit, unless otherwise specified on the plans or revised in writing by the Engineer, is the actual intersected grade or ground line whichever is lower. For holes requiring rock sockets, the lower payment limit is the top of rock as shown on the plans or revised, in writing, by the Engineer. For holes without rock sockets, the lower payment limit is the pile tip elevation as shown on the plans or revised, in writing, by the Engineer.

Rock Sockets
This work will be measured as the number of meters of sockets in rock satisfactorily installed, as measured in the field, in accordance with the contract documents and as directed by the Engineer. The upper payment limit is the top of rock as shown on the plans or revised, in writing, by the Engineer. The lower payment limit is the pile tip elevation as shown on the plans or as revised, in writing, by the Engineer.

Installing Soldier Piles
This work will be measured as the number of meters of soldier piles satisfactorily installed, as measured in the field, in accordance with the contract documents and as directed by the Engineer. The upper payment limit is the pile top elevation as shown on the plans or as revised, in writing, by the Engineer. The lower payment limit is established as the tip of the soldier pile driven or placed to the elevation shown on the plans or as revised, in writing, by the Engineer.

Installing Lagging
This work will be measured as the number of square meters of lagging satisfactorily installed in accordance with the contract documents and as directed by the Engineer.

BASIS OF PAYMENT
Holes in Earth
The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including progressing the hole through obstructions.

Rock Sockets
The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.

Installing Soldier Piles
The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including pile driving equipment, equipment for excavating holes, pile shoes, splices, backfilling the hole and cutting off the soldier pile where required. No additional payment will be made for complete pile removal, where allowed, or for splices when the pile exceeds the estimated length.

Installing Lagging
The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including waling, bracing, connections and lagging removal, where required. No additional payment will be made when a wall is excavated on both sides. No additional payment will be made if wood lagging is placed behind concrete.

NOTE: nn denotes serialized pay item, see §101-02.

ITEM 17551.60 M - FURNISHING EQUIPMENT FOR INSTALLING DRILLED SHAFTS
ITEM 17551.61 M - FURNISHING EQUIPMENT FOR INSTALLING DRILLED SHAFTS (ON WATER)
ITEM 17551.62 M - FURNISHING EQUIPMENT FOR INSTALLING DRILLED SHAFTS (LOW OVERHEAD CLEARANCE)

DESCRIPTION
Under this work, furnish the necessary equipment including barges, platforms and support vessels for installing drilled shafts as shown on the plans.

MATERIALS
Not specified.

CONSTRUCTION DETAILS
Prior to delivering any equipment to the site, submit the proposed type of equipment for drilled shaft installation to the Deputy Chief Engineer (Structures) (D.C.E.S.) for review and approval. The D.C.E.S. will render a decision within 15 working days, measured from the date of receipt of all information.

Provide equipment capable of installing drilled shafts with lengths 20% greater than those shown on the plans. Provide equipment capable of accessing holes on water and progressing holes through soils at the site which may include miscellaneous fill, boulders, timber and other obstructions, and into bedrock. Remove all equipment from the site deemed unsatisfactory by the D.C.E.S. and replace it with satisfactory equipment at no additional cost to the State.

Provide equipment capable of installing drilled shafts, given the low overhead clearance conditions at the site.

METHOD OF MEASUREMENT
Payment will be made by lump sum. No field measurements will be taken.

BASIS OF PAYMENT
The lump sum price bid includes the cost of furnishing all labor, materials and equipment, including barges, platforms and support vessels, necessary for transporting, erecting, maintaining, making any ordered equipment replacement, dismantling and removing all installation equipment.

Payment will be made as follows: Seventy five (75%) percent of the amount bid will be authorized for payment when the equipment for installing drilled shafts is furnished and the installation of drilled shafts has commenced. The remainder will be authorized for payment when the work of installing the drilled shafts is completed.

06/96
M 09/97
M 07/01
M 01/02

ITEM 17551. 9949nn M - DRILLED SHAFTS
ITEM 17551. 9950nn M - DRILLED SHAFTS (LOW OVERHEAD CLEARANCE)
ITEM 17551. 9802 M - TRIAL SHAFTS

DESCRIPTION

General

Under this work, furnish the materials and install drilled shafts at the locations, dimensions, and batters shown on the **contract plans** or where ordered by the Engineer and approved by the Deputy Chief Engineer Structures (D.C.E.S.). This work includes excavating shafts, disposing of all excavated material and drilling mud, placing steel reinforcement, and placing concrete as detailed.

The intent of this work is for the Contractor or subcontractor to provide reinforced concrete shafts in cylindrical excavated holes which extend enough into the soil and/or rock to support the structure and all externally applied loads for which it was designed.

The Contractor or subcontractor performing this work must have had prior experience installing drilled shafts, as described in this specification.

Definitions

Contractor- The contractor or subcontractor performing the work described in this specification.

Casing Method - A method of shaft construction, consisting of advancing and cleaning a cased hole, placing the reinforcing cage, and concreting the shaft while extracting temporary casing (if used).

Casing (Shell) - A steel shell used to construct the drilled shaft. The casing can help advance the hole, and supports the sides of the hole. Casing can be permanent, interim or temporary.

Drilling Mud - A slurry made using bentonite or polymers (see Slurry).

Drilled Shaft - A cylindrical structural column transmitting loads to soil and/or rock. The drilled shaft is constructed in a hole with a circular cross section. The hole is filled with concrete and may be reinforced with steel.

Dry Construction Method- A method of shaft construction consisting of drilling the shaft, removing water and material from the excavation, placing the reinforcing cage, and concreting the shaft in a relatively dry condition.

Interim Casing - A casing that acts as a form, but remains in place permanently. It is not designed to carry structural loads.

Permanent Casing - A casing that is designed to carry structural loads. It acts as a form and remains in place permanently.

ITEM 17551. 9949nn M - DRILLED SHAFTS
ITEM 17551. 9950nn M - DRILLED SHAFTS (LOW OVERHEAD CLEARANCE)
ITEM 17551. 9802 M - TRIAL SHAFTS

Quality Assurance - A test or procedure that acts to verify the quality of the work or product. Quality Assurance procedures would include static load testing, Osterberg cell testing, coring, cross hole sonic logging, and other non-destructive testing.

Rock - Rock is identified in the boring logs. Rock may also be defined at the shaft installation site by a Departmental Engineering Geologist.

Seat - The act of placing the tip of a casing in intimate contact on rock for its entire circumference.

Slurry - A mixture of water and bentonite, or water and polymers, which provides hydrostatic pressure that supports the sides and bottom of the hole, lubricates and cools the drill tools, and aids clean-out. Slurry cannot be made from native materials, or material from the excavation.

Surface Casing - Temporary casing installed to prevent sloughing of the surrounding soil near the surface of the shaft excavation.

Temporary Casing - A casing that serves its function during construction of the drilled shafts. It serves no permanent structural function, and is extracted during concreting.

Top of Socket - The highest location of the rock socket that is capable of resisting axial and lateral design loads. At any given location, the top of socket elevation is usually below the top of rock elevation. This distance depends on the type and quality of the rock, and the Contractors drilling methods and equipment.

Tremie - A method to place concrete under water. Refer to Section 555 of the Standard Specifications.

Trial Shaft - A hole for a drilled shaft constructed on the project site, but outside the proposed footing limits. It is not to be incorporated into a structure or foundation. A trial shaft is constructed prior to installing production drilled shafts, according to the methods detailed in the Contractor's submittals. Its function is to verify the proposed excavation methods, and permit the Inspectors to become familiar with the excavation procedure. Upon inspection and acceptance, the trial shaft is backfilled with unreinforced concrete.

Wet Construction Method - A method of shaft construction in which slurry is used to maintain stability of the hole while advancing the excavation to the final depth, placing the reinforcing cage, and concreting the shaft.

MATERIALS

Refer to the **contract plans** to determine which of the following materials will be required.

ITEM 17551. 9949nn M - DRILLED SHAFTS
ITEM 17551. 9950nn M - DRILLED SHAFTS (LOW OVERHEAD CLEARANCE)
ITEM 17551. 9802 M - TRIAL SHAFTS

A. Permanent Casing

Provide continuous permanent casing conforming to the limits shown on the **contract plans**.

Provide material conforming to the requirements of ASTM A252 Grade 2, unless specified otherwise in the contract plans. Furnish full length shells, consistent with requirements shown in the contract documents. Unless otherwise specified in the contract documents, use of spiral welded casing is not permitted.

If needed, equip casing with an appropriate casing shoe to enable installation of casing to the elevations shown on the **contract plans**.

B. Interim Casing

Provide interim casing capable of withstanding all handling and installation stresses. If needed, equip casing with an appropriate casing shoe to enable installation of casing to the depths necessary to construct the drilled shaft to the elevations shown on the **contract plans**.

C. Temporary Casing

Provide temporary casing capable of withstanding all handling and installation and extraction stresses. If needed, equip casing with an appropriate casing shoe to enable installation of casing to the depths necessary to construct the drilled shaft to the elevations shown on the **contract plans**.

D. Reinforcing Steel

Provide bar reinforcement meeting the requirements of Subsection 709-01, Bar Reinforcement Grade 400, or continuously threaded "Uncoated Steel Bar for Prestressing Concrete"-ASTM A615 M.

E. Concrete

Provide concrete conforming to the requirements of Section 501, Portland Cement Concrete-General, Class GG. The mix criteria for Class GG concrete are:

Cement (kg/m^3) - 480
Sand % Total Agg. (solid volume) - 45.0
Water/cement (weight) - 0.45
Air Content (%) - 6.0 +/- 2%
Slump Range (mm) - 150-230
Type of Coarse Agg. Gradation - CA1

F. Centralizers

Provide centralizers for properly aligning the steel reinforcement, made of a material that is not detrimental to the reinforcement or the concrete. The type of centralizer utilized must be approved by the D.C.E.S.

G. Rebar Cage Feet

Provide cylindrical feet to support the rebar cage at the proper elevation, made of a material that is not detrimental to the reinforcement or concrete. The type of feet utilized must be approved by the D.C.E.S.

H. Protective Coating For Permanent Casing

Provide a Coal Tar Epoxy-Polymide Coating meeting the requirements of, and apply it in accordance with SSPC-PS 11.01: Black (or Dark Red) Coal Tar Polymide Painting System. Apply the coating between the limits shown on the **contract plans**.

I. Mineral Slurry

Provide a mineral (bentonite) slurry that will remain in suspension, and with sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. Provide a slurry with the percentage and specific gravity of the material used to make the suspension sufficient to maintain the stability of the excavation and to allow proper concrete placement.

The acceptable range of values for mineral slurry is as follows:

Range of Values (20_ C)			
Property (Units)	Time of Slurry Introduction	Time of Concreting (In hole)	Test Method
Density (kg/m^3)	1030 to 1106	1030 to 1200	Density Balance
Viscosity (sec. per liter)	29 to 48	29 to 48	Marsh Cone
pH	8 to 11	8 to 11	pH paper or meter

Increase density range values by 32 kg/m^3 in salt water.

Desand the slurry so that the sand content does not exceed 4 percent (by volume) prior to concrete placement as determined by the American Petroleum Institute sand content test.

J. Polymer Slurry

Provide a polymer slurry with sufficient viscosity and gel characteristics to hold the hole open, and transport excavated material to a suitable screening system.

Polymer slurry may be made from PHPA (emulsified), vinyl (dry), or natural polymers.

Desand the polymer slurry so that the sand content is less than 1 percent (by volume) prior to concrete placement, as determined by the American Petroleum Institute sand content test.

K. Water

Provide water conforming to the requirements of Subsection 712-01 WATER, except with a pH conforming to the slurry requirements listed above.

CONSTRUCTION DETAILS

A. Prior Experience

Submit proof and details of: 1.) two projects in the past 5 years where the Contractor or subcontractor performing the work has successfully installed drilled shafts similar to the size and type on this project; 2.) the foreman for this work having supervised the successful installation of drilled shafts on at least two projects in the last 2 years, and 3.) the drill operators having had at least one year of experience installing drilled shafts with similar diameters and lengths, and in similar conditions. Include details describing the equipment and methods used, any difficulties encountered and how they were overcome, and the results of any testing performed. Include the name and telephone number of someone for each project cited who can be contacted as a reference. Submit this information to the D.C.E.S. for review, evaluation, and approval prior to submitting detailed information as stated in this specification under C. Submittals. The D.C.E.S. will render a decision within 15 working days after the receipt of all information. A Contractor or subcontractor will not be permitted to install drilled shafts without this approval.

All approvals are subject to trial and satisfactory field performance. Departmental approval does not relieve the Contractor or subcontractor of his responsibility to satisfactorily complete the work detailed in the contract documents.

B. General

Provide the equipment and use procedures necessary to install drilled shafts at the locations and to the elevations shown on the **contract plans**, or as approved by the D.C.E.S.

Prior to preparing submittals, fully examine the existing site conditions and subsurface exploration logs.

The construction methods selected are directly related to the method of load transfer assumed in the project design. The type of drilling method, presence of permanent or interim casing, and clean out procedure all affect the drilled shaft load transfer behavior in skin friction and end bearing. Construct the drilled shafts using construction methods consistent with the load transfer mechanism shown on the **contract plans**.

C. Submittals

ITEM 17551. 9949nn M - DRILLED SHAFTS
ITEM 17551. 9950nn M - DRILLED SHAFTS (LOW OVERHEAD CLEARANCE)
ITEM 17551. 9802 M - TRIAL SHAFTS

Submit the proposed procedure and equipment for installing drilled shafts to the D.C.E.S. for review and approval prior to commencing the work. The D.C.E.S. will render a decision within 15 working days, measured from the date of receipt of all pertinent information. The submittal should include, but not be limited to, the following information:

a. Method describing how the Contractor will progress through obstructions and rock.
b. Details and method describing how the Contractor will keep the hole for the drilled shaft open.

c. Drawings showing and details describing the proposed sequence of drilled shaft installation. Include the sequence for each shaft, the overall construction sequence, and the sequence of shaft construction in bents or groups.

d. Information describing the type of equipment to be used, including drill rig, cranes, drilling tools, final cleaning equipment, desanding equipment, slurry pumps, sampling equipment, tremies or concrete pumps, casing (including casing dimensions, material and splice details), etc.

e. Proposed method for cleaning out the shaft excavations. Include a description of how the Contractor will perform spoil removal and disposal.

f. Documentation that shows that the Contractor, Driller, and Foreman have the requisite prior experience in installing drilled shafts. Include the name and telephone number of someone for each project cited who can be contacted as a reference.

g. Shaft excavation methods, and final shaft dimensions.

h. If slurry is to be used, indicate the method proposed to mix, circulate, and desand slurry. Include methods of slurry disposal in the submittal.

i. Method of reinforcement placement, including support and centralization type and methods.

j. Details and method of concrete placement, curing, and protection.

k. If the concrete mix is modified (i.e., retarders), include the new mix design, and test results of cylinder breaks from an independent laboratory. Also, include test results that demonstrate a slump loss versus time relationship.

l. A description and details of the slurry sampling tool to be used. Provide a tool capable of taking a slurry sample at a specific depth, without being contaminated by slurry from another depth.

m. When slurry is used, include an alternate procedure to be used which will secure the shaft in the event of slurry loss.

n. A description of the type of feet to be used to support the rebar cage in the drilled shaft.

o. An emergency construction joint procedure, to be used in the event when concrete placement for the drilled shaft is unexpectedly interrupted.

p. A procedure for filling voids between permanent or interim casing and the soil.

q. A description of equipment and methods to be used for drilled shaft inspection. The Inspector will use these methods and equipment to inspect the drilled shafts. The inspection program must be thorough enough to assure the Department that each drilled shaft meets the requirements contained in this specification.

Do not begin work until the D.C.E.S. has issued all approvals.

D. Construction Tolerances

a. The allowable tolerance from **plan location** is 75 mm at the top of shaft elevation. Measure the as-drilled center of shaft using reference stakes offset from the shaft excavation.

b. The allowable tolerance from the required verticality is 2%. For battered shafts, the allowable tolerance from the required batter is 3%. This tolerance applies for the total length of shaft.

c. Cutoff elevation tolerance is plus 25 mm to minus 75 mm from the top of shaft elevation shown in the **contract plans**.

d. Rebar stick up elevation tolerance, after all shaft concrete has been placed, is plus or minus 50 mm from the stick up elevation shown in the **contract plans**.

e. The bottom of the shaft excavation is perpendicular to the axis of the shaft, within a tolerance of 20 mm per 300 mm of shaft diameter.

f. Tolerances for the diameter are as follows: the minimum diameter of the drilled shaft is not more than 25 mm less than the diameter shown on the plans. The maximum shaft diameter is the diameter shown on the plans plus 150 mm. Verify the diameter for the entire length of the shaft using devices constructed of a rigid rod with four 90_ offset rods.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. Submit written correction procedures to the D.C.E.S.

through the Engineer for approval prior to correcting the deficiencies. The Contractor is responsible for correcting
all unacceptable shaft excavations and completed shafts to the satisfaction of the Engineer at no cost to the State.

E. Drilling and Excavation

General
When drilled shafts are to be constructed in conjunction with embankment placement, construct shafts after placement of the fill, unless otherwise shown on the **contract plans**.

The Contractor is responsible for reviewing all the subsurface and site information, and limitations, for the project.

Trial Shaft(s)
Construct trial shaft(s) in accordance with the same methods submitted and approved for production drilled shaft installation. The purpose of the trial shaft installation is to demonstrate the adequacy of the Contractor's proposed methods and equipment for excavating the drilled shafts.

Construct trial shaft(s) in the area(s) designated on the **contract plans,** or as directed in writing by the Engineer. Progress the trial shaft(s) to the depth shown on the plans.

Progress the holes for the drilled shaft(s) to the required elevation(s) in such a manner so as not to cause disturbance or settlement to the surrounding ground surface or adjacent structures. If any disturbance occurs, halt operations and modify the equipment and/or procedures so as not to cause any further disturbance. Submit the modified drilled shaft installation procedure, in writing, to the D.C.E.S. through the Engineer. After receiving approval from the D.C.E.S., repair any damage at no cost to the State, and proceed.

During drilling or excavation of the shaft(s), make frequent checks of the plumbness, alignment, and dimensions of the shaft. Correct any deviations exceeding the allowable tolerances using a procedure approved by the Engineer.
Clean the inside of the holes for the drilled shaft(s) to the diameters and depths called for in the **contract plans**. Dispose of all excavated material in accordance with Section 203-3.08, Disposal of Surplus Excavated Materials.

After the trial shaft(s) have been excavated, inspected, and accepted, remove any casing used and backfill the hole(s) with unreinforced concrete. Cut off the completed trial shaft(s)
0.6 m below finished grade. Restore the disturbed areas in the vicinity of the trial shaft(s) as nearly as possible to their original condition.

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Failure of the Contractor to demonstrate the adequacy of methods and/or equipment to the Engineer constitutes reason for the Engineer to require alterations in methods and/or equipment. Construct any additional trial shaft(s) necessary to achieve satisfactory results at no additional cost to the State, as ordered by the Engineer.

Drilled Shafts and Drilled Shafts (Low Overhead Clearance)
Excavate the holes and dispose of all excavated material for production drilled shafts using the same requirements, methods, procedures, and equipment used to satisfactorily excavate trial shaft(s), if trial shafts were used. Otherwise, use the same methods approved by the D.C.E.S. Do not alter equipment and/or methods without written permission by the D.C.E.S.

Where drilled shafts are located in open water areas, extend exterior casings (temporary, interim or permanent) from above the water elevation into the ground to protect the shaft concrete from water action during placement and curing of the concrete. Install the exterior casing in such a manner so as to produce a positive seal at the bottom of the casing and prevent piping of water or other materials into or from the shaft excavation.

Do not keep mineral slurry in the holes while drilling rock sockets, as it has a detrimental effect on the concrete-to-rock bond.

Dry Construction Method
This method will be permitted only at sites where the groundwater table and site conditions are suitable to permit construction of the shaft in a relatively dry excavation, *and* where the sides and bottom of the shaft remain stable without any caving, sloughing, or swelling, *and* can be visually inspected prior to placing the rebar cage and concrete. A "relatively dry" excavation is one where the infiltration rate does not exceed 300 mm of water in one hour. Perform all operations so that less than 50 mm of water remain at the bottom of the excavation at the time of concreting.

Wet Construction Method
The wet construction method may be used at sites where a dry excavation cannot be maintained for placement of the shaft concrete. This procedure may require cleaning the slurry, and final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump, or other devices.
Maintain a minimum slurry level of 1.5 m above the highest groundwater level encountered on the project.

Provide surface casings to aid shaft alignment and position, and to prevent sloughing of the top of the shaft excavation, unless it is demonstrated to the satisfaction of the Engineer that the surface casing is not required.

Temporary Casing Construction Method
Use this method at sites where the stability of the excavated hole and/or the effects of groundwater cannot be controlled by other means. Install temporary casing using

rotating, oscillating, driving, or vibratory methods unless methods are required or limited in the **contract plans**. Install temporary casing in advance of the excavation to the lower limits of the caving material.

Remove temporary casing while the concrete is still workable. As the casing is withdrawn, maintain a 1.5 m minimum head of fresh concrete in the casing so that all fluid trapped behind the casing is displaced upward without contaminating the shaft concrete. Extract the casing at a slow, uniform rate, with the pull in line with the axis of the casing.

Interim Casing Construction Method

Use this method at sites where the stability of the excavated hole and/or the effects of groundwater cannot be controlled by other means. Install interim casing using rotating, oscillating, driving, or vibratory methods unless methods are required or limited in the **contract plans**. If full penetration cannot be attained, the Contractor may either excavate material within the embedded portion of the casing, or excavate a pilot hole ahead of the casing until the casing reaches the desired penetration. Progress the pilot hole centered in the shaft, and no larger than one-half the diameter of the shaft.

Progress the interim casing so that the casing maintains intimate contact with the soil.

Permanent Casing Construction Method

This method generally consists of installing the permanent casing to a prescribed elevation prior to excavating. Install permanent casing using rotating, oscillating, driving, or vibratory methods unless methods are required or limited in the **contract plans**. If full penetration cannot be attained, the Contractor may either excavate material within the embedded portion of the casing, or excavate a pilot hole ahead of the casing until the casing reaches the desired penetration. Progress the pilot hole centered in the shaft, and no larger than one-half the diameter of the shaft.

Progress the permanent casing so that the casing maintains intimate contact with the soil.

Slurry

Pre-mix the slurry, and allow adequate time for hydration prior to introduction into the shaft excavation. Provide adequate slurry tanks when specified or required by the Engineer. Do not mix slurry in the hole for the drilled shaft. Slurry pits will not be allowed without written permission from the Engineer.

Provide adequate desanding equipment where required for slurry operations. Take appropriate steps to prevent slurry from “setting up” in the shaft excavation, such as agitation, circulation, and adjusting the properties of the slurry. Do not let the slurry sit unagitated for more than four (4) hours. If the slurry is in the hole, unagitated for more than four (4) hours, scape the sides to remove the filter cake before proceeding with the excavation.

Perform control tests on the slurry to determine density, viscosity, and pH before and during shaft excavation to establish a consistent working pattern.

Let the slurry sit for 30 minutes prior to placing the rebar cage and shaft concrete, to allow the excess sand to settle out. Remove any sand and spoil that has accumulated on the bottom.

Immediately prior to placing shaft concrete, take slurry samples from the bottom and 3 m from the bottom of the drilled shaft excavation using an approved slurry sampling tool. Remove any heavily contaminated slurry and spoil that has accumulated at the bottom of the shaft. Be sure the slurry is within the specification requirements immediately before concrete placement. If it is not, clean the hole and flush it with fresh slurry until subsequent tests reveal that the slurry is within the tolerances contained in this specification.

Excavation Inspection

Provide equipment for checking the dimensions and alignment of each shaft excavation. Determine the dimensions and alignment under the direction of the Engineer. Measure the final shaft depth after cleaning.

F. Rock Sockets

Progress rock sockets to the depth, diameter and elevations shown on the **contract plans**. If the top of socket elevation varies from that shown on the **contract plans** by more than 1 m, notify the Engineer who will contact the D.C.E.S. for a redesign.

G. Quality Assurance Equipment Installation

Install any quality assurance equipment prior to concreting the hole. This includes any pipes for crosshole sonic logging, and any other instrumentation.

H. Rebar and Concrete Placement, and Temporary Casing Removal

Place reinforcing and concrete within two (2) hours after the drilled shaft has been excavated, cleaned out, inspected, and accepted by the Engineer.

Completely assemble the reinforcing steel cage, including longitudinal bars, ties, cage stiffener bars, centralizers, concrete feet, and other necessary appurtenances.

Place and center the rebar cage in the hole for the drilled shaft prior to concreting the shaft. Install centralizers at the bottom and along the axial length of the steel reinforcing at sufficient spacing to maintain proper concrete cover (minimum 75 mm), but not at a spacing exceeding 3 m. Place approved cylindrical feet (bottom supports) at the bottom of the cage to ensure that the bottom of the cage is maintained at the proper distance above the base.

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Immediately prior to concreting, take depth measurements with a weighted tape. Clean out the hole if there is more than 10 mm of debris on the bottom for end-bearing shafts, and
50 mm of debris for side-friction shafts. The type of shaft will be shown on the **contract plans**. If drilling mud is being used to support the hole, perform slurry contamination tests in accordance with the American Petroleum Institute's (API's) test, Standard Procedure for Field Testing Drilling Fluids, API RP-13B. Adjust the slurry to meet contract specification requirements.

Check the elevation of the top of the rebar cage before and after placing the shaft concrete. If the rebar cage is not maintained within the specified tolerances, make corrections to the satisfaction of the Engineer. Do not construct additional shafts until the procedure has been modified, to the satisfaction of the Engineer.

For drilled shafts constructed using the Dry Construction Method, place concrete by tremie, pumping, or free-fall. When placing concrete by free-fall, direct the concrete so that it does not strike the sides of the excavation or the reinforcing cage.

For all other drilled shafts, place concrete in accordance with the requirements of Subsection 555-3.04 and 3.05, Structural Concrete, except place the concrete using the tremie method, by pumping, or by another method approved by the Engineer. Do not place concrete using free fall. Place concrete in one continuous operation to the top of the shaft.

For shafts less than 2.5 m in diameter, conduct operations so that the elapsed time from the beginning of concrete placement in the shaft to the completion of placement does not exceed two hours, unless an approved shaft concrete retarder is used. Proceed so that the concrete mix remains in a workable plastic state throughout the two hour placement limit.

When the top of shaft elevation is above ground, form the portion above ground with a removable form, or with permanent casing when **specified.**

Temporary casings which become bound during shaft construction and cannot be practically removed are unacceptable, unless the Contractor can prove to the Department's satisfaction that the casing will not adversely affect the performance of the drilled shaft. Submit a procedure for correcting this to the Engineer for approval before conducting further work on the shaft.

Do not conduct any construction operations which may cause soil movement immediately adjacent (within 1.5 m) to the drilled shaft for 24 hours after completing the shaft concrete pour.

Fill any voids between permanent or interim casing and the soil with concrete at least 48 hours after concreting the shaft.

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Pumped Concrete

Use Class GG concrete for pumped concrete applications. Concrete pumps and lines may be used for concrete placement in either wet or dry excavations. Provide pump lines with a minimum diameter of 100 mm, and constructed of watertight joints. Do not begin concrete placement until the pump line discharge orifice is at the shaft base elevation.

For wet excavations, use a plug or similar device to separate the concrete from the fluid in the hole until pumping begins. Remove the plug or similar device from the excavation.

Keep the discharge orifice at least 1.5 m below the surface of the fluid concrete. If it is necessary to lift the pump line during concreting, temporarily reduce the line pressure until the orifice has been repositioned at a higher level in the excavation.

If at any time during the concrete pour the pump line orifice is removed from the fluid concrete and discharges above the rising concrete level, the shaft will be considered defective. The Contractor must take appropriate and immediate action to correct the deficiency. *An example of such an action would be to recharge the pump line using a new plug, submerge the orifice below the contaminated concrete level and resume pumping, to displace the contaminated concrete. Another example would be to remove the rebar cage and concrete, complete any necessary sidewall removal directed by the Engineer, replace the rebar cage, and repour the shaft.* Perform the corrective action at no additional cost of the State.

I. Quality Assurance

Provide Quality Assurance as required on the **contract plans.**

In the event the Quality Assurance testing indicates voids or discontinuities in the concrete which, as determined by the D.C.E.S., indicate that the drilled shaft is not structurally adequate, submit a written proposal for correcting the deficiencies and steps to prevent them from recurring to the Engineer for approval by the D.C.E.S. Do not continue working on the drilled shaft in question, or any other drilled shaft, until the D.C.E.S. grants approval. Perform any additional QA verification work (such as full depth shaft coring) and/or corrective work necessary as a result of shaft defects at no additional cost to the State.

METHOD OF MEASUREMENT

The quantity to be paid for these items will be measured as follows:

Drilled Shafts and Drilled Shafts (Low Overhead Clearance) - The number of Linear meters of drilled shaft furnished, installed, and accepted, measured between the cut-off elevation and the tip elevation shown on the **contract plans** or as changed, in writing, by the Engineer.

Trial Shafts - Each trial shaft installed, and accepted.

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BASIS OF PAYMENT

The unit price for each item includes the cost of furnishing all labor, material, and any equipment necessary to complete the work not included in the Item for furnishing equipment for installing drilled shafts. This includes progressing the hole through all soil, rock, and obstructions, placing concrete and reinforcing steel in the drilled shaft, installing temporary, interim and/or permanent casing, and supplying the methods and equipment for drilled shaft inspection.

Note: nn denotes a serialized pay item. Refer to Subsection 101-53. The State will make payment for each specified diameter of drilled shaft.

Quality Assurance, including any load testing and non-destructive testing (i.e. crosshole sonic logging), will be paid for under separate items. There will be no payment for additional quality assurance testing (i.e. coring) that is required to verify or quantify anomalies detected by the initial QA testing.

There will be no extra payment for leaving bound temporary casing, deemed acceptable to the Engineer, in place.

Include the cost for furnishing equipment to install Trial Shafts in the Item for furnishing equipment for installing drilled shafts.

There will be no separate payment for equipment changes to install trial shafts and production drilled shafts.

ITEM 17554.20 M - TERRACED GEOCELL SYSTEM

DESCRIPTION

Provide and install geocells (three-dimensional cellular confinement units and infill) at the locations and within the limits shown on the plans.

MATERIALS

A. GEOCELLS

Provide certified tested geocells made of High Density Polyethylene (HDPE), of the size(s) and dimensions shown on the plans. Geocells will be perforated with the exception of the fascia, which will be solid and green in color. Acceptance will be based on meeting the following material properties:

Property	Test Method	Requirement
Thickness	ASTM D 5199	1.1 mm minimum
Cell Seam Peel Strength	Per U.S. Army Corps of Engineers Technical Report GL-86-19 Appendix A	10.0 N per mm of cell depth, minimum
Ultraviolet Stability	ASTM D 1603 or ASTM D 4218	1.5 % by weight carbon black minimum
Environmental Stress Crack Resistance	ASTM D 1693	2000 hrs minimum

B. INFILL

Provide infill material meeting the material requirements of Item 203.07 M, Select Granular Fill, with the added stipulation that the maximum particle size is 50 mm.

Where a vegetated face is called for, the outermost cells are to be filled with topsoil meeting the material requirements of §713-01.

C. ANCHORAGE PINS AND STAPLES

Provide anchorage pins and staples approved by the manufacturer.

CONSTRUCTION DETAILS

A. GENERAL

Store and protect geocells prior to installation, in accordance with the manufacturer's recommendations. For installation assistance and guidance at the start of construction, provide on-site representatives from the geocell supplier for a minimum of three days.

B. GEOCELL AND INFILL PLACEMENT

Expand, place and secure the geocell units in accordance with the manufacturer's recommendations, to the line, grade and orientation shown on the plans. Units are to be continuous in the dimension perpendicular to the wall face. Stagger overlying units by a minimum of one (1) meter so as to avoid continuous vertical joints between layers.

ITEM 17554.20 M - TERRACED GEOCELL SYSTEM

Use anchor pins, stretcher frames, or other means to hold the position of each unit prior to infilling, in accordance with the manufacturer's recommendations. Ensure that the geocell unit is uniformly expanded and is correctly aligned both vertically and horizontally. Interleaf and staple edge cells of adjacent sections ensuring that the top edges of the cells remain flush.

Infill the geocells in such a manner that no damage occurs. Overfill the geocells and level fill to approximately 25 mm above the top of the cell walls. Compact each lift of infill to 95% of Standard Proctor Maximum Density in accordance with the requirements contained in Subsection 302-3.12, Compaction. Screed off excess fill flush with the top of the cell walls. Correct any damage prior to placement of any overlying material at no cost to the State.

METHOD OF MEASUREMENT

The quantity to be paid for under this item is calculated by the number of vertical square meters of face area, satisfactorily installed, and computed between the payment lines shown on the plans or from payment lines established, in writing, by the Engineer prior to performing the work.

BASIS OF PAYMENT

The unit price bid for this item, includes the cost of furnishing all labor, equipment and materials including site preparation, geocells, infill, anchorage pins, staples, on-site supplier representation and incidentals necessary to satisfactorily complete the work as shown on the plans.

ITEM 17554.9610 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (PERMANENT)
ITEM 17554.9620 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (TEMPORARY)

DESCRIPTION

Provide and install a Geosynthetic Reinforced Earth System at the locations and within the limits shown on the plans.

MATERIALS

A. GEOSYNTHETIC REINFORCEMENT

1. Primary Reinforcement:

Provide certified tested geosynthetic meeting the long term design tensile strengths, T_D as shown on the plans and conforming to the following minimum testing criteria:

$$T_D = \frac{T_{ULT}}{RF}$$

Where:

T_D = Long Term Design Tensile Strength

T_{ULT} = Ultimate Tensile Strength Determined in the Primary Strength Direction in Accordance with ASTM D4595

RF = Total Reduction Factor = $RF_{CR} \times RF_{CD} \times RF_{DU}$

RF_{CR} = Reduction Factor For Creep Deformation for 100 Year Design Life Calculated in Accordance With Geosynthetic Research Institute Standard Practice GRI-GG4 using ASTM Standard Test Methods D5262 to determine long term strength, T_{LT} and D4595 to determine short term strength, T_{ST}.

RF_{CD} = Reduction Factor For Construction Damage Calculated in Accordance with Geosynthetic Research Institute Standard Practice GRI-GG4

The minimum tested RF_{CD} value permitted is 1.10.

RF_{DU} = Reduction Factor for Durability Determined in Accordance with EPA9090 and ASTM D4595

The minimum tested RF_{DU} value permitted is 1.10.

The minimum "RF" values permitted based on extrapolation of product specific test data are:

PERMANENT	TEMPORARY
RF = 3	RF = 2

ITEM 17554.9610 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (PERMANENT)
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When product specific test data are not available, use the following total reduction factors:

PERMANENT	TEMPORARY
RF =10	RF = 4

2. Secondary Reinforcement:
Provide certified tested geosynthetic meeting the ultimate tensile strength, $T_{ULT,}$ (in the direction perpendicular to the slope) shown on the plans.

B. BACKFILL

1. Type A
Provide backfill material, to the lines and grade shown on the plans, meeting the material requirements of Item 203.07 *Select Granular Fill*.

2. Type B
Provide backfill material to the lines and grade shown on the plans, meeting the following requirements:

a) Gradation

SIEVE SIZE	% PASSING
150 mm	100
425 μm	0-60
75 μm	0-40

b) The ratio of $\frac{\text{Percent Passing 75 } \mu\text{m sieve}}{\text{Percent Passing 425 } \mu\text{m sieve}} \times 100\%$ must be $\leq 70\%$

C. FACING

1. Welded Wire Form
Provide and install welded wire forms and wire struts as shown on the plans, and conforming to the material requirements of Subsection 709-02 *Wire Fabric for Concrete Reinforcement.*

2. Geotextile
Provide geotextile material as shown on the plans and conforming to Item 207.12 *Geotextile Drainage*.

ITEM 17554.9610 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (PERMANENT)
ITEM 17554.9620 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (TEMPORARY)

3. Non-Degradable Erosion Control Mat

Provide non-degradable erosion control mat meeting the following material properties:

Property	Test Method	Requirement
Color	N/A	Green
Minimum Tensile Strength (Machine / cross-machine direction)	ASTM D 1682	1575 N/m /525 N/m
Maximum Elongation (Machine / cross-machine direction)	ASTM D 1682	150% / 100%
Ultraviolet Stability	ASTM D 4355	80%

CONSTRUCTION DETAILS

A. GENERAL

1. ON-SITE REPRESENTATION - For installation assistance and guidance at the start of construction, provide on-site representatives from the geosynthetic and non-degradable erosion control mat suppliers for a minimum of three days.

2. STORAGE OF GEOSYNTHETIC AND NON-DEGRADABLE EROSION CONTROL MAT - Store and protect prior to installation, in accordance with the manufacturer's recommendations.

B. SITE PREPARATION

Prepare and compact the surface immediately beneath the bottom layer of primary geosynthetic reinforcement as shown on the plans or as directed by the Engineer.

C. GEOSYNTHETIC PLACEMENT

Place and secure the primary and secondary reinforcement in accordance with the manufacturer's recommendations, in continuous strips without joints, seams or connections, to the line, grade and orientation shown on the plans.

Place welded wire forms where required, as shown on the plans. Position and connect the welded wire forms to overlap 50 mm with adjacent forms and connect with wire ties. Place and wrap secondary reinforcement and geotextile facing to conform to the welded wire forms as shown on the plans. Where required, install wire struts as shown on the plans.

Place non-degradable erosion control mat where required, as shown on the plans and secure according to manufacturer's recommendations.

ITEM 17554.9610 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (PERMANENT)
ITEM 17554.9620 M - GEOSYNTHETIC REINFORCED EARTH SYSTEM (TEMPORARY)

D. BACKFILL PLACEMENT OVER GEOSYNTHETIC REINFORCEMENT

Replace any damaged geosynthetic prior to placement of any overlying material at no cost to the State. Place the backfill onto the geosynthetic reinforcement in such a manner that no damage occurs. The thickness of a compacted lift of backfill is not to exceed 0.3 m or the measured vertical distance between geosynthetic layers, whichever is less. Compact the backfill to a minimum of 95% of Standard Proctor Maximum Density in accordance with the requirements contained in Subsection 203-3.12, *Compaction*.

METHOD OF MEASUREMENT:

The quantity to be paid for under this item is calculated by the number of vertical square meters of face area computed between the payment lines shown on the plans or from payment lines established, in writing, by the Engineer prior to performing the work.

BASIS OF PAYMENT

The unit price bid for this item, includes the cost of furnishing all labor, equipment and materials including site preparation, backfill, geosynthetic reinforcement, geotextile, on-site supplier representation, welded wire forms, non-degradable erosion control mat and incidentals necessary to satisfactorily complete the work as shown on the plans.

ITEM 16555.9701 M - CONCRETE FOR STRUCTURES, CLASS HP (REINFORCEMENT INCLUDED AND NO BAR LIST IN PLANS)
ITEM 16555.9702 M - FOOTING CONCRETE, CLASS HP (REINFORCEMENT INCLUDED AND NO BAR LIST IN PLANS)

DESCRIPTION:

This work shall consist of furnishing and placing Class HP concrete for structures, including steel reinforcement as indicated in the contract documents or as directed by the Engineer.

MATERIALS:

All the material requirements of §555-2 and §556-2 shall apply. If specified in the contract documents, galvanized reinforcement shall meet the requirements of §709-11.

CONSTRUCTION DETAILS:

If placement details and bar lists are not included in the contract plans, then the following provisions apply:

1. At least thirty (30) days prior to fabrication of the reinforcement the Contractor shall submit a minimum of two copies of the bar lists and placement drawings showing the bar locations to the Engineer. The details of the bar list drawing and placement shall meet the requirements of the current edition of the Concrete Reinforcing Steel Institute's publication Reinforcing Bar Detailing. Placement drawings shall be size "B". Drawings and bar lists shall be clear and legible.

2. Requests for information or changes along with reasons shall be documented in a separate list.

3. The Engineer will transmit the documents to the designer for review for conformance with the design requirements and in accordance with §105-16. The designer will not check lengths, number of bars, weights or bar marks. Corrections will be returned to the Contractor. A review time of two days per placement drawing submitted with a minimum of 15 days for each submission will be allowed upon receipt of the submission. When the documents are satisfactory they will be returned to the Contractor stamped "Approved In Conformance With Design Requirements". The Contractor shall supply the Engineer with five (5) copies of the approved documents. No reinforcement shall be placed until copies of the approved documents are received by the Engineer.
4. Construction details for reinforcing steel shall meet the requirements of §556-3. The reinforcement shall be of the type indicated in the contract documents.

5. Partial submissions that require coordination with other drawings will not be accepted.

6. All the provisions of §555-3 shall apply.

METHOD OF MEASUREMENT:

All the provisions of §555-4 shall apply. Separate measurement of the bar reinforcement will not be made.

BASIS OF PAYMENT:

All the provisions of § 555-5 shall apply, except that bar reinforcement will be included. No separate payment will be made for reinforcement.

ITEM 18559.1896 M - PROTECTIVE SEALING OF STRUCTURAL CONCRETE ON NEW BRIDGE DECKS AND BRIDGE DECK OVERLAYS

DESCRIPTION. Under this work the Contractor shall furnish and apply, in accordance with this specification, a protective sealer to concrete surfaces, at locations indicated on the plans or where directed by the Engineer.

MATERIALS. The protective sealer used on new concrete bridge decks shall be one appearing on the Department's Approved List, which does not contain an aqueous solvent/carrier and shall meet the requirements of the following subsection:

717-03 - Penetrating Type Protective Sealers

CONSTRUCTION DETAILS.

A. General. The Contractor shall provide the Engineer with the sealer manufacturer's written instructions for application and use, at least five (5) working days before the start of work. Only one (1) brand and specific type of sealer will be allowed for use on each deck.

B. Surface Preparation. All concrete bridge decks shall air dry for twenty-four (24) hours after the time of completion of saw cut grooving. If the concrete is subjected to rain or moisture from other project operations, the drying period shall be extended twenty-four (24) hours from the time that the concrete has stopped being wetted. All required surface texturing, saw cut grooving, barriers, parapets, sidewalks and safetywalks shall be completed, before the surface is cleaned. After the drying period has ended, the concrete surface shall be cleaned by vacuum methods, to remove loose particles.

After cleaning, no laitance, standing water, oil, dirt or other foreign particles shall be present, which may prevent penetration of the sealer. All surface preparation work shall be completed and approved by the Engineer before sealer application can commence.

C. Weather Limitations. Sealer materials shall not be applied during wet weather conditions or when adverse weather conditions are anticipated within twelve (12) hours of the completion of sealer application. Ambient and surface temperatures, during application, and until the sealed concrete is dry to the touch, shall be a minimum of 5_ C. Application by spray methods will not be permitted during windy conditions, if in the opinion of the Engineer, unsatisfactory results will be obtained.

D. Sealer Application. The protective sealer shall be used as supplied by the Manufacturer without thinning or alteration. Equipment for sealer application shall be clean of foreign materials and approved by the Engineer before use. The sealer shall be applied by brushing, spraying or rolling, as recommended by the Manufacturer.

A minimum of two (2) coats of the sealer shall be applied to achieve uniform coverage. The total quantity of sealer applied by all coats shall be equal to the quantity required at the application rate specified in the Approved List. The second and each additional coat shall be applied perpendicular to the previous coat. Care shall be taken when applying

each coat, such that running or puddling does not occur. Each coat shall be allowed to dry for a minimum of two (2) hours before the next coat is applied. The final coat shall be allowed to dry according to the Manufacturer's instructions, before the removal of maintenance and protection of traffic.

METHOD OF MEASUREMENT. Payment will be made at the unit price bid per square meter for the number of square meters of concrete to be sealed, stated in the Estimate of Quantities shown on the Contract Plans. The figure shown in the Estimate of Quantities shall be used to compute payment.

BASIS OF PAYMENT. The unit price bid per square meter shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.

ITEM 25587.3920M -THRIE BEAM RAILING/CORRUGATED BEAM ROCK FENCE

1. DESCRIPTION:

1.01 Under this item the Contractor shall furnish and erect thrie beam railing/corrugated beam rock fence in areas as shown on the plans or as ordered by the Engineer.

2. MATERIALS:

2.01 Materials used for this work shall conform to the following requirements:

1. Thrie beam guide railing, corrugated beam and thrie beam back-up plates shall meet the requirements of Materials Specification Subsection 710-20.

2. All thrie beam sections shall be 10 gauge except the transition section which shall be 12 gauge.

3. Heavy posts and offset beams shall conform to the requirements of ASTM A36.

4. Bolts, nuts and washers shall conform to the requirements of ASTM 325.

5. All components of the railing, including nuts, bolts and washer shall be galvanized in accordance with Material Specification Subsection 719-01.

3. CONSTRUCTION DETAILS:

3.01 The thrie beam railing/corrugated beam rock fence, and post and rail transitions shall be erected in the position indicated on the plans and in a manner approved by the Engineer.

3.02 Posts shall be driven unless otherwise specified by the Engineer. The driving shall be accomplished with approved equipment and methods that will leave the posts in their final position, free of any distortion, burring or other damage. When posts are driven through asphalt concrete or a bituminous treated material, the Contractor shall take care to prevent damage to paved or treated areas. Large holes and voids caused by driving the posts shall be filled and compacted with a bituminous treated material of asphalt concrete similar to that damaged. The small area adjacent to the post disturbed during installation or where to the post disturbed during installation or where gaps exist at the post after pavement repairs shall be sealed with a bituminous material approved by the Engineer.

3.03 As an alternate to driving posts on unpaved medians and where site conditions are such that driving is not possible, the Contractor shall carefully excavate for all post holes. Post holes and post foundation structures shall be backfilled with backfill materials compacted in accordance with 203-3.15, Fill and Backfill at Structures, Culverts, Pipes, Conduits and Direct Burial Cables.

3.04 All posts shall be aligned to a tolerance of 6 millimeters for plumb and grade line.

4. METHOD OF MEASUREMENT:

4.01 The quantity of thrie beam guide railing/corrugated beam rock fence measured for payment will be the

number of meters measured along the axis of the railing between its extreme outer limits as shown on the plans and as directed by the Engineer.

ITEM 25587.3920M -THRIE BEAM RAILING/CORRUGATED BEAM ROCK FENCE

5. BASIS OF PAYMENT:

5.01 The price bid shall include the cost of all labor, materials and equipment including: field work necessary to adjust, set and shim posts and/or railing, repair galvanizing after tack welding, drilling, bolting or other operations that might damage the galvanizing; and all other incidental expenses necessary to complete the work.

ITEM 04603.9804 M - DUCTILE IRON SEWER PIPE & FITTINGS, 4 NPS
ITEM 04603.9806 M - DUCTILE IRON SEWER PIPE & FITTINGS, 6 NPS
ITEM 04603.9808 M - DUCTILE IRON SEWER PIPE & FITTINGS, 8 NPS
ITEM 04603.9810 M - DUCTILE IRON SEWER PIPE & FITTINGS, 10 NPS
ITEM 04603.9812 M - DUCTILE IRON SEWER PIPE & FITTINGS, 12 NPS
ITEM 04603.9814 M - DUCTILE IRON SEWER PIPE & FITTINGS, 14 NPS
ITEM 04603.9816 M - DUCTILE IRON SEWER PIPE & FITTINGS, 16 NPS
ITEM 04603.9818 M - DUCTILE IRON SEWER PIPE & FITTINGS, 18 NPS
ITEM 04603.9820 M - DUCTILE IRON SEWER PIPE & FITTINGS, 20 NPS
ITEM 04603.9824 M - DUCTILE IRON SEWER PIPE & FITTINGS, 24 NPS
ITEM 04603.9830 M - DUCTILE IRON SEWER PIPE & FITTINGS, 30 NPS
ITEM 04603.9836 M - DUCTILE IRON SEWER PIPE & FITTINGS, 36 NPS
ITEM 04603.9842 M - DUCTILE IRON SEWER PIPE & FITTINGS, 42 NPS

DESCRIPTION: Under this item, the Contractor shall furnish and install cement lined, ductile iron sewer pipe and fittings and make all necessary connections to new and existing mains in accordance with the specification, as shown on the plans or as directed by the Engineer.

MATERIALS: As specified in the contract documents.

CONSTRUCTION DETAILS: As specified in the contract documents.

METHOD OF MEASUREMENT: The quantity will be measured as the number of meters of new sewer pipe (including all necessary connections and fittings) furnished and installed in accordance with the plans, specifications and as directed by the Engineer.

BASIS OF PAYMENT: The unit price bid shall include the cost of furnishing all labor, materials and equipment necessary to complete the work including, but not limited to; fittings, plugs, connections, and leakage tests..

Excavation, backfill, sheeting and specials will be paid for under their respective items.

Progress payments will be made at the unit price bid for 80 percent of the quantity of pipe installed. The remaining 20 percent will be paid for when the testing of the system has been completed.

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ITEM 604.5102nn15 - STORMWATER TREATMENT SYSTEM (SWTS)

DESCRIPTION:

This work shall consist of designing, furnishing and installing a Stormwater Treatment System (SWTS) in accordance with this specification, as shown in the contract documents and as directed by the Engineer. The system shall also be routinely inspected, cleaned, and maintained for the duration of the contract.

MATERIALS:

All precast concrete elements shall meet the requirements of Section 704-03 - *Precast Concrete - General,* of the Standard Specifications except the concrete shall have a minimum compressive strength of 35 Mpa at 28 days, unless otherwise noted on the approved fabrication drawing. Precast units shall be fabricated at facilities approved by the Department.

Manhole frames and covers shall comply with the requirements of Section 655 – *Frames, Grates and Covers*.

The stormwater treatment system components, inserted or cast into precast concrete units, shall be one of the following:

Vortechs™ as manufactured by	Vortechnics, Inc. 41 Evergreen Drive Portland, ME 04103 Phone (207) 855-9830
Downstream Defender™ as manufactured by	Hydro International 94 Hutchins Drive Portland, ME 04102 Phone (207) 756-6212
Stormvault™ as manufactured by	Jensen Precast 625 Bergin Way Sparks, NV 89431 Phone (800) 648-1134

The contractor shall provide the manufacturer's standard sheets, installation details, and operations and maintenance manuals to the Engineer ten days prior to the installation. Units shall be designed to withstand an MS-18 highway loading. Design calculations and fabricator working drawings shall be stamped by a Professional Engineer licensed and registered to practice in New York State. Fabricator working drawings, prepared in accordance with the requirements of Section 704-03, *Precast Concrete - General,* of the Standard Specifications, shall be supplied to the Materials Bureau for approval prior to fabrication of the precast concrete units. The structure(s) must meet the following performance specifications: (1) the manufacturer must document a sediment removal efficiency of 80% for all particles entering the structure (as determined by third party independent scientific study) at the flow rate associated with the Water Quality Volume as indicated in the contract documents; (2) the manufacturer shall determine the rise in Hydraulic Grade Line (HGL) of the drainage system upstream of the SWTS. This shall consist of a stage-discharge table indicating the water surface elevation at the entrance of the SWTS for the full range of flows that may pass through the system. Documentation of these performance standards must be submitted to the Engineer.

ITEM 604.5102nn15 - STORMWATER TREATMENT SYSTEM (SWTS)

Sizing of the unit shall be determined by the manufacturer based on the maximum flow rate through the structure (i.e. the flow associated with water quality volume for 10-year, 24-hour storm event) as indicated in the contract documents and shown in Table 1. If units can not pass the 10-year, 24-hour storm event, the SWTS shall be installed off of the main drainage system (off-line installation). The configuration of the unit with respect to the drainage system (on-line vs. off-line) shall be as shown in the contract documents. Inlet, bypass, and outlet pipe diameters will be as required by the manufacturer and/or as indicated on the plans. All pipe sizes and invert elevations determined by the manufacturer shall be verified by the contractor prior to installation of pipes at the unit.

Table 1

Item Number	Maximum Flow Capacity (cfs)/(l/s)
604.51020115	**1.6 (45)**
604. 51020215	**2.8 (80)**
604. 51020315	**4.5 (125)**
604. 51020415	**6.0 (170)**
604. 51020515	**8.5 (240)**
604. 51020615	**11.0 (315)**
604. 51020715	**14.0 (400)**
604. 51020815	**17.5 (495)**
604. 51020915	**25.0 (710)**

CONSTRUCTION DETAILS:

The contractor shall follow the procedures established by the manufacturer for installation and field testing.

The contractor shall be responsible for cleaning the system when needed, maintaining performance / efficiency, and keeping a record of maintenance inspections for the duration of the contract. If the system is not functioning as outlined in the Operation and Maintenance Manual for the system, then the contractor, with the Engineer's approval, shall take the necessary steps to diagnose and correct problems at no additional cost to the State.

Final approval of the installation will be made by the Engineer verifying that the system has been installed, field tested and functioning as outlined in the Operation & Maintenance Manual for the system.

METHOD OF MEASUREMENT:

This work will be measured as the number of Stormwater Treatment Systems installed in accordance with this specification, and approved by the Engineer.

BASIS OF PAYMENT:

ITEM 604.5102nn15 - STORMWATER TREATMENT SYSTEM (SWTS)

The unit price bid for each Stormwater Treatment System shall include the cost of all labor, materials, equipment necessary to complete the work, including manhole frames and covers; all necessary excavation, backfill, sheeting; and necessary maintenance for the duration of the contract.

The cost of the outlet/inlet pipes will be paid for under their respective items.

Seventy-five percent of the price bid for this item will be paid upon satisfactory installation of the SWTS units. The remaining percentage will be paid after the SWTS is satisfactorily cleaned at the completion of the contract.

ITEM 605.0902--08 M - UNDERDRAIN FILTER TYPE 1 (MODIFIED)

All specification requirements for Item 605.0901 M shall apply with the following modifications:

1. The use of crushed gravel or screen gravel as stated in Subsection 605-2.02A Granular Filter Materials will not be allowed.

2. METHOD OF MEASUREMENT

   A deduction shall be made for pipes (based on nominal diameters) and other payment items, when the combined cross-sectional area exceeds 0.1 square meter unless otherwise shown on the plans. No deduction will be made for the cross sectional area of an existing facility.

ITEM 605.99 17 – UNDERDRAIN VIDEO INSPECTION

DESCRIPTION

The work consists of inspecting the interior of underdrain pipe having a nominal inside diameter of 100 mm or 150 mm at locations directed by the Engineer, and furnishing a video record of the inspection.

MATERIALS

None specified.

CONSTRUCTION DETAILS

A. Equipment Description.

1. Video Inspection/Recording Equipment. Furnish video inspection/recording equipment that is specifically designed for continuous viewing and recording of images of the interior walls of pipes and fittings having a nominal inside diameter of 100 mm or 150 mm and capable of providing a true-color image of the entire pipe periphery. Additional requirements:
    - i. a camera with a minimum horizontal resolution of 400 television lines, as determined from manufacturer's specifications.
    - ii. a Super VHS or Hi8 video cassette recorder.
    - iii. a centering device to keep the camera centered in the pipe during inspection.
    - iv. a camera/lighthead/push rod system capable of extending 120 meters into the pipe and negotiating 100 mm or 150 mm "T" pipe connections.
    - v. an electronic distance counter capable of measuring the amount of rod dispensed within plus or minus 0.5 meters per 120 meters.
    - vi. the capability of displaying the amount of rod dispensed and a minimum of 30 alpha-numeric text characters across by 10 lines down on the video record.
    - vii. audio input.

2. Video Cassettes. Furnish new, high grade video cassettes for all original recordings and copies of original recordings.

3. Power Source. Furnish an appropriate power source to operate all inspection equipment.

B. Inspection Procedure. All paving must be completed in the inspection area, prior to inspecting.

Inspect at each location in accordance with the following procedure:

01/14/99
09/12/02
09/01/05

ITEM 605.99 17 – UNDERDRAIN VIDEO INSPECTION

1. Record a title screen for between 25 to 35 seconds, consisting of the route number, town, county, contract number, date of inspection, and station and offset of point of entry.
2. Insert the camera 2 meters into the pipe outlet, adjust the contrast and clarity of the video image, and set the electronic distance counter to zero.
3. Display the route number, date of inspection, station and offset of point of entry, and amount of rod dispensed at locations on the video that do not interfere with the observation of pipe distress.
4. Begin recording with the video cassette recorder in SP mode.
5. Advance the camera through the pipe at a maximum rate of 5 meters per minute, maintaining proper image contrast and clarity.
6. Audibly document any problems incurred conducting the inspection. Document observed pipe distress as outlined in step 7 below.
7. In areas where obstructions, rips, separations, crushed sections, or improper connections are observed, do the following:
    i. stop advancing the camera;
    ii. adjust the camera to provide a clear image of the distressed area(s);
    iii. audibly document the location, type, severity, and extent of each distress.
8. Repeat steps 5 through 7 until either there is refusal to further movement, the end of the pipe segment is reached, or for a maximum inspection length of 120 meters.
9. Stop recording and retract the camera.
10. Provide the Engineer with the original video recording in Super VHS or Hi8 format and a transmittal letter within 48 hours after the completion of the inspection.

Recording of inspection runs at multiple locations on a single video cassette is permitted, provided that each run is totally contained on the video cassette.

METHOD OF MEASUREMENT

The quantity of video inspection to be paid is the number of linear meters of underdrain recorded, as determined from the electronic distance counter, and accepted by the Engineer.

BASIS OF PAYMENT

Include in the unit price bid per linear meter the cost of furnishing all labor materials and equipment necessary to satisfactorily complete the inspection, and to provide the original video record and a copy of the original video record.

01/14/99
09/12/02
09/01/05

ITEM 11606.90 - CONCRETE MEDIAN BARRIER TRANSITION (CAST IN PLACE)

DESCRIPTION :

This work shall consist of the replacement of the concrete median barrier removed for the construction of overhead sign structure as shown on the plans.

MATERIALS:

Materials shall conform to the applicable provisions of Section 606-2.
Premoulded Resilient Joint Filler shall conform to Section 705-07.

CONSTRUCTION DETAILS:

Construction details shall conform to the applicable provisions of Section 606-3.

METHOD OF MEASUREMENT:

The quantity of concrete median barrier transition measured for payment will be the number of meters placed in accordance with the plans and specifications, measured along the axis of the barrier and between its extreme outer limits.

BASIS OF PAYMENT:

The unit price bid per meter for the above work shall include the cost of all labor, equipment and material necessary to complete the work, including the cost of premoulded joint filler and any repairs required to the existing barrier.

Payment will be made under:

Item No.	Item	Pay Unit
11606.90	Concrete Median Barrier Transition(Cast in Place)	Meter

ITEM 16607.0640 M - PEDESTRIAN FENCING FOR BRIDGES
ITEM 16607.0641 M - SNOW FENCING FOR BRIDGES

DESCRIPTION:
The work shall consist of furnishing and installing fencing including all hardware and construction systems necessary to complete the work. Fencing shall be installed according to the details and at the locations indicated on the Contract Plans.

MATERIALS:
Materials used for this work shall conform to the following requirements:

PART	REQUIREMENTS
Vinyl Coated Steel Fence Fabric	710-03
Steel Fence Fabric (Aluminum Coated)	710-04
Posts, Rails, Braces, and Fittings	710-10.3
Plastic Coated Posts, Rails, Braces, and Fittings	710-12
Angles and Plates	ASTM A 36M
Steel "T" and Wide Flange Sections	ASTM A 36M
U-Bolts	ASTM A307
Nuts and Bolts	ASTM A307 and ASTM A325M
Pipe Supports	ASTM A 53
Anchor Bolts	ASTM A449

All uncoated steel shall be galvanized unless otherwise indicated on the Contract Plans or in the Proposal. Unless otherwise specified, galvanizing shall be in accordance with the requirements of Subsection 719-01, type as applicable. The type and size of fence fabric, posts, rails, braces, and fittings will be designated on the Contract Plans or in the Proposal.

Top and bottom edges of the fence fabric shall be "knuckled" (wire ends bent back upon themselves to eliminate sharp wire ends).

Unless otherwise noted on the Plans:

1. Posts shall be a nominal 64 mm dia. (73 mm O.D.). Minimum weight per 305 mm shall be 2.61 kg for Schedule 40 Pipe and 2.10 kg for Class B Steel Tubing.

2. Top and Bottom rails shall be a nominal 32 mm dia. (42 mm O.D.). Minimum weight per 305 mm shall be 1.03 kg for Schedule 40 Pipe and .59 kg for Class B Steel Tubing.

3. Pipe supports shall be 38 mm nominal dia. Schedule 80 Pipe.

CONSTRUCTION DETAILS:
Fence fabric shall be firmly attached to the posts, rails, and braces. All fencing shall be stretched taut.

The posts shall be fastened to the structure in accordance with the details indicated on the Contract Plans. Posts shall be set so that straight sections are truly vertical.

ITEM 16607.0640 M - PEDESTRIAN FENCING FOR BRIDGES
ITEM 16607.0641 M - SNOW FENCING FOR BRIDGES

All the top rails shall pass through the base of the post caps. Both the top and bottom rails shall provide continuous support for the fencing from end-to end of the fence fabric. Sections of both rails shall be joined with sleeve couplings. At expansion joints in the structure, expansion sleeves shall be used. Top rails shall be securely fastened to terminal posts by means of rail end connectors approved by the Engineer.

Horizontal braces shall be provided at all terminal posts, midway between the top and bottom rails, and shall extend from the terminal post to the first adjacent intermediate post. Braces shall be securely fastened to the intermediate posts by brace ends and brace bands. Braces shall be securely fastened to the terminal posts by rail end connectors, approved by the Engineer. Braces shall be made from the same material as the top and bottom rails.

All welding shall meet the requirements of the New York State Steel Construction Manual.

Field welding shall be allowed only where indicated on the Contract Plans, or where ordered by the Engineer. Remove galvanizing in the area of the weld, prior to welding.

All finished surfaces of welds, and surfaces from which the galvanizing has been removed, shall be repaired in accordance with the requirements of Subsection 719-01. All galvanizing repair shall be done at no additional cost.

Unless otherwise noted on the plans:

1. The fabric shall be securely fastened to all terminal posts by 25 mm x 19 mm tension bars with 11 gauge pressed steel bands spaced approximately 300 mm apart.

2. Fabric shall be attached to top and bottom rails with 6 gauge tie wires at 600 mm centers.

3. The fabric shall be securely fastened to all vertical posts by 6 gauge aluminum ties at 300 mm centers.

4. Whenever fencing is cut to fit, the exposed ends, shall be coated as dictated by galvanizing repair procedures in subsection 719-01 of the standard specifications.

METHOD OF MEASUREMENT:

Measurement will be taken as the number of linear meters of fencing installed.
Measurement will be taken along the bottom of the bottom rail, center-to-center of terminal posts.

BASIS OF PAYMENT:

The unit price bid per linear meter shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work.

ITEM 10607.9110 M - DECORATIVE PROTECTIVE FENCE

DESCRIPTION

The work shall consist of furnishing and installing a decorative steel protective fence as shown on the Contract Plans, as ordered by the Engineer and as herein specified.

MATERIALS

All posts, pickets, and rail bars shall be steel conforming to A.I.S.I. Specifications C1015. Sizes shall be as shown on the Contract Plans.

Clip bars shall be steel conforming to ASTM A36 M. Sizes shall be as shown on the Contract Plans.

Bolts, nuts and washers shall conform to the requirements of ASTM A307. Sizes shall be as shown on the Contract Plans.

Shim plates shall be steel conforming to ASTM A36 M.

Grout for setting of fence posts shall conform to the requirements of 701-05.

All components of the decorative protective fence shall be coated with paint conforming to the requirements of the special note "Preparation and Painting of Steel Surfaces" found in the proposal. The color of the finish coat shall be as shown on the plans.

CONSTRUCTION DETAILS

Contractor shall submit shop drawings for all fabricated components of fence in accordance with Section 202 of the New York State Steel Construction Manual. Shop drawings shall show dimensions of all panels, slope angles, post locations and welds.

Posts shall be fabricated with steel clip bars welded on. All welding shall be performed in accordance with the New York State Steel Construction Manual. All welds shall be ground smooth to a neat finish.

Rails and pickets shall be formed into panels of the shapes and sizes shown on the Contract Plans. Rails and pickets shall be pre-cut to the specified lengths. Rails shall be pre-punched to accept pickets for fillet welding. Curved pickets shall be bent prior to assembly in rails.

Bolted connections shall be as shown on the Contract Plans.

Pickets and posts in all cases shall be set truly vertical. Rails shall be parallel to roadway profile as shown on the plans.

Posts shall be set in holes cored in dimension stone coping and sleeved in concrete parapet. Size

ITEM 10607.9110 M - DECORATIVE PROTECTIVE FENCE

of holes shall be as shown on the plans. Cored holes shall be thoroughly cleaned prior to setting fence posts using compressed air or other methods approved by the Engineer.

After the posts have been set in place and supported to hold them to the proper line and grade, the annular space shall be filled with grout. The top of the grout shall be sloped away from the post to provide positive drainage. Grouting shall not be performed when the temperature is less than 7ºC.

Any fence post or panel not set plumb and true to line and grade shall be removed and reset at the Contractor's expense. The Contractor shall be responsible for maintaining the protective fence over the life of the Contract and shall repair, replace or touch-up painted members that are damaged.

The fence shall be prepared and painted in accordance with the special note, "Preparation and Painting of Steel Surfaces." Primer and intermediate coats of paint shall be shop applied. Finish coat of paint shall be field applied. Prior to applying finish coat, the entire fence shall be thoroughly cleaned in accordance with the requirements of SSPC-SP1 (Solvent Cleaning) as described by the Steel Structures Painting Council.

METHOD OF MEASUREMENT

This work will be measured by the number of linear meters of protective fence measured along the top of fence, center to center of end posts, properly furnished and installed in accordance with the Contract Plans and specifications.

BASIS OF PAYMENT

The unit price bid per meter for this item shall include the cost of furnishing all labor, materials, and equipment to complete the work. The unit price bid shall include the cost of coring holes in the dimension stone coping. No payment will be made for any repair work necessitated by damage or defacement caused by the Contractor's operations.

ITEM 08607.96 M - REMOVE AND DISPOSE OF EXISTING FENCE

DESCRIPTION:

The contractor shall remove existing fence in accordance with the plans, specifications and directions of the Engineer. All references to "fencing" shall include existing gates, if any to be removed.

MATERIALS:

Materials needed for modifying end sections shall conform to the requirements of Section 710 of the Standard Specifications or shall conform to the material requirements of the existing fence, as directed by the Engineer.

Concrete for footings shall conform to Section 607-2.01 of the Standard Specifications.

CONSTRUCTION DETAILS:

The contractor shall remove and dispose of the existing fence to a point shown on the plans or where directed by the Engineer. If a portion of the existing fence is to remain, the remaining end section shall be modified to adequately secure the fencing. This modified section shall include all hardware necessary to secure the fencing in a manner similar to the existing end section or as directed by the Engineer. Parts salvaged from the removed portion, acceptable to the Engineer, may be reused in the end section.

All work shall be done in a workmanlike manner with care taken not to disturb the surrounding area or existing fence to remain. Any damage to the area or existing fence to remain caused by the contractor's operations shall be repaired to the original condition at no expense to the state. Any concrete post footings shall be either broken up and removed or removed in one piece as determined by the contractor and approved by the Engineer. All post holes shall be filled to meet existing grade. All excavation and backfill shall conform to Section 203 "Excavation and Embankment".

METHOD OF MEASUREMENT:

This work will be measured as the number of meters of fence removed in accordance with the plans or as directed by the Engineer. An additional 3 meter allowance will be paid for each end section modified to secure the remaining fence.

BASIS OF PAYMENT:

The unit price bid shall include the cost of all labor, equipment and materials necessary to complete the work, including the cost of any fill required to fill the post holes.

ITEM 08609.06 M - CURB REMOVAL

DESCRIPTION:

Under this item the contractor shall remove and dispose of various types of existing curb where indicated on the plans or where directed by the Engineer.

MATERIAL:

Not specified.

CONSTRUCTION DETAILS:

The existing curbs shall be removed and disposed of in a neat and workmanlike manner.

The existing curbs to be removed are adjacent to existing pavements that are to remain, the contractor shall exercise extreme care during their removal so as not to damage the existing adjacent facilities in any way. In the event that such damage does occur as a direct result of the contractor's curb removal operation, repairs shall be made by the contractor to these existing facilities at no cost to the State and in a manner satisfactory to the Engineer.

Existing longitudinal tie bars are to be removed and disposed of in areas where new construction abuts the existing pavements that are to remain.

METHOD OF MEASUREMENT:

This work will be measured as the number of meters of existing curbs removed and disposed of, measured along their center line and within the limits indicated on the plans or where directed by the Engineer.

BASIS OF PAYMENT:

The unit price bid per meter shall include the cost of all labor and equipment necessary to complete the work, including the removal and disposing of the existing longitudinal tie bars.

ITEM 24615.0301 M - VEGETATION CONTROL MATTING (25 mm THICKNESS)
ITEM 24615.0302 M - VEGETATION CONTROL MATTING (12.5 mm THICKNESS)

DESCRIPTION. This work shall consist of furnishing and placing recycled rubber vegetation control matting in lines of guide rail and/or at sign posts and delineator posts in the lengths, widths, thicknesses, shapes and locations shown in the Contract documents or as directed by the Engineer.

MATERIALS. The Recycled Rubber Vegetation Control Matting shall be manufactured of recycled shredded rubber that is primarily derived from used tires. The matting shall be formed by compressing a mixture of shredded rubber and a permanent bonding agent that has been formulated to resist degradation. The resulting vegetation control matting shall be approximately 12.5 mm thick or 25 mm thick as specified in the Contract documents and shall be of sufficient mass to resist displacement by mowing machines and other routine maintenance traffic. The color of the vegetation control matting shall be the manufacturer's standard brown color unless otherwise specified in the contract documents or approved by the Engineer. The vegetation control matting shall be approved by the Engineer prior to installation.

CONSTRUCTION DETAILS.

1. Ground Preparation and Installation. Areas to receive vegetation control matting shall be shaped, graded and compacted to the lines and grades shown on the contract documents or as directed by the Engineer. All stones, clods, or other undesirable material over 25 mm in the greatest dimension shall be removed and disposed of as approved.

Vegetation control matting of the thickness specified in the contract documents shall be placed on the freshly prepared ground surface in accordance with the manufacturer's instructions. The matting shall be placed in contact with the soil at all points and shall be even with the surrounding prepared ground surfaces. The placed matting shall be rolled or tamped firmly onto the soil surface.

2. Care and Repair During Construction. If the recycled rubber vegetation control matting is installed prior to installing the guide rails, sign posts or delineator posts, the Contractor shall care for the areas of recycled rubber vegetation control matting until the guide rail or sign/delineator post installation is completed. Such care shall consist of providing approved warning signs or barricades for protection against traffic or other activities. Any surfaces and/or vegetation control matting that have become settled or otherwise damaged by traffic, the Contractor's operations or other causes shall be repaired or replaced at the Contractor's expense.

METHOD OF MEASUREMENT. Recycled rubber vegetation control matting will be measured as the number of square meters of surface area that have been acceptably completed.

BASIS OF PAYMENT. The unit price bid per square meter shall include the cost of all labor, equipment and materials, including necessary excavation, grading, equipment and incidentals necessary to acceptably complete the work as specified.

ITEM 619.9002 08 – TOW TRUCK SERVICE

DESCRIPTION:

Under this item the Contractor shall provide tow truck service for all disabled vehicles within the contract limits that affect the flow of traffic from Monday through Friday during the morning and afternoon "peak" periods. There will be two (2) "peak" periods per day and their times will be determined by the Engineer. Each "peak" period will be three (3) hours in duration. The tow service availability on holidays and/or days other than those detailed above will be as ordered by the Engineer. The intent is to remove the disabled vehicle off the traveled way to a location approved by the Engineer as quickly as possible.

MATERIALS:

The Contractor shall provide tow trucks, with at least one tow truck capable of handling a gross weight of 8165 kilograms. Each truck shall be equipped with an amber cab mounted flashing light, two-way radio, tow rig, cushioned bumper, and rear pintle hooks.

CONSTRUCTION DETAILS:

Towing shall be provided to remove disabled vehicles from the traveled way to another location within the contract limits. Once the tow is initiated, the vehicle will be the Contractor's responsibility (including security) until the rightful owner or police remove the vehicle from the Contractor's control. All of this service shall be provided at no charge to the owner and/or operators of the disabled vehicles. Any additional towing to an off-site location shall be by private or other towing services, as may be arranged by the police or the motorist.

The tow truck shall be stationed within the contract limits during the required time periods at a location approved by the Engineer. The tow truck will be called to the scene by the Contractor or the Engineer. The tow truck must respond and arrive at the scene of the disabled vehicle no later than ten (10) minutes after receipt of the call. The Contractor must provide ten (10) minute response service even though there may be simultaneous multiple disabled vehicles at different locations within the limits of the contract. If the Contractor fails to meet the above requirements for response service to the satisfaction of the Engineer, payment for one day of service will be deducted from the Contractor for each day the response service requirement is not met. In the case of vehicular accidents, the tow truck, in some instances, may not be allowed to remove the disabled vehicle or vehicles until authorized by the police.

The Contractor shall provide the tow truck with a two way radio capable of receiving the radio frequency to be used by the Engineer or his/her designated representative.

METHOD OF MEASUREMENT:

The services will be measured by the number of days that the tow truck service is provided for two (2) "peak" periods minus any deductions for response service failures as detailed above. Tow truck service shall commence at the time of the first major change in traffic by construction activities as determined by the Engineer, and continue until determined by the Engineer to be no longer necessary.

BASIS OF PAYMENT:

The unit price bid per day shall include all labor, materials, tools, equipment, insurance, and other incidental expenses necessary to provide the tow truck service to the satisfaction of the Engineer.

ITEM 623.12----08 M - CRUSHED STONE (IN PLACE MEASURE) MODIFIED

All specification requirements for Item 623.12 M shall apply except for the following additions:

MATERIALS:

1) Material supplied shall meet the requirements of Concrete Aggregate Type CA 2 as shown on Table 501-2 of the Standard Specifications.

2) Material shall be stockpiled, sampled and tested in conformance with the procedures contained in the appropriate Departmental publications which are current on the date of advertisement for bids. On contracts containing less than 75 cubic meters in total quantity, the stockpiling requirement may be waived by the Regional Geotechnical Engineer.

METHOD OF MEASUREMENT:

A deduction shall be made for pipes (based on nominal diameters) and other payment items, when the combined cross-sectional area exceeds 0.1 square meter, unless otherwise shown on the plans. No deduction will be made for the cross sectional area of an existing facility.

ITEM 08633.0504 M - CLEAN AND FILL JOINTS AND CRACKS IN ASPHALT CONCRETE PAVEMENT, AND ASPHALT OVERLAY ON CONCRETE PAVEMENT

DESCRIPTION:

This work shall consist of cleaning and filling joints and cracks in the existing pavement prior to the application of a new course.

MATERIALS:

Materials will conform to the following subsections of the Standard Specifications:

Plant Mix Pavements	401
Bituminous Materials	702
Fine Aggregate	703-01
Mineral Filler	703-08

CONSTRUCTION DETAILS:

Clean all packed dirt, vegetation and extraneous materials from all unsealed and inadequately sealed joints and cracks greater than 10 mm in width to a depth equal to a minimum of twice the width of the joint or crack. With existing asphalt overlays, the material shall be removed to the full depth of the overlay if the overlay depth is less than twice the width of the crack. This includes loose pieces of asphalt between secondary cracks. All spalls and potholes shall be cleaned to sound Asphalt Concrete or Portland Cement Concrete. This work shall be done prior to shimming wheel ruts and/or T&L.

Keep joints, cracks, spalls, and potholes clean until the filling and paving operations are completed.

Complete all stress relieving pavement repairs, transverse joint repairs, and/or blowup repairs, prior to beginning this work.

Fill all cleaned joints, cracks, spalls, and potholes with asphalt concrete meeting the requirements of Item 402.058901 M, Shim Course F9, Hot Mix Asphalt.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis for work satisfactorily completed in a manner approved by the Engineer.

BASIS OF PAYMENT:

Payment includes the cost of all labor, materials, and equipment necessary to complete the work.

ITEM 634.9901 17 – BUILDING CONDITION SURVEY
ITEM 634.9902 17 – VIBRATION MONITORING (NONBLASTING)

DESCRIPTION

A. Building Condition Survey:
This work shall consist of performing a building condition survey(s) and preparing permanent records as indicated in the contract documents prior to the commencement of work, after completion of work, and at locations and times during construction as directed by the Engineer.

B. Vibration Monitoring (Nonblasting):
This work shall consist of performing vibration monitoring of background and construction activities and preparing daily and summary report(s) of vibration readings.

MATERIALS

A. Building Condition Survey:
Provide general photography and video equipment, analog or digital, capable of superimposing the date and time on all images.

B. Vibration Monitoring (Nonblasting):
Provide a 3-component seismograph, capable of measuring particle velocity data in three mutually perpendicular directions. Annual factory calibration is required throughout the duration of the work.

CONSTRUCTION DETAILS

The Contractor shall engage the services of a firm capable of furnishing a New York State licensed Professional Engineer to conduct a condition survey of the existing building(s) indicated in the contract documents in the Special Note entitled Vibration Criteria and an experienced vibration monitoring Consultant to measure peak particle velocities prior to, and during, construction operations. Submit as proof to the Deputy Chief Engineer (Technical Services) the experience and qualifications of the firm's personnel conducting the work.

A. Building Condition Survey:
Provide, as a minimum, the following information:

1. Photographic and videotape documentation of the interior and exterior condition of the building(s).
2. Extent and location of existing signs of building distress such as cracks, spalling, signs of settlement, flooding, leaking, etc.

The Engineer may accompany the Contractor on each building condition survey for verification of the data recorded. Provide two copies of all documentation of each building condition survey to the Engineer.

B. Vibration Monitoring (Nonblasting):
The Deputy Chief Engineer (Technical Services) may waive the requirements of vibration monitoring based on the results of the building condition survey.

ITEM 634.9901 17 – BUILDING CONDITION SURVEY
ITEM 634.9902 17 – VIBRATION MONITORING (NONBLASTING)

Perform continuous vibration monitoring during construction operations when adjacent construction activities make monitoring prudent. The Contractor shall perform the work in a manner that will limit construction vibration at the specified locations to within the limits set within the contract documents.

Submittal of Written Vibration Monitoring Plan:
Prior to performing work adjacent to specified locations, a written Vibration Monitoring Plan prepared by the Contractor shall be submitted to the Engineer a minimum of 10 work days in advance for approval. The Engineer will send a copy of the Vibration Monitoring Plan to the Geotechnical Engineering Bureau, Engineering Geology Section for review and written comment. The vibration monitoring plan may be returned to the Contractor for revision or clarification.

The vibration monitoring plan shall include the necessary information to outline the recording collection. The vibration monitoring plan shall include, but not be limited to, the following items:

1. Contract Designations
- The name of vibration monitoring specialist(s).
- The scheduled start date and length of construction operations which require vibration monitoring.
- The limits of vibration monitoring work, including sites on or off State-owned right-of-way.
- The location of all structures to be monitored in proximity to the construction operation.
- The location of any underground utilities in proximity to the construction operation.

2. Experience and Equipment
- Submit proof and details, as references, of two projects in the past five years where the vibration monitoring consultant performing the work has satisfactorily monitored construction operations by recording maximum peak particle velocities (PPVs). Include contact information for each reference.
- Submit information on the required 3-component seismograph, capable of measuring particle velocity data in three mutually perpendicular directions, including: the manufacturer's name, model number, and documentation of factory calibration performed within the last 12 months.

3. Methods and Procedures
- The location of adjacent structures to be monitored and maximum allowable PPVs as indicated in the contract documents. If not otherwise specified, a maximum allowable PPV in accordance with the United States Bureau of Mines (USBM) Vibration Criteria (Figure 1) shall be observed at all structures.
- The location of seismograph(s) placements, as directed by the Contractor's Professional Engineer. Recording seismographs may be installed on selected structures.
- Appropriate details for anchoring the geophone(s).
- The procedure for tracking PPV throughout construction operations (e.g., Pile Driving Operations: pile tip vs. vibrations may be correlated through time of day. A record of the

time of day at each depth interval, included on the pile driving records, would be required to correlate to a time-based readout of PPV).

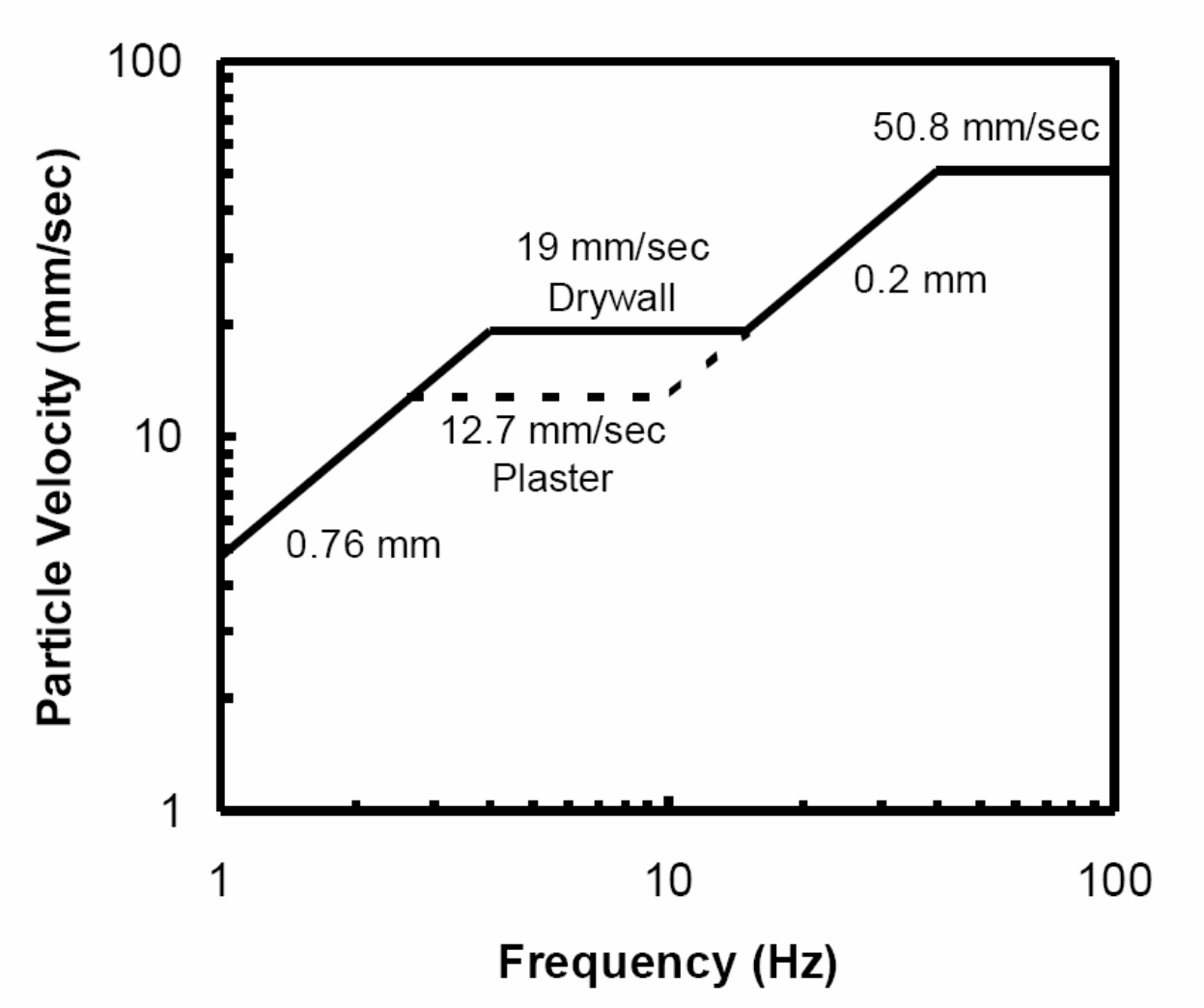

Figure 1 – USBM Vibration Criteria (after Siskind et al, 1980)
The figure provides a "threshold damage" limit, defined as cosmetic damage (e.g., cracking) within the structure, categorized by both frequency ranges and particle velocity

The Contractor shall inform the Engineer immediately each time measured particle velocities exceed 85% of the allowable peak particle velocity. The Contractor shall make equipment or procedural modifications as required to avoid exceeding the allowable vibration intensity.

If the measured velocities exceed the maximum allowable PPVs, the Contractor shall stop operations immediately and revise equipment and procedures to reduce vibrations to allowable levels.

ITEM 634.9901 17 – BUILDING CONDITION SURVEY
ITEM 634.9902 17 – VIBRATION MONITORING (NONBLASTING)

If the seismographs show any indication of damage or vandalism, the seismographs shall be immediately recalibrated or replaced.

The Contractor shall be in communication with his monitoring firm's personnel during vibration monitoring at all locations to verify the data recorded.

The Contractor shall provide the Engineer with the results of daily vibration monitoring, one work day after the readings are taken. Upon completion of the construction operations for those locations requiring vibration monitoring, the daily submittals shall be synthesized into a final report.

METHOD OF MEASUREMENT

The building condition survey(s) and vibration monitoring work will be measured on a lump sum basis.

BASIS OF PAYMENT

The lump sum bid price for building condition survey(s) and vibration monitoring shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.

Vibration Monitoring (Nonblasting):
Progress payments will be made for this item paid proportionally in accordance with the amount of work completed, measured on a workday basis.

ITEM 637.3551 20 - CPM SCHEDULING

DESCRIPTION

The work shall consist of furnishing and maintaining a computerized CPM (Critical Path Method) Scheduling System. The requirements of Section 108-01, shall apply except where superceded by this specification.

The purpose of the computerized CPM Scheduling System is to ensure timely completion of the contract and to establish a standard methodology for time adjustment analysis based on the principles of the Critical Path Method of Scheduling. The CPM schedule shall be prepared based on the principles defined by the latest issue of the *Construction Planning & Scheduling Manual* published by the Associated General Contractors of America.

MATERIALS

The Contractor shall furnish the Engineer with a licensed copy of the latest available version of Primavera SureTrak Project Manager.

The Contractor shall ensure that any and all computer files submitted to the Engineer are in a format that can be imported directly into SureTrak Project Manager.

CONSTRUCTION DETAILS

A. PRE CONSTRUCTION SCHEDULING MEETING

The Engineer will schedule and conduct a Pre construction Scheduling Meeting with the Contractor within fifteen (15) calendar days after the contract has been awarded. The requirements of this specification will be reviewed at this meeting. Additionally the following topics will be discussed:

- Specifics of any contract Time-Related Clauses (A+B, I/D, Liquidated Damage, etc.).
- The representation in the schedule of the Time Related work.
- The calendar, activity coding, and resource definition requirements unique to and consistent with the contract.
- The Contractor's schedule methodology employed, proposed work sequence and any proposed deviations from the contract plans.
- The factors that the Contractor determines to control the completion of the project and any milestone completions contained therein.
- Narrative content for Initial Baseline and Monthly Updates.
- Schedule submission protocol for Initial Baseline and Monthly Updates.

The Contractors attendance at the Pre construction Scheduling Meeting is mandatory. No field work will be allowed, with the exception of set up of the Engineer's field office, until this meeting is held.

B. INITIAL BASELINE CPM CONSTRUCTION SCHEDULE

Within thirty (30) calendar days following the Pre-Construction Scheduling Meeting, the Contractor shall prepare and submit to the Engineer the Initial Baseline CPM Construction Schedule for the entire project. This submission shall include the electronic Schedule file and paper reports as listed in paragraph B - 2 below.

ITEM 637.3551 20 - CPM SCHEDULING

The Initial Baseline Schedule shall represent the Contractor's plan to construct the project. This schedule shall include all work and activities necessary to complete the project including but not limited to activities for the preparation, submittal, review, approval, fabrication, and delivery of all shop drawing and procurement related items. The Initial Baseline CPM Construction Schedule must be set up to conform with the staging/phasing and other requirements defined in the contract.

The Initial Baseline Schedule shall meet all interim milestone dates and shall not extend beyond the contract completion date.

1. SCHEDULE REQUIREMENTS
   The Contractors Initial Baseline CPM Construction Schedule shall meet the following requirements:

   a. CPM ACTIVITY NETWORK FORMAT
      The schedule network shall use the Precedence Diagraming Method.

   b. PROJECT DEFINITIONS The following project specific properties within the schedule shall be defined:

      CALENDAR- The standard calendar shall be 8-hour days, five days per week and shall account for holidays and non working days. Additional calendars shall be created and included as required for:
      - Work week (5 or 6 day).
      - Seasonal restrictions (asphalt, landscape, etc.).
      - Concrete curing/calendar days.
      - Shop drawing review (consistent with NYSDOT work calendar).
      - Any project specifics as required by the Engineer.
      - Expected and contemplated weather conditions shall be accounted for in the calendars.

      All calendars created shall encompass and account for the total duration of the contract time period.

      ACTIVITY CODE- As a minimum the following activity codes shall be established:
      - **Responsibility** - The party responsible for each activity. Only one party can be responsible for an activity. Include Values for "NYSDOT", "Prime Contractor" and third parties to the contract as appropriate (utilities, etc).
      - **Phase**- Phasing consistent with Contract plans where each activity is performed; Include Values for "None", and "Project Wide".
      - **Stage** - Staging consistent Contract MPT stage where each activity is performed; Include Values for "None", and "Project Wide".
      - **Location** - Location of activity work by Stationing, Ramp #, Structure #, etc.; Include Value for "None", and "Project Wide".
      - **Type**- The type of work for each activity; Include a Value for

"Administrative"

- **Added Work**- Work added to the Contract and incorporated into the schedule with the Engineers Approval; Include a Value for "None"
- **Time Related Clause**- A+B, I/D, Liquidated Damages, etc.; Include a Value for "None".
- **As Required by Project** - Any coding unique to or as required by the Engineer to facilitate the use and analysis of the Schedule. This coding shall be established in consultation with the Engineer at the Pre construction Scheduling Meeting.

RESOURCES - The Resource Dictionary shall be established as required by the Engineer. The Resource Dictionary shall be limited to Labor and Equipment. Labor may be represented by work crews. The composition of each crew must be detailed and included as an appendix to the Narrative Report. Sub Contractors shall be represented as a labor crew(s).

c. ACTIVITIES DATA

ACTIVITY IDENTIFICATION - Each activity shall have a unique identifier. The identifier may be alpha-numeric, but at a minimum must be a unique number.

ACTIVITY DESCRIPTION - Each activity shall be unambiguously described. Descriptions such as "construct 30% of ....", are unacceptable. Activities shall be discrete to the extent necessary to accurately schedule the work.

ACTIVITY DURATION - Durations of individual work activities shall not exceed fifteen working days. The minimum activity duration increment is one full day. Durations of individual shop drawing review activities may exceed fifteen working days and shall be consistent with Contract Requirements. Exceptions to this will be reviewed by the Engineer on an activity-by-activity basis. If requested by the Engineer, production rates or other supporting information shall be supplied justifying the reasonableness of any given activity time duration. A Method Statement including the labor, equipment, production rates and any additional information, required to achieve a given activity shall be supplied when requested by the Engineer.

ACTIVITY RELATIONSHIPS – Activity relationships shall be finish-to-start with no lags unless directed otherwise by the Engineer. Contractor requests for exemptions will be made on a case by case basis. Each activity with the exception of the required "Project Award" and "Completion" activities shall have a predecessor and a successor activity relationship.

ACTIVITY START and FINISH DATES - The earliest start date, earliest finish date, latest start date, and latest finish date shall be calculated for each activity.

ACTIVITY TOTAL FLOAT - The total float shall be calculated for each activity. Total float is the full amount of time by which the start on an activity may be

delayed without causing the project to last longer.

ACTIVITY CALENDARS- The appropriate calendar assignment shall be made to each activity.

ACTIVITY CODES - Coding shall be assigned to each activity from the defined activity dictionary. Each code shall have a value assigned in a given activity.

ACTIVITY CONSTRAINTS - The start or completion of any activity shall not be constrained. Exceptions to this must be approved by the Engineer. A "Must-Finish-By" Date for the overall project is a constraint and must be approved.

ACTIVITY RESOURCES- The schedule shall be "Resource" loaded as required by the Engineer. The resources required to accomplish each activity shall be assigned to that activity from the 'Resource Dictionary".

d. REQUIRED ACTIVITIES
The following activities shall be incorporated into the Schedule:

Activity ID	Activity Description	Activity Type	Logic Relationship
000010	Contract Award	Start Milestone	No Predecessors to this First Schedule Activity
999999	Completion	Finish Milestone	No Successors to this Last Schedule Activity

e. DATA DATE
The Data Date and Project Start Date in the Initial Baseline Schedule shall be the AWARD DATE.

The Data Date for each Monthly Update shall be the last work day of the month.

2. REVIEW OF THE INITIAL BASELINE CPM CONSTRUCTION SCHEDULE
The Contractor shall submit to the Engineer the following items to facilitate review of the Initial Baseline CPM Construction Schedule:

- Narrative- A statement explaining the general sequence of work in the Contractor's schedule, a detailed definition of the work on the Critical Path, a statement regarding the meeting of any Time Restrictive Clause dates and bonus dates, and the explanation of any other ambiguities in the schedule.

The following Activity Sorts generated from the software shall be provided:

- Critical Path Activity Sort - The activities that comprise the projects Critical Path. The list shall start with the first activity in the path and then ascend by Early Start date to the final activity in the path.
- Time Related Activity Sort - For contracts that contain Interim Time Frames (A+B, I/D, etc.), the activities necessary to complete the work within each specific Time Frame provision in the contract, shall be listed. The list shall start

with the first milestone activity and then ascend by Early Start date to the final milestone activity in the network comprising each Time Frame period. Include a Critical Path activity sort for each specific Time Frame in the contract.

- Constraint Activity Sort - Listing of Constrained Activities and type of constraint.
- Listing of Calendars and Activity Coding incorporated in the Schedule

Electronic copies of the Initial CPM Construction Schedule shall be provided.

The Engineer will review the Initial Baseline CPM Construction Schedule and forward any comments, revisions, or requests to the Contractor. Within fifteen (15) calendar days of the Engineer's reply, the Contractor shall make adjustment to the Initial Baseline CPM Construction Schedule in accordance with the Engineer's comments and resubmit copies for review consistent with the above directives.

Upon final revisions, the Contractor shall submit electronic file copies of the Initial Baseline CPM Construction Schedule to the Engineer. A sort of activities scheduled to start (ES) & finish (EF) in the next update period shall be included. The Logic Diagram (PERT chart) shall be submitted on 279 mm x 425 mm size sheets. The final submission shall be submitted for approval within one week of the Contractor's receipt of the final comments by the Engineer.

Approval of the Initial Baseline CPM Construction Schedule by the Engineer shall not be construed to imply approval of any particular method or sequence of construction or to relieve the Contractor of providing sufficient materials, equipment, and labor to guarantee completion of the project in accordance with the contract proposal, plans, and specifications. Approval shall not be construed to modify or amend the completion date. Completion dates can only be modified or amended by standard contractual means.

Failure to include in the Initial Baseline CPM Construction Schedule any element of work required for the performance of the contract shall not excuse the Contractor from completing all work required within the completion date(s) specified in the contract.

C. SCHEDULE UPDATES

1. MONTHLY PROGRESS UPDATES

The Contractor shall update the schedule monthly. The schedule shall be updated to include all work and progress up to and including the last working day of the month. This will establish the "Data Date". The Monthly update shall detail progress based on actual dates of activities started and completed, the percent of work completed to date on each activity started but not yet completed and the status of procurement of critical materials. The updated schedule data shall be submitted in an electronic file format acceptable to the Engineer.

A Narrative Report is required for each update and shall provide the following

information:

- Contractors transmittal letter to the EIC stating the update period and schedule "Data Date".
- Work started, completed and ongoing during the update period by activity with “Actual Dates”.
- Description of current Critical Path and any change from previous Critical Path.
- Any activities added or deleted and any proposed changes in Activity Logic (Engineer’s approval is required).
- Current Delays or Advancements
  - Delayed or Advanced Activities.
  - Proposed corrective action and schedule adjustments to address the Delay.
  - Impact of Delay or Advancement on other activities(duration, ES,EF,LS,LF), milestone and completion dates.
  - Impact of Delay or Advancement on the Critical Path.
- Outstanding Items that effect the schedule and status thereof (including but not limited to):
  - Permits.
  - Shop Drawings.
  - Orders-on-contract.
  - Reviews of submittals.
  - Approvals.
  - Fabrication and Delivery.
- Scheduled Completion Date Status
  - Contract Completion.
  - Interim Time Frame (A+B, I/D, etc.).

The following Activity Sorts generated from the Software shall be provided:

- Current Critical Path Activity Sort.
- Near Critical Activities Sort, TF< 5 days.
- Sort of Activities scheduled to start (ES) & finish (EF) in the next Monthly update period.

The Monthly Progress Updates shall be submitted to the Engineer within three (3) calendar days of the “Data Date”. The Engineer shall prepare a written response within seven (7) calendar days of receipt of the Monthly Update approving, approving with comments, or returning for resubmission. If the Contractor fails to comply with the Monthly Progress Update submission requirements the Engineer may invoke Article 8 of the contract and withhold contract payments.

D. TOTAL FLOAT OWNERSHIP

Total Float belongs to the contract and shall not be considered as available for the exclusive use of or benefit of either the State or the Contractor. Total Float is the number of days an activity may be delayed without extending the completion of either the project or an interim milestone. Float is available on a first-come, first-served basis to all identified “Responsible” parties in the schedule.

ITEM 637.3551 20 - CPM SCHEDULING

E. FLOAT MANIPULATION NOT PERMITTED

The Schedule shall not sequester float through such strategies as calendar manipulation, resource/labor manipulation or the extension of activity durations to fill up available float time. The Initial Baseline CPM Construction Schedule shall not attribute negative float to any activity.

F. CHANGES TO THE SCHEDULE

The Initial Baseline CPM Construction Schedule shall accurately reflect the manner in which the Contractor intends to proceed with the project. Changes to the schedule (the addition or deletion of activities, logic changes, and duration changes) shall be submitted in writing to the Engineer for approval and inclusion in the next Monthly Progress Update. The approved or approved with comments Monthly Progress Update shall be considered the updated Baseline from which future progress is measured. The process of comparing the Schedule Update to Baseline (previous Update) shall be followed throughout the contract. Revision to any contract milestones, or contractually mandated schedule provisions will not be permitted without written authorization from the Engineer.

G. CRITICAL ACTIVITIES AND BASIS FOR TIME ADJUSTMENTS

The measure for Time Adjustments in the schedule shall be based on the criticality of the delay or advancement. Criticality is defined as the presence of the delayed or advanced activity on the projects Critical Path. The Critical Path is defined to be the longest continuous chain of activities through the schedule network that establishes the minimum overall duration in the absence of constraints in the program software.

H. CHANGES TO THE CONTRACT

In the event a notice of a change to the contract is received the Contractor shall notify the Engineer in writing within 10 (ten) calendar days of the effect of such change to the schedule. Change to the contract includes, but is not limited to, extra work, Orders on Contract’s, suspensions, changed condition, Value Engineering Change Proposal, etc. The effect of the change to the contract on the projects Critical Path shall be stated. Any proposed revisions to the Schedule to incorporate the change to the contract shall be stated. No changes shall be made to the Schedule without the written approval of the Engineer. The approved changes shall be incorporated in the next Monthly Progress Update.

I. SCHEDULE ANALYSIS METHOD

Events, actions, and progress that cause delays or gains to the Project Schedule will be analyzed solely by the "Contemporaneous Period Analysis" method. The Contemporaneous Period Analysis evaluates delays or gains in the period in which it occurred. The analysis period for the purpose of this Specification shall be the period covered in each Monthly update to the schedule.

METHOD OF MEASUREMENT

The Critical Path Method Scheduling System will be measured for payment on a Lump Sum

ITEM 637.3551 20 - CPM SCHEDULING

Basis.

BASIS OF PAYMENT

The lump sum price bid for the Critical Path Method Scheduling system shall include the cost of preparation and submission of the Initial Baseline Schedule and the preparation and submission of the monthly updates and the licensed copy of the latest available version of SureTrak Project Manager.

Payment will be made as follows:

A. Upon completion of the Pre-Construction Schedule Meeting	10%
B. Upon acceptance of the Initial Baseline Construction Schedule	30%
C. The balance will be paid in equal monthly payments distributed over the contract. These payments will be contingent on the submission of acceptable monthly updates.	60%

ITEM 04645.3401XX M - BRIDGE MOUNTING CONNECTION FOR SIGN PANELS

DESCRIPTION: Under this work the Contractor shall furnish and erect bridge mounting connections for guide sign panels in accordance with the plans and specifications or as directed by the Engineer.

MATERIALS: Steel for component parts of the bridge connection shall meet the requirements of Section 644-02.02 of the New York State Standard Specifications and the requirements detailed on the plans.

CONSTRUCTION DETAILS: Construction details shall conform to the appropriate sub-sections of Section 644-3 of the New York State Standard Specifications.

METHOD OF MEASUREMENT: The quantity to be paid for under this item will be the number of bridge mounting connections actually furnished and installed according to the plans or as directed by the Engineer.

BASIS OF PAYMENT: The unit price bid for each bridge mounting connection shall be compensation in full for fabricating, furnishing, and erecting the connection complete as specified including all necessary hardware, drilling, grouting, anchor bolts, nuts and washers and all other material, equipment and labor necessary to property complete the work as shown on the plans and called for in the specifications will be included in this item.

ITEM 03647.1301 M - RESTORING AND RELOCATING CAST ALUMINUM HISTORIC MARKER PANEL ON CUT LIMESTONE FOUNDATION

DESCRIPTION:

This work shall include the restoration and relocation of a Cast Aluminum Historic Marker Panel on a Cut Limestone Foundation designated on the plans and as specified by the Engineer. Restoration of the Historic Marker shall consist of minor surface repair, cleaning, surface preparation, painting, and sealing. The marker components shall include the cast aluminum marker panel, z-bar attachment, and I-beam posts set in concrete. The cut limestone foundation shall consist of limestone blocks cut to the dimensions specified, grout, subbase, and geotextile The marker shall remain the property of the State. New I-beam sign posts set in a concrete base shall be furnished and erected at the new location called for on the plans and as directed by the Engineer. A cut limestone foundation shall be constructed around the base of the historic marker as shown on the plans and as directed by the Engineer.

MATERIALS:

Cut Limestone Foundation

Limestone Blocks :	The stone shall resemble existing stone used in the wall of the Erie Canal. Existing stone from the Canal Wall Reconstruction deemed unsuitable for Item 03560.1701 M, Repairing Erie Canal Stone Wall, shall be evaluated for use in this foundation as approved by the Engineer. Color and quality as approved by the Engineer. Length - 300 to 500 mm; Width - 400 mm; Depth - 150 to 200 mm. Rectangular shapes with slight variations shall be accepted.
Grout :	Meeting the material requirements of 701-02 Masonry Cement and as approved by the Engineer.
Subbase :	Item 304.15 M, Subbase Course, Optional Type as approved by the Engineer.

Relocating Cast Aluminum Historic Marker

I-Beam :	Galvanized Steel. Match dimensions to existing I-beam. See contract plans for length (depth).	
Z-Bar :	Reuse existing Z-bar as approved by the Engineer.	
Hardware :	Use Existing nuts, bolts, and washers if approved by the Engineer. New hardware, as required, shall match existing hardware.	
Concrete :	Footings -	Class A Concrete as specified under Section 555, Structural Concrete.
	Base -	As specified under Section 608, as it relates to Item 608.0101 M, Concrete Sidewalks and Driveways.

ITEM 03647.1301 M - RESTORING AND RELOCATING CAST ALUMINUM HISTORIC MARKER PANEL ON CUT LIMESTONE FOUNDATION

Restoring Cast Aluminum Historic Marker Panel

Paints & Solvents : Dark blue lettering paint. #109-L "One Shot Lettering Enamel" or approved equal.
Gold lettering paint. #107-L Metallic Gold, "One Shot Lettering Enamel" or approved equal.
Laquer and Paint Thinner.
Turpentine

Miscellaneous : Various brushes (paint, wire, plastic bristle, etc.), one inch wooden roller, nonabrasive cotton rags, and other various incidentals.

CONSTRUCTION DETAILS:

The Cast Aluminum Historic Marker Panel shall be removed from the existing Safety Parking Area and transported, by the Contractor, to the location where the restoration is to take place. Upon completion of the restoration process, the Marker shall be stockpiled, by the Contractor, to the satisfaction of the Engineer, at a site within the R.O.W. limits as designated by the Engineer. Care shall be exercised in removing, transporting, and stockpiling the Marker to prevent damage to any part of the face, raised characters, or the z-bars (2) located on the rear of the panel. Any damage shall be repaired or replaced, to the satisfaction of the Engineer, at the Contractor's expense.

The restoration of the Cast Aluminum Historic Marker Panel shall include lightly filing, sanding, and/or buffing out graffiti that has been scratched into the surface of the aluminum. Loose paint shall be removed by wire brushing and/or sanding. The entire surface shall be cleaned/prepared by washing/scrubbing it with turpentine and lightly wire brushing. The blue background color shall be applied first, taking care not to paint the surface of the raised letters or any other gold portions of the Marker. Two coats of the blue color shall be applied if necessary, depending on the condition of the Marker at the time of restoration, by spraying or brushing. If a brushing method is employed, no brush strokes shall be visible. The gold paint shall be applied with a small wooden roller, slightly wider than the height of the raised letters. The thickness of the gold paint shall be adjusted slightly with paint thinner to allow the wooden roller to apply the paint evenly, without running. Touch-up work shall be done with fine artist brushes. Following the drying times for the processes above, a minimum of two coats of laquer shall be applied, allowing for full drying between applications.

The existing sign support structure (I-beams, 2 each), the concrete footing(s), and stone shall be removed from the work site. The concrete footing(s) shall be cut to a depth of 0.3 meters below ground and the area restored in accordance with Section 107-11, Restoration of Disturbed Areas Within the Right-Of-Way.

The Contractor shall erect new sign posts (I-beams, 2 ea.) as shown in the detail and at the location shown on the plans. Concrete footers shall meet the requirements specified in Section 555, Structural Concrete. A concrete base meeting the requirements of Item 608.0101 M, Concrete Sidewalks and Driveways shall then be placed as specified in the plans.

ITEM 03647.1301 M - RESTORING AND RELOCATING CAST ALUMINUM HISTORIC MARKER PANEL ON CUT LIMESTONE FOUNDATION

Following the installation of the two I-beams, a Cut Limestone Foundation shall be constructed to the specifications shown on the details in the contract plans and as specified by the Engineer.

The restored Cast Aluminum Historic Marker Panel shall be mounted on to the two I-beams as shown on the plans and to the satisfaction of the Engineer.

METHOD OF MEASUREMENT:

Payment will be made at the unit price bid for the Restored and Relocated Cast Aluminum Historic Marker Panel on Cut Limestone Foundation completed and be measured on an each basis.

BASIS OF PAYMENT:

The unit price for Restoring and Relocating Cast Aluminum Historic Marker Panel on Cut Limestone Foundation shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work, including concrete footers, concrete base, and the removal of the existing sign support structure at the Safety Parking Area and the restoration of that area.

ITEM 647.92 11 - REMOVE SIGN POST

DESCRIPTION
The work shall consist of removing existing metal sign posts at locations shown on the plans or where directed by the Engineer.

MATERIALS
None specified.

CONSTRUCTION DETAILS
The existing sign posts and concrete sign footings shall be completely removed, or if allowed by the Engineer, shall be cut to a depth of 0.3 meters below existing ground and be replaced with suitable materials as specified by the Engineer. The overhead cantilever sign posts shall become the property of the Contractor and shall be removed from the work site in a neat and skillful manner.

METHOD OF MEASUREMENT
This work will be measured as the number of sign posts removed.

BASIS OF PAYMENT
The unit price bid for each sign post removed and disposed of shall include the cost of all labor, equipment and materials necessary to complete the work.

ITEM 10647.93 M - REMOVE SIGN POST STUB

DESCRIPTION:

The work shall consist of removing existing metal sign post stubs at locations shown on the plans or where directed by the Engineer.

MATERIALS:

Not specified.

CONSTRUCTION DETAILS:

The existing sign post stubs and/or concrete sign footings shall be removed to a depth of 75 mm below the existing ground and shall be replaced with suitable material, as specified by the Engineer. The stub shall become the property of the Contractor and shall be removed from the work site.

METHOD OF MEASUREMENT:

This work will be measured as the number of sign post stubs removed.

BASIS OF PAYMENT:

The unit price bid per each sign post stub removed and disposed of shall include the cost of all labor, equipment and materials necessary to complete the work.

ITEM 08659.1007 M - INSTALL CABLE TV PULLBOX

DESCRIPTION:

This work will consist of installing Cable TV furnished pullboxes at the locations shown on the contract documents or as directed by the Engineer.

For the purposes of this specification, the involved utility will be referred to as the Company regardless of whether or not the company is profit-making, non-profit-making, or governmental.

MATERIALS:

All pull boxes shall be furnished by the Company.

The contractor shall notify the Company of the installation schedule at least thirty (30) days prior to the actual planned installation date. Should the Company fail to deliver the necessary material according to schedule, the State shall not be responsible for any delays attributable thereto, or for the failure of delivery of such materials.

It is the contractor's responsibility to inspect the material immediately upon delivery and advise the Company promptly of all damaged material. Any material damaged or lost after the contractor's inspection shall be replaced by the contractor at no additional expense.

CONSTRUCTION DETAILS:

The nature of the work is such that certain specified requirements of the Company’s installation policies shall be followed. The contractor is responsible for obtaining copies of the Company’s installation requirements as necessary.

The contractor shall install pull boxes at locations shown on the contract documents and/or as directed by the Engineer.

Excavation and backfill shall be in accordance with the provisions of Item 206.04 M of the NYSDOT Standard Specifications and any installation requirements by the Company as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price lump sum for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, and including an allowance for overhead and profit. Any bid other than the amount preprinted in the Proposal will be disregarded and the preprinted price and amount will be used to determine the total amount bid for the contract. Payment shall be the fixed price lump sum, and shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work as shown on the plans and in accordance with the appropriate specifications and standards of NYSDOT and the Company.

ITEM 08659.1703nn 08 M - FURNISH AND INSTALL FIBERGLASS CONDUIT ON STRUCTURE (CABLE TV)

DESCRIPTION:

This work shall consist of furnishing and installing fiberglass conduits, fittings, support angles and hardware, sleeves, and hanger assemblies as shown in the contract documents and in accordance with the applicable specifications and standards of Cablevision.

The contractor may contact the Cable Television Company for information at the following office:

Cablevision
2013 Crompond Road
Yorktown Heights, New York 10598

MATERIALS:

Conduits shall be 4 NPS (4" I.D.) fiberglass and /or 4 Way 1 1/4 NPS (1 1/4" I.D.) multiple fiberglass conduits (Quad) and be produced to meet the applicable requirements of :

ASTM D-2996	Standard Specification for filament mound reinforced thermosetting resin pipe.
ASTM D-2310	Standard Classification for man-made reinforced thermosetting resin pipe.

Joining Method- each length of the 4 NPS conduit shall have double lead threaded male and female ends. Without adhesive the threaded conduit joint shall withstand a minimum of 13.3 kN pullout strength.

Each length of 1 1/4 NPS (Quad) conduit shall have a coupling on one end and be fixed in place with the manufacturer’s adhesive.

Conduit shall be capable of interior hanger spans of 6.5 m, based on cable of 4.5 kg per meter and have a mid span deflection not exceeding 13 mm.

Metals for hangers, support angles, and hardware shall meet the appropriate requirements of Sections 715 and 725 of the NYSDOT Standard Specifications.

The sleeves shall be schedule 40 galvanized steel pipe.

Expansion joints shall be gasketed.

Pull cords shall be 10 mm (3/8") polypropylene rope and have 6.7 kN tensile strength.

CONSTRUCTION DETAILS:

The galvanized steel sleeves shall be furnished in required lengths as shown in the plans and be installed through the backwall/abutment forms prior to placing the concrete. The concrete shall be poured in contact with the sleeves, forming an integral part of the backwall/abutment.

The contractor shall install the hanger assemblies and/or support angles with all related hardware on the

ITEM 08659.1703nn M - FURNISH AND INSTALL FIBERGLASS CONDUIT ON STRUCTURE (CABLE TV)

structure at locations shown on the plans and as directed by the Engineer.

The 4 NPS and/or 4 Way 1 1/4 NPS fiberglass conduits shall be installed as shown in the plans or as directed by the Engineer.

Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter. An expansion fitting shall be installed at each expansion joint.

The contractor shall seal the gap between the sleeves and the conduits with caulking compound suitable for structures.

All conduits installed shall be tested for clear bore and correct installation by the contractor using a ball mandrel, brush and snake before the installation will be accepted. The ball shall be approximately 85 percent of the internal diameter of the raceway to be tested. Two short wire brushes shall be included in the mandrel assembly. Snaking of the installing cord for the conduits shall be done by the contractor in the presence of the Engineer. All conduit which rejects the mandrel shall be cleared at once; the contractor bearing all costs to replace defective conduit.

All empty conduit and duct openings shall be capped or plugged by the contractor as directed by the Engineer. The contractor shall temporarily cap the conduits installed on the structure until connections to the conduits in the approaches are made.

Polypropylene rope shall be installed in all fiberglass conduits.

Excavation and backfill shall be in accordance with the provisions of Item 206.04 M of the NYSDOT Standard Specifications and any installation requirements by the Company as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price lump sum for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, and including an allowance for overhead and profit. Any bid other than the amount preprinted in the Proposal will be disregarded and the preprinted price and amount will be used to determine the total amount bid for the contract. Payment shall be the fixed price lump sum, and shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work as shown on the plans and in accordance with the appropriate specifications and standards of Cablevision.

No separate payment shall be made for furnishing and installing pull cord, cement, adapters, couplings, angle supports, sleeves or hanger assemblies which are included in the cost of this item.

Note: “nn” denotes a serialized pay item (for each structure location), see Subsection 101-02.

ITEM 659.1810nn08 M - FURNISH AND INSTALL FIBERGLASS CONDUIT ON STRUCTURE (TELEPHONE)

DESCRIPTION:

This work shall consist of furnishing and installing fiberglass conduits, fittings, support angles and hardware, sleeves, and hanger assemblies as shown in the contract documents and in accordance with the applicable specifications and standards of Verizon Communications.

The contractor may contact the Company for information at the following office:

Verizon Communications
500 Summit Lake Drive
Valhalla, New York 10595

MATERIALS:

Conduits shall be 4 NPS (4" I.D.) fiberglass and /or 4 Way 1 1/4 NPS (1 1/4" I.D.) multiple fiberglass conduits (Quad) and be produced to meet the applicable requirements of :

ASTM D-2996	Standard Specification for filament mound reinforced thermosetting resin pipe.
ASTM D-2310	Standard Classification for man-made reinforced thermosetting resin pipe.

Joining Method- each length of the 4 NPS conduit shall have double lead threaded male and female ends. Without adhesive the threaded conduit joint shall withstand a minimum of 13.3 kN pullout strength.

Each length of 1 1/4 NPS (Quad) conduit shall have a coupling on one end and be fixed in place with the manufacturer's adhesive.

Conduit shall be capable of interior hanger spans of 6.5 m, based on cable of 4.5 kg per meter and have a mid span deflection not exceeding 13 mm.

Metals for hangers, support angles, and hardware shall meet the appropriate requirements of Sections 715 and 725 of the NYSDOT Standard Specifications. The sleeves shall be schedule 40 galvanized steel pipe.

Expansion joints shall be gasketed.

Pull cords shall be 10 mm (3/8") polypropylene rope and have 6.7 kN tensile strength.

CONSTRUCTION DETAILS:

The galvanized steel sleeves shall be furnished in required lengths as shown in the plans and be installed through the backwall/abutment forms prior to placing the concrete. The concrete shall be poured in contact with the sleeves, forming an integral part of the backwall/abutment.

The contractor shall install the hanger assemblies and/or support angles with all related hardware on the structure at locations shown on the plans and as directed by the Engineer.

ITEM 08659.1810nn M - FURNISH AND INSTALL FIBERGLASS CONDUIT ON STRUCTURE (TELEPHONE)

The 4 NPS and/or 4 Way 1 1/4 NPS fiberglass conduits shall be installed as shown in the plans or as directed by the Engineer.

Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter. An expansion fitting shall be installed at each expansion joint.

The contractor shall seal the gap between the sleeves and the conduits with caulking compound suitable for structures.

All conduits installed shall be tested for clear bore and correct installation by the contractor using a ball mandrel, brush and snake before the installation will be accepted. The ball shall be approximately 85 percent of the internal diameter of the raceway to be tested. Two short wire brushes shall be included in the mandrel assembly. Snaking of the installing cord for the conduits shall be done by the contractor in the presence of the Engineer. All conduit which rejects the mandrel shall be cleared at once; the contractor bearing all costs to replace defective conduit.

All empty conduit and duct openings shall be capped or plugged by the contractor as directed by the Engineer. The contractor shall temporarily cap the conduits installed on the structure until connections to the conduits in the approaches are made.

Polypropylene rope shall be installed in all fiberglass conduits.

Excavation and backfill shall be in accordance with the provisions of Item 206.04 M of the NYSDOT Standard Specifications and any installation requirements by the Company as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price lump sum for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, and including an allowance for overhead and profit. Any bid other than the amount preprinted in the Proposal will be disregarded and the preprinted price and amount will be used to determine the total amount bid for the contract. Payment shall be the fixed price lump sum, and shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work as shown on the plans and in accordance with the appropriate specifications and standards of Verizon Communications.

No separate payment shall be made for furnishing and installing pull cord, cement, adapters, couplings, angle supports, sleeves or hanger assemblies which are included in the cost of this item.

Note: “nn” denotes a serialized pay item (for each structure location), see Subsection 101-02.

ITEM 659.1818nn 08M - FURNISH AND INSTALL PVC CONDUIT(S) OFF STRUCTURE (TELEPHONE)

DESCRIPTION:

This work shall consist of furnishing and installing PVC conduits and fittings of the number, type, and at the locations indicated in the contract documents and in accordance with the applicable specifications and standards of Verizon Communications.

The contractor may contact Verizon Communications for information at the following office:

Verizon Communications
500 Summit Lake Drive
Valhalla, NY 10595

MATERIALS:

Type "C" PVC conduits shall be 4 NPS (4" I.D.), one ended bell, sweeps and fittings, telephone white, and conforms to GT8343, United CH5-71, and Nema TC-10.

Schedule 40 PVC multiple conduits (Quad) shall be 4 Way 1 1/4 NPS (1 1/4" I.D.), one ended bell, sweeps and fittings, and conforms to UL Standard 651, Nema TC2-1990, and Federal Specification WC 1094A.

Conduit manufacturer shall be American U-Tel or approved equal.

PVC cement shall be supplied to join sections of PVC conduit as per manufacturer's recommendations.

Pull cords shall be 10 mm (3/8") polypropylene rope.

CONSTRUCTION DETAILS:

The contractor shall install Type "C" and/or Schedule 40 PVC conduits at locations shown on the plans or as directed by the Engineer.

Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter.

All conduits installed shall be tested for clear bore and correct installation by the contractor using a ball mandrel, brush and snake before the installation will be accepted. The ball shall be approximately 85 percent of the internal diameter of the raceway to be tested. Two short wire brushes shall be included in the mandrel assembly. Snaking of the installing cord for the conduits shall be done by the contractor in the presence of the Engineer. All conduit which rejects the mandrel shall be cleared at once; the contractor bearing all costs to replace defective conduit.

All empty conduit and duct openings shall be capped or plugged by the contractor as directed by the Engineer.

ITEM 659.1818nn 08M - FURNISH AND INSTALL PVC CONDUIT(S) OFF STRUCTURE (TELEPHONE)

Polypropylene rope shall be installed in all PVC conduits.

Excavation shall be in accordance with the provisions of Trench and Culvert Excavation in Section 206 of the NYSDOT Standard Specifications.

Whenever excavation exceeds 1.5 meters in depth, sheeting shall be used and shall meet the requirements of Section 552 of the NYSDOT Standard Specifications.

Backfill shall meet the requirements of and be in accordance with Items shown on the plans or as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis.

The fixed price shown in the proposal is not to be altered in any manner by the bidder. Should the amount shown be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

BASIS OF PAYMENT:

The amount set forth in the proposal is a fixed price for all bidders. Any bid, other than the specified amount shown on the itemized proposal, will be adjusted to reflect the fixed price and the contractor shall be entitled to payment for this item strictly in accordance with this paragraph. The fixed price shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work in accordance with the contract documents, or as directed by the Engineer. No separate payment will be made for installing; measuring/pull cords, adaptors, couplings, warning tape, or de-watering or sealing penetrations into manholes but the cost of these items shall be included in the price bid for this item. No separate payment will be made for excavation, backfill, and surface restoration but the cost of these items shall be included in the fixed price set forth in the proposal.

Note: “nn” denotes a serialized pay item (for each location), see Subsection 101-02.

ITEM 659.1819nn 08M - FURNISH AND INSTALL PVC CONDUIT(S) OFF STRUCTURE (CABLE TV)

DESCRIPTION:

This work shall consist of furnishing and installing PVC conduits and fittings of the number, type, and at the locations indicated in the contract documents and in accordance with the applicable specifications and standards of Cablevision.

The contractor may contact Cablevision for information at the following office:

Cablevision
2013 Crompond Road
Yorktown Heights, New York 10598

MATERIALS:

Type "A" PVC conduits shall be 4 NPS (4" I.D.), one ended bell, sweeps and fittings, telephone white, and conforms to GT8343, United CH5-71, and Nema TC-10.

Schedule 40 PVC multiple conduits (Quad) shall be 4 Way 1 1/4 NPS (1 1/4" I.D.), one ended bell, sweeps and fittings, and conforms to UL Standard 651, Nema TC2-1990, and Federal Specification WC 1094A.

Conduit manufacturer shall be American U-Tel or approved equal.

PVC cement shall be supplied to join sections of PVC conduit as per manufacturer's recommendations.

Pull cords shall be 10 mm (3/8") polypropylene rope.

CONSTRUCTION DETAILS:

The contractor shall install Type "A" PVC conduits at locations shown on the plans or as directed by the Engineer.

Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter.

All conduits installed shall be tested for clear bore and correct installation by the contractor using a ball mandrel, brush and snake before the installation will be accepted. The ball shall be approximately 85 percent of the internal diameter of the raceway to be tested. Two short wire brushes shall be included in the mandrel assembly. Snaking of the installing cord for the conduits shall be done by the contractor in the presence of the Engineer. All conduit which rejects the mandrel shall be cleared at once; the contractor bearing all costs to replace defective conduit.

All empty conduit and duct openings shall be capped or plugged by the contractor as directed by the Engineer.

ITEM 659.1819nn 08M - FURNISH AND INSTALL PVC CONDUIT(S) OFF STRUCTURE (CABLE TV)

Polypropylene rope shall be installed in all PVC conduits.

Excavation shall be in accordance with the provisions of Trench and Culvert Excavation in Section 206 of the NYSDOT Standard Specifications.

Whenever excavation exceeds 1.5 meters in depth, sheeting shall be used and shall meet the requirements of Section 552 of the NYSDOT Standard Specifications.

Backfill shall meet the requirements of and be in accordance with Items shown on the plans or as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured on a lump sum basis.

The fixed price shown in the proposal is not to be altered in any manner by the bidder. Should the amount shown be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

BASIS OF PAYMENT:

The amount set forth in the proposal is a fixed price for all bidders. Any bid, other than the specified amount shown on the itemized proposal, will be adjusted to reflect the fixed price and the contractor shall be entitled to payment for this item strictly in accordance with this paragraph. The fixed price shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work in accordance with the contract documents or as directed by the Engineer. No separate payment will be made for installing; measuring/pull cords, adaptors, couplings, warning tape, de-watering or sealing penetrations into manholes, excavation, backfill, and surface restoration but the cost of these items shall be included in the price bid for this item.

Note: “nn” denotes a serialized pay item (for each location), see Subsection 101-02.

ITEM 659.60540108 M - FURNISH AND INSTALL PRECAST MANHOLES (TELEPHONE)

DESCRIPTION:

This work shall consist of furnishing and installing precast concrete manholes at locations shown on the plans or as directed by the Engineer. The precast manholes, including frames, covers, racking, bonding and grounding kit, ladder and ladder steps shall be supplied by the contractor and delivered by the manufacturer to the site. The manufacturer shall be Rotondo & Sons, Inc., 151 Old Farms Road, Avon, CT 06001 (203) 673-3291.

The precast manholes shall be ordered as per details as shown on the contract drawings.

This work shall include demolition and removal of existing manholes as shown in the contract documents or ordered by the Engineer.

MATERIALS:

Masonry or Concrete Collars	Section 604-2.01
Crushed Stone	Concrete Aggregate Type CA2 (Table 501-2)
Excavation	Section 206 (Trench, Culvert, and Structure Excavation)
Backfill	Section 203-3.15
Sheeting	Section 206

A galvanized steel bracket or manhole step shall be included in concrete collars as a ladder support.

CONSTRUCTION DETAILS:

The contractor shall install a precast manhole and construct a masonry or precast concrete collar (250 mm minimum height), as required, to bring the frame to final grade as shown on the plans or as directed by the Engineer. After excavating, the contractor shall place 150 mm of crushed stone to serve as a base for the manhole. Manholes shall be racked and equipped as per the Telephone Company's Specifications.

When prevailing conditions dictate, a cast-in-place manhole may be substituted for the precast, as determined by the Engineer.

The contractor shall provide all necessary pumps, dams, drains, ditches, flumes, well points and other means for excluding and removing water from trenches which interfere with the work. The contractor shall dewater all trenches to completely dry out and solidify the foundation below the bottom of the structure to whatever depth is necessary to provide a firm, solid surface on which to install the structure.

Excavation, backfill, and crushed stone shall meet the requirements of Sections 203-3.15, 206-3.01, and 623-3 respectively of the Standard Specifications and as directed by the Engineer.

METHOD OF MEASUREMENT:

This work will be measured as the number of precast manholes installed in accordance with the contract documents and directions of the Engineer.

ITEM 08659.6054nn M - FURNISH AND INSTALL PRECAST MANHOLES (TELEPHONE)

BASIS OF PAYMENT:

The unit price bid for each precast manhole installation set forth in the Proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor, materials, and equipment necessary to complete the work, including an allowance for overhead and profit. Any bid other than the amount noted in the Proposal may cause the bid to be considered informal.

The cost of the precast manhole shall also include the installation of the masonry or concrete collar, manhole racking, bonding and grounding kit, ladder, excavation, crushed stone, sheeting, backfill, and frame and cover.

The cost of excavation, demolition, and removal of existing manholes shall be included in the lump sum for this item.

Note: “nn” denotes a serialized pay item (for each manhole location), see Subsection 101-02.

ITEM 03660.19XXYY M - INSULATION FOR WATER OR SEWER MAIN

DESCRIPTION:

The work shall consist of furnishing and installing insulation for a water main or a sewer main where indicated on the contract plans.

MATERIALS:

The insulation shall be flame retardant, extruded polystyrene, wired on with No. 18 copper wire on 150 mm centers. The covering shall be an aluminum jacket 0.4 mm thick min., with lock-on type joints and a polycraft moisture barrier secured in place by 12.5 mm stainless steel strapping on 450 mm centers. The joint shall be sealed with Miracle Adhesive FO 400 Sealer; Foster Foamseal 30-45; Cad-a-Seal 745 or equal.

The Contractor shall furnish the insulation manufacturer with the exact dimensions of the pipe to be insulated, together with the type of couplings and specials to be used.

CONSTRUCTION DETAILS:

The insulation material shall be cut to fit the pipe so as to give a continuous thickness. The insulation shall then be wired on with No. 18 copper wire on 150 mm centers. All joints shall be sealed, and with 75 mm overlaps will be secured in place by 12.5 mm stainless steel strapping of 450 mm centers. All fittings, valves and flanges shall be insulated with the same materials securely held in place. All jacket overlaps shall be sealed and waterproofed with a sealant as noted above, or equal. The work shall be accomplished to the satisfaction of the Owner and the Engineer.

METHOD OF MEASUREMENT:

This work will be measured as the number of linear meters of pipe and fittings insulated, measured along the axis of the pipe.

BASIS OF PAYMENT:

The unit price per linear meter shall include the cost of furnishing all labor, equipment and materials necessary to complete the work.

Payment will be made under ITEM 03660.19xxyy m - Insulation for water or sewer main where xx represents a code for the insulation thickness in millimeters and yy represents a code for the diameter of the water main or sewer main in NPS units as indicated below.

ITEM 03660.19XXYY M - INSULATION FOR WATER OR SEWER MAIN

INSULATION THICKNESS		WATER OR SEWER MAIN DIAMETER	
XX =	MM	YY =	DIAMETER
02	50 mm	04	4 NPS
03	75 mm	06	6 NPS
04	100 mm	08	8 NPS
05	125 mm	10	10 NPS
		12	12 NPS
		14	14 NPS
		16	16 NPS
		18	18 NPS
		20	20 NPS
		24	24 NPS
		30	30 NPS
		36	36 NPS
		42	42 NPS
		48	48 NPS
		54	54 NPS
		60	60 NPS

ITEM 660.3404 10 M - DUCTILE IRON SANITARY SEWER PRESSURE PIPE, 4 NPS
ITEM 660.3406 10 M - DUCTILE IRON SANITARY SEWER PRESSURE PIPE, 6 NPS
ITEM 660.3410 10 M - DUCTILE IRON SANITARY SEWER PRESSURE PIPE, 10 NPS
ITEM 660.3412 10 M - DUCTILE IRON SANITARY SEWER PRESSURE PIPE, 12 NPS

DESCRIPTION

The Contractor shall furnish and install ductile iron sanitary sewer pressure pipe of the required size in the locations shown on the plans and where directed by the Engineer.

MATERIALS

A. Identification of Pipe
   1. All pipe delivered to the job site shall be clearly marked at the factory with the size, type, class of pipe, lot number, date of manufacture, and the manufacturer's identification. Additional markings as required by ASTM Specifications for each pipe shall also be included.
   2. Each coupling, fitting, and special shall be similarly marked by the manufacturer and also marked with the size and class of pipe with which it is to be used.
   3. Omission of the above information may be cause for rejection of the pipe.

B. Manufacturer's Testing
   1. General
      a. Each manufacturer furnishing pipe under these Specifications must provide certifications, acceptable to the Engineer, that all pipe provided conforms to the appropriate ASTM standards and specifications outlined herein.

C. Submittals
   1. Shop drawings shall be submitted for all pipe, pipe fittings, mandrels, and all accessories necessary for a complete pipe system.

D. Ductile Iron Pipe (DIP)
   1. Pipe
      a. Ductile iron pipe shall be centrifugally cast, conforming to the requirements of ANSI, A21.51 (AWWA C151). Pipe and fittings shall be pressure class 1035kPa and shall have a minimum wall thickness of class 54 pipe.
      b. Fittings
         (i) Fittings shall be cast iron or ductile iron conforming to the requirements of ANSI A21.10 (AWWA C110).
      c. Joints
         (i) All pipe joints shall be either mechanical joints or push-on joints. Joints for valves and fittings may be flanged.
         (ii) Mechanical joints, push-on joints, and gaskets shall conform to the requirements of ANSI A21.11 (AWWA C111). All gaskets for mechanical joints shall be lead tipped gaskets.

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(iii) Flanged joints shall conform to the requirements of ANSI A21.15 (AWWA C115) and ANSI B16.1

d. Lining

(i) All pipe and fittings shall be cement lined in accordance with ANSI A21.4 (AWWA C104). The lining shall be centrifugally applied and have a bituminous sealer. The cement lining shall be standard thickness.

(ii) All pipe and fittings shall be coated on the outside at the point of manufacture with a coal tar pitch varnish (pipe dip). The coating shall average 0.038 mm to 0.051 mm dry film thickness.

(iii) Pipe and fittings shall be encased in polyethylene tubes or sheets in accordance with ANSI A21.5 (AWWA C105). The polyethylene tubes shall have a minimum thickness of 0.202 mm.

CONSTRUCTION DETAILS

A. Preparation

1. Receiving, Handling and Storage

a. Special care shall be taken in the loading, transportation and unloading of pipe. Under no circumstances shall a pipe be dropped. Suitable skids or blocks shall be placed under each pipe in the shop, and the pipe shall be securely wedged during transportation to prevent injury to the pipe and coating.

2. Inspection

a. All pipe, specials and fittings shall be carefully inspected for defects immediately prior to the laying. No cracked, broken, or defective materials shall be used in the work.

b. If any defective piece shall be discovered after having been laid, it shall be removed and replaced with a sound one by the Contractor at no cost to the County, State, or other agency having jurisdiction.

3. Trench Preparation

a. Pipe trenches shall have flat bottoms conforming to the grade to which the pipe is to be laid. Excavation shall be in accordance with the requirements of Subsection 660-3.03 "Excavation" of the New York State Standard Specifications. Backfill shall be in accordance with the requirements of Subsection 660-3.04 "Backfilling" of the New York State Standard Specifications. Special care shall be exercised in

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placing and compacting material immediately adjacent to the pipe in order to avoid damage to the pipe and to prevent pipe misalignment.

b. All measures required to keep the excavation dewatered during pipe installation shall be included under Trench and Culvert Excavation. The Contractor is directed to the proposal for special notes regarding dewatering.

B. Pipe Laying

1. All pipe lines shall be laid accurately to line and grade. The pipe shall be bedded in a firm and stable foundation as shown on the plans. As detailed on the plans, the pipe shall be installed on a crushed gravel foundation.
2. The pipe bedding and backfilling shall be as directed on the plans. Backfill shall be in accordance with the requirements of Subsection 660-3.04 "Backfilling" of the New York State Standard Specifications.
3. Pipe and fittings shall be installed in accordance with the best modern practice. Manufacturer recommendation on installation of pipe shall be followed. Proper and suitable tools and appliances for the safe and convenient cutting, handling and laying of the pipes and fittings shall be used.
4. The pipes and fittings shall be thoroughly cleaned before they are laid and shall be kept clean until they are accepted in the completed work. Special care shall be exercised to avoid leaving bits of wood, dirt and other foreign particles in the pipe. All lines shall be kept absolutely clean during construction, shall be stopped off with wooden bulkheads after each day's work, and shall be blown out as directed by the Engineer.
5. Exposed ends of uncompleted lines shall be capped or otherwise temporarily sealed at all times when pipe laying is not actually in progress.
6. The laying of pipe shall begin at the downstream end and progress in the upstream direction. Pipe with bell and spigot type joints shall be laid with the bells upstream and pipe with tongue and groove type joints shall be laid with the grooves upstream.
7. The open ends of all pipe stubs or lines installed for future connection shall be capped, plugged or bulkheaded and sealed watertight as directed.
8. All ductile iron pipe and fittings shall be encased in polyethylene tubes or sheets in accordance with ANSI A21.5 (AWWA C105).

C. Joints

1. All pipe joints and connections shall be made watertight and they shall meet the test requirements as specified in the "Leakage Tests" section of this specification.
2. All surfaces shall be clean and dry before making the joint in the field. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The joints shall then be placed,

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fitted, jointed and adjusted as necessary in such a workmanlike manner as to obtain the required degree of watertightness specified.

3. Joints shall be made up in such a manner that the interior surfaces of the pipes at the face of the joint are uniform and even.
4. All elbows, tees, etc., in pressure pipe shall be properly backed up with concrete thrust blocks or mechanically restrained, where indicated on the plans.
5. Where two (2) different types of pipe are joined, a duplex coupling or adaptor of an approved type shall be used to couple the pipe. The coupling shall include a stainless steel shear ring and transition bushing as required.

D. Connections to Existing Sanitary Sewer Manholes

1. Where required to connect a new sewer pipe to an existing sanitary sewer manhole, the Contractor shall core-drill the new opening in the existing manhole. The new pipe shall be placed to the inside face of the manhole and a flexible watertight seal shall be provided around the pipe.
2. When connections are to be made to an existing manhole without a formed invert, the Contractor shall form and construct a poured invert. When connections to an existing manhole require that the existing invert be modified, the Contractor shall remove the existing invert completely. A new invert shall be poured and shaped in accordance with the plans or as directed by the Engineer. The new invert shall provide a smooth, continuous flow transition between the inlet and outlet pipes. Concrete for manhole invert fill shall be Class A Concrete and shall conform to Section 501 "Portland Cement Concrete-General" of the New York State Standard Specifications.
3. Where connecting new sewer pipe to existing sanitary manholes, it may be necessary to remove a portion of the existing (to be abandoned) sewer pipe to facilitate this connection. The end of the existing sewer pipe to be abandoned shall be sealed with a 300mm thick plug of precast concrete pavers and mortar, as shown on the plans. Precast concrete pavers shall meet all the requirements of Section 704-13 "Precast Concrete Pavers" of the New York State Standard Specifications. Any void left in the wall of the existing sanitary manhole, due to the removal of the existing sewer pipe, shall be filled with a State approved quick-set, non-shrink epoxy grout. All voids must be filled prior to the placement of the new concrete invert within the existing sanitary manhole.
4. While making the connections to existing sanitary manholes, the Contractor shall maintain the existing sewage flow in a manner acceptable to the sewer agency having jurisdiction. The Contractor will be required to divert and maintain the existing sewage flow until the connections to existing sanitary manholes have been completed (including poured inverts) and accepted by the sewer agency having jurisdiction. A minimum of thirty (30) days prior to

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commencing any work involving the connections to existing sanitary manholes, the Contractor shall submit to the Engineer the method and detailed procedures proposed to maintain existing sewer flows while connections to existing sanitary manholes are made. The submittal of proposed procedures will be subject to the approval of the Engineer and sewer agency having jurisdiction. No connections to the existing sewer may commence until a bypass plan is approved by the Engineer and accepted by the sewer agency having jurisdiction. These connections shall be made at times of low sewage flow, generally occurring during late night and early morning hours.

5. All of the aforementioned work involving connections to existing sanitary sewer manholes shall be incorporated in the price bid for this item. No separate payment will be made for this work.

E. Alignment Test

1. After the sewer pipe has been installed and the trench satisfactorily backfilled and compacted, the Engineer or his representatives will inspect the sewer line for misalignment and displacement by lamping. The Contractor shall supply a sufficient number of laborers to assist the Engineer in the lamping operation.
2. Alignment tests will be accomplished by illuminating the interior of the pipe line between manholes with a bright light and visually checking for any defects.
3. Should the illuminated interior of the pipe reveal poor alignment, displaced pipe, or any other defect, the Contractor shall undertake such remedial action as required by the Engineer to correct the defect. The pipe line shall be retested following any corrective action. All corrective action shall be performed at no additional cost to the County, State or other agency having jurisdiction, and prior to any leakage tests.
4. Prior to making any repairs, the Contractor shall submit to the Engineer, in writing, the proposed method of repair and secure his written approval of method and material to be incorporated in the repair. The Engineer shall be the sole judge as to whether pipe shall be repaired or replaced.

F. Leakage Tests

1. Definitions
   a. For leakage test purposes, a section of sewer line shall be construed as being that portion of a sewer line between two (2) consecutive manholes inclusive of upstream manhole and appurtenances unless otherwise specified.
2. Submittals

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a. The Contractor shall submit a schedule of lines to be tested and the methods and equipment to be utilized in the testing to the Engineer for approval.
b. The Contractor shall be required to notify the Engineer not less than forty-eight (48) hours prior to the time he intends to begin testing at any particular location.
c. Prior to undertaking any repairs, the Engineer's written approval of method and material to be used in the repair shall be secured. Items which in the opinion of the Engineer cannot be repaired shall be replaced.

3. General Parameters
   a. All gravity and pressure sewer lines, including but not limited to pipe, fittings, manholes, risers, stubs, specials and appurtenances, shall be tested for water tightness as hereinafter specified.
   b. The Contractor shall furnish all necessary material, equipment, labor and other facilities required to satisfactorily perform the tests and shall make all necessary repairs or replacements and retests as required at his own expense.
   c. In areas requiring dewatering, groundwater observation wells shall be utilized for monitoring ground water levels prior to and during all leakage testing.
   d. The Contractor is warned that the Engineer may refuse to allow exfiltration testing, or void those already underway if, in his judgment, heavy rain or rainwater inflow will distort test results. Retests of the affected lines shall be done at no cost to the County, State or other agency having jurisdiction. No claims for delays will be considered by the County, State or other agency having jurisdiction, in the event testing is suspended by the Engineer, as specified above.
4. Preparation
   a. General
      (i) All sewer pipes and manholes must be clean prior to any work described in this section. They shall be free from dirt, debris, sand, stones, etc., and accumulated water must be removed.
   b. Lamping and Television Inspection
      (i) The Contractor shall lamp each sewer in the presence of the Engineer prior to any other tests to ensure that there are no visible leaks, blockages or protrusions in the line, and that all pipes have been installed to proper grade and in a straight alignment.
      (ii) If leaks, blockages or protrusions are discovered during the lamping operation, the Contractor shall televise the respective

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line in which the condition occurs to determine the type of leak, blockage or protrusion.

(iii) The Contractor shall correct all deficiencies discovered by lamping and/or television inspection prior to any subsequent testing described in this section. All repairs and retests shall meet the requirements specified in the "Repairs and Retests" section of this specification.

5. Leakage Test for Pressure Pipe Utilized for Sewer Pipe

a. General

(i) Prior to testing, the pipeline must be backfilled to prevent movement while under test pressure.

(ii) No test shall be applied until at least three (3) days after the last concrete reaction or thrust backing has been cast with high early strength cement, or at least seven (7) days after the last concrete thrust or reaction backing has been cast with standard cement.

(iii) Each section of pipe line prior to testing shall be slowly filled with water. The test pressure shall be measured at the point of lowest elevation, and applied by means of a pump connected to the pipe, in a manner satisfactory to the Engineer. The pump, pipe connection, and all necessary apparatus, gauges, and meters shall be furnished by the Contractor. The Contractor will furnish measuring devices for the test and will make all taps into the pipe as required.

(iv) All air shall be expelled from the pipe line during filling and again before performing the leakage test.

b. Test Pressure and Allowable Leakage

(i) All pressure piping utilized for sewer pipe shall be tested at a minimum pressure of 206.8 kPa. Test pressures shall be maintained within 34.5 kPa of the test pressure for a period of not less than two (2) hours. The allowable leakage shall be zero kPa.

6. Repairs and Retest

a. General

(i) Prior to making any repairs, the Contractor shall submit to the Engineer, in writing, the proposed method of repair and secure his written approval of methods and material to be incorporated in the repair. The Engineer shall be the sole judge as to whether the pipes or manholes shall be repaired or replaced.

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(ii) All repairs and retesting must be made in the presence of a representative of the Engineer and to the satisfaction of the Engineer.

(iii) Should the lamping of the pipe reveal poor alignment, displaced pipe, or any other defects, necessary repairs shall be made before any leakage tests on this section of pipe are performed.

(iv) Should a section or sections of pipe, or manholes, fail to meet the leakage criteria, the Contractor shall at no cost to the State or other agency having jurisdiction, locate the leaks and repair pipe and manholes as necessary until the leakage is within the permitted allowance.

(v) Regardless of the results of the infiltration test, it is required that all visible leaks be repaired.

(vi) No repairs involving the injection of a gel, sealant, or other product will be permitted without the simultaneous use of a television camera to insure the location of the injecting mechanism.

(vii) The injection of gel, sealant, or any other product to seal cracks, porous section, or any other structural defect of the pipe or manhole will not be permitted.

b. Television Inspection

(i) If the Engineer deems it necessary, he can require the Contractor to internally inspect the lines which failed the tests by use of closed circuit television. The Contractor shall conduct this internal inspection at no cost to the County, State or other agency having jurisdiction.

(ii) The Engineer or his representative must be present for all television inspections and leak locating procedures.

(iii) Picture quality and definition shall be to the complete satisfaction of the Engineer, and if not, the equipment shall be repaired or replaced until satisfactory results are obtained.

(iv) The camera will proceed at a rate acceptable to the Engineer and will pause as directed to examine suspected defects. The internal television inspection shall be recorded on video tapes. The video tapes shall be transmitted to the Engineer immediately after the television inspection.

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c. Retests

(i) All tests and repairs shall be repeated as many times as necessary, at no cost to the State or other agency having jurisdiction, until the requirements herein before specified have been met.

METHOD OF MEASUREMENT

This work will be measured as the number of linear meters (laying length) of pipe, including fittings, furnished and incorporated in the work in accordance with the plans, specifications and as directed by the Engineer.

BASIS OF PAYMENT

The unit price bid per meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work including pipe, fittings, joints, leakage tests, and core-drilling into existing sanitary manholes to connect new pipe.

No separate payment will be made for connections to existing sanitary sewer manholes, as denoted in this specification. The cost of this work, including diverting and maintaining existing sewage flows, shall be included in the price bid for this item.

Trench and culvert excavation (dewatering included), sheet piling, crushed gravel and geotextile will be paid for separately, under the appropriate contract items.

10660.75 M - PLUGGING PIPES AND CONDUITS

DESCRIPTION. This work shall consist of plugging pipes and conduits as shown on the plans or in a manner approved by the Engineer.

MATERIALS. Sections 704-01, 704-02 and 705-21 of the General Specifications apply.

CONSTRUCTION DETAILS. New or existing pipes or conduits shall be partially or totally plugged as shown on the plans or as directed by the Engineer.

METHOD OF MEASUREMENT. This item shall be measured by the number of ends of pipes or conduits plugged.

BASIS OF PAYMENT. The unit price bid shall include the cost of all labor, materials and equipment necessary to complete the work.

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ITEM 661.1702_08 - INSTALL FIBERGLASS CONDUIT ON STRUCTURE (ELECTRIC)

DESCRIPTION:

This work shall consist of installing fiberglass conduit for electric as well as associated fittings and connections at locations as detailed in the contract documents and as directed by the Engineer.

The contractor shall completely install permanent and/or temporary fiberglass conduit on the designated structure as shown on the plans.

MATERIALS:

The Conduits shall be 5" (140mm O.D.) Bullet-Resistant Fiberglass for electric including fittings, couplings, and appurtenances as furnished by the Consolidated Edison Company.

The contractor shall furnish all other material required for the installation including but not limited to hangers, sleeves, and expansion joints.

The materials and their necessary construction details shall conform to the latest NYSDOT and Con Edison Specifications.

The contractor shall notify the Consolidated Edison Company of the installation schedule at least thirty (30) days prior to the planned installation date. Should Con Edison fail to deliver the necessary material according to schedule, the State shall not be responsible for any delays.

It is the contractor's responsibility to inspect and unload the material immediately upon delivery and advise Con Edison promptly of all damaged material. Any material damaged or lost after the contractor's inspection shall be replaced by the contractor at the contractor's expense.

CONSTRUCTION DETAILS:

The contractor shall install the fiberglass conduit for electric as shown on the NYSDOT contract plans as well as Con Edison's associated drawings. Con Edison shall be notified at least 48 hours prior to the installation.

Con Edison may, at no cost to the Contractor, furnish an Inspector during the installation if the conduit. The Inspector will advise the Engineer regarding proper methods of work. The Inspector will not direct the Contractor's operation.

The nature of the work is such that certain specified requirements of the Consolidated Edison Company of New York, 511 Theodore Fremd Avenue, Rye, New York 10580, be followed. The contractor is responsible for obtaining copies of Con Edison's specifications and plans as necessary.

Excavation and backfill shall be in accordance with the provisions of Item 206.04 M of the NYSDOT Standard Specifications and any installation requirements by the Company as directed by the Engineer.

ITEM 661.1702 08 - INSTALL FIBERGLASS CONDUIT ON STRUCTURE (ELECTRIC)

METHOD OF MEASUREMENT:

This work, for installing company furnished fiberglass conduit on structure, shall be paid at the fixed lump sum price set forth in the proposal.

BASIS OF PAYMENT:

The amount set forth in the proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work including materials and an allowance for overhead and profit.

Monthly payment will be made for this work in proportion to the amount of work completed.

No separate payment shall be made for furnishing and installing hangers, expansion joints, or sleeves which are included in the cost of this item.

ITEM 04662.17nnnn M - INSTALL UTILITY HANGER SYSTEM - FIXED PRICE

DESCRIPTION:

Under this Item the Contractor shall install conduit and/or pipe hangers at the locations indicated on the Contract Documents or where directed by the Engineer.

All material necessary for complete hanger installation will be furnished by the company involved.

For purposes of this specification, the involved utility will be referred to as the Company regardless of whether or not the company is profit-making, non-profit-making, or governmental.

MATERIALS:

Except as noted, all materials necessary for proper installation will be furnished and delivered to the site by the Company.

The Contractor shall notify the Company at least thirty (30) days before material is required on the site. It shall be the Contractor's responsibility to inspect the material immediately upon delivery, and advise the Company of all damaged, or non-appropriate, material. If the Contractor fails to inspect the material, or if the material is damaged, lost or deemed inappropriate after the Contractor's acceptance, such material shall be replaced at the Contractor's expense.

Materials which are necessary for proper installation, but which by nature cannot be furnished by the Company (e.g. welded attachments to structural steel), will be furnished and paid for under their respective items.

CONSTRUCTION DETAILS:

The Company may, at no cost to the Contractor, furnish an Inspector during the installation of the conduit pipe hangers. The Inspector will advise the Engineer regarding proper methods of work. He will not direct the Contractor's operations.

METHOD OF MEASUREMENT:

Payment will be made at the lump sum price bid for each structure noted in the Proposal.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, and including an allowance for overhead and profit. Any bid other than the amount noted in the Proposal may cause the bid to be considered informal.

Monthly payments will be made for this work in proportion to the amount of work completed.

Materials not noted in this specification, which are necessary for proper hanger installation, will be paid for under their respective items.

No payment will be made for work specifically excluded from payment by the terms of this item.

ITEM 10662.1711 M - INSTALLING ELECTRIC COMPANY CONDUIT OFF STRUCTURE
ITEM 10662.1811 M - INSTALLING TELEPHONE COMPANY CONDUIT OFF STRUCTURE
ITEM 10662.1911 M - INSTALLING CABLE TELEVISION CONDUIT OFF STRUCTURE
ITEM 10662.2011 M - INSTALLING TELECOMMUNICATIONS COMPANY CONDUIT OFF STRUCTURE

DESCRIPTION:

The Contractor shall completely install the conduits of the various types and sizes at the locations shown on the plans or as ordered by the Engineer.

MATERIALS:

Conduit and fittings will be furnished in commercial lengths by the respective utility companies. The Contractor shall furnish all materials for the coating, joining, spacing or temporary support of the respective conduit and fittings.

The Contractor is to notify the utility company at least one month before the material is required at the site. It shall be the Contractor's responsibility to immediately inspect the material during delivery and advise the company of any damaged or inappropriate material. If the Contractor fails to inspect the material during delivery or accepts the material and the material is damaged, lost or deemed inappropriate, such material shall be replaced at the Contractor's expense.

CONSTRUCTION DETAILS:

The installation of the electrical conduit shall be in accordance with Subsections 670-3.01, 670-3.03, 670-3.07, 670-3.14, 670-3.15, and 670-3.17 of the Standard Specifications.

The installation of the telephone, cable television and telecommunications conduit shall be in accordance with Subsections 680-3.03, 680-3.04, 680-3.06, 680-3.08, 680-3.09, 680-3.13, and 680-3.20 of the Standard Specifications.

Conduit excavation and backfill shall be in accordance with the appropriate subsections of Section 206 of the Standard Specifications.

All installed conduit shall be tested by the Contractor before the installation will be accepted. The Contractor shall test for clear bore, and correct installation by the use of a ball mandrel, brush and snake. The ball shall be of lignum vitae, or other material of equal hardness, as determined by the Engineer. The ball shall be turned to approximately 85% of the internal diameter of the conduit to be tested. Two short wire brushes shall be included in the mandrel assembly.

Snaking of the mandrel through the conduit shall be done in the presence of the Engineer. Any conduit which rejects the mandrel shall be cleared immediately. All conduit which cannot be cleared shall be repaired or

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ITEM 10662.1711 M - INSTALLING ELECTRIC COMPANY CONDUIT OFF STRUCTURE
ITEM 10662.1811 M - INSTALLING TELEPHONE COMPANY CONDUIT OFF STRUCTURE
ITEM 10662.1911 M - INSTALLING CABLE TELEVISION CONDUIT OFF STRUCTURE
ITEM 10662.2011 M - INSTALLING TELECOMMUNICATIONS COMPANY CONDUIT OFF STRUCTURE

replaced, as determined by the Engineer. Replacement conduit shall be equal in all respects to the conduit originally supplied. Repair and replacement work shall be done at the Contractor's expense.

All conduit shall be capped or plugged, unless otherwise indicated on the Contract plans, or ordered by the Engineer.

METHOD OF MEASUREMENT:

Payment will be made at the fixed lump sum price for the various types of conduit installed in accordance with this specification.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, including excavation, backfill, materials and an allowance for overhead and profit. Any bid other than the amount noted in the Proposal may cause the bid to be considered informal.

Monthly payment will be made for this work in proportion to the amount of work completed.

Materials not noted in this specification, which are necessary for proper conduit installation, will be paid for under their respective items.

No payment will be made for work specifically excluded from payment by the terms of this item.

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ITEM 08662.1820nn M - FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES

DESCRIPTION:

This work shall consist of furnishing and installing conduit of the number, type and location as indicated on the contract documents and as directed by the Engineer.

All material necessary for complete conduit installation will be furnished by the contractor.

For purposes of this specification, the involved utility will be referred to as the Company regardless of whether or not the company is profit-making, non-profit-making, or governmental.

MATERIALS:

Except as noted, all materials necessary for proper installation will be furnished and delivered to the site by the contractor. Conduit and fittings will be furnished in commercial lengths. Sleeves for expansion joints will be furnished in the required lengths.

Materials which are necessary for proper installation (e.g. welded attachments to structural steel) will be furnished and paid for under their respective items.

Contractor supplied materials:

Steel sleeves (diameter and thickness as shown on the Plans)	ASTM A36M
Portland Cement	701-01
Concrete Repair Material	701-04
Mortar Sand	703-03
Water	712-01

Pull Cord as indicated on the plans.

Conduit as indicated on the plans

Hangers and hardware as indicated on plans

Epoxy Adhesive	Manufacturer's recommendation for conduit type

CONSTRUCTION DETAILS:

A. Holes in abutments may be made by coring. Alternately, the contractor shall saw or line drill the perimeter of the opening and remove the remaining concrete using chipping hammers meeting the requirements of subsection 580-3.02. If the plans show blockouts, the contractor shall form the openings to the satisfaction of the Engineer.

Unless otherwise shown on the plans, the steel sleeves shall be grouted in place with the grout extending the full thickness of the abutment. Grout shall consist of Concrete Repair Material(§ 701-04) or a 3 to 1 (by volume) mixture of sand and cement together with sufficient water to make a workable mix.

Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter. Expansion sleeves shall be installed at the locations indicated on the contract plans or as directed by the Company.

All joints in galvanized steel conduit shall be sealed with a thread sealing material, recommended by the conduit manufacturer, applied to the male threads. Plastic conduit shall be joined by solvent welding belled ends and couplings. Fiberglass conduit shall be jointed in accordance with the manufacturer's recommendation for the type of joint furnished.

When directed by the Engineer, the contractor shall repair damage to galvanized steel surfaces of conduit in accordance with the requirements of subsection 719-01. For the purposes of this specification the repair size limitations of subsection 719-01 shall not apply. The Engineer shall determine size limitations of repair. If the Engineer determines that a damaged galvanized coating is not repairable, for whatever reason, that portion of conduit shall be replaced by the contractor with conduit coated in a manner acceptable to the Engineer. The replacement will be made at the contractor's expense.

When galvanized steel conduit is installed, all metallic connections shall be tight to ensure continuity of ground bondings. Bonded ground straps shall be installed at each expansion joint of each conduit. Each conduit installation will be grounded outside the bridge limits by the contractor.

All conduit shall project a minimum of 300 mm beyond the back of the abutment backwalls, or as shown on the contract plans. Underground conduit greater than 1.5m in length shall be backfilled in accordance with subsection 203-3.15 - FILL AND BACKFILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS AND DIRECT BURIAL CABLES. All underground conduit, regardless of length, shall be covered with the minimum earth cover indicated on the contract plans.

All installed conduit shall be tested by the contractor before the installation will be accepted. The contractor shall test for clear bore, and correct installation by the use of a ball mandrel, brush and snake. The ball shall be of lignum vitae, or other material of equal hardness, as determined by the Engineer. The ball shall be turned to approximately 85% of the internal diameter of the conduit to be tested. Two short wire brushes shall be included in the mandrel assembly.

Snaking of the mandrel through the conduit, shall be done in the presence of the Engineer. Any conduit which rejects the mandrel shall be cleared immediately. All conduit which cannot be cleared shall be repaired, or replaced, as determined by the Engineer. Replacement conduit shall be equal in all respects the conduit originally supplied. Repair and replacement work shall be done at the contractor's expense.

All ducts shall be fitted with a pull cord. The pull cord shall be installed immediately after completing each section of conduit. All conduit shall be capped, or plugged, unless otherwise indicated on the contract plans, or as directed by the Engineer.

The Company may, at no cost to the contractor, furnish an Inspector during the installation of the conduit. The Inspector will advise the Engineer regarding proper methods of work. He will not direct the contractor's operations.

B. Excavation:

The requirements as specified in Section 206, Trench, Culvert and Structure Excavation, of the Standard Specifications shall apply. Except that the cost of excavation shall be included in the lump sum price bid for installing conduit.

C. Backfill:

The requirements as specified in Section 203-3.15, Fill and Backfill at Structures, Culverts, Pipes, Conduits and Direct Burial Cable, of the Standard Specifications shall apply. Except that the cost of backfill shall be included in the lump sum price bid for installing conduit.

ITEM 08662.1820nn M - FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES

D. Excavation Protection System:

The requirements as specified in Section 552-3.04, of the Standard Specifications and the directions of the Engineer shall apply. Except that the cost of backfill shall be included in the lump sum price bid for installing conduit.

E. Control Backfill Material:

The provisions of the Specification for Controlled Low Strength Material and the directions of the Engineer shall apply.

METHOD OF MEASUREMENT:

This work will be measured at the lump sum price bid for each location shown in the plans or noted in the proposal, and as directed by the Engineer.

BASIS OF PAYMENT:

The lump sum price bid for furnishing and installing conduit shall include all equipment, material, and labor required to complete the work as shown on the plans and/or in the proposal, and as directed by the Engineer.

Monthly payments will be made for this work in proportion to the amount of work completed.

Materials not noted in this specification, which are necessary for proper conduit installation, will be paid for under their respective items.

No payment will be made for work specifically excluded from payment by the terms of this item.

The cost of Trench & Culvert Excavation, Select Granular Fill, Excavation Protection System, and Controlled Low Strength Material shall be included in the price bid for this item.

PAYMENT WILL BE MADE UNDER:

ITEM NO.	ITEM	PAY UNIT
08662.1820nn M	FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES	LUMP SUM

Note: "nn" denotes a serialized pay item, see Subsection 101 - 53.

ITEM 01662.20 M - INSTALL XX NPS COMPANY FURNISHED PVC CONDUITS

DESCRIPTION:

Under this item the Contractor shall install Company furnished PVC conduit in the manner and location as shown on the plans or as directed by the Engineer, and in accordance with the specifications and standards of the owning utility company.

The contractor shall be responsible for obtaining copies of the applicable specifications and standards from the utility company, and for coordinating all work with their offices.

For the purposes of this specification, the owning utility company will be referred to as the Company.

MATERIALS:

PVC utility conduit will be furnished and delivered to the site by the Company. Conduit and fittings will be furnished in commercial lengths.

The Contractor shall notify the Company at least thirty (30) days before material is required on the site. It shall be the Contractor's responsibility to inspect the material immediately upon delivery, and advise the Company of all damaged, or non-appropriate material. If the Contractor fails to inspect the material, or if the material is damaged, lost, or deemed inappropriate after the Contractor's acceptance, such material shall be replaced at the Contractor's expense.

The Contractor shall furnish all other materials as shown on the plans, or as directed by the Engineer, and as indicated in the specifications and standards of the utility company.

Sand backfill shall meet the requirements of Subsection 703-06 of the Standard Specifications

Concrete for duct encasement shall meet the requirements of Section 555 - Concrete for Structures, Class A

CONSTRUCTION DETAILS:

No work shall be performed on this item until the roadway area has been graded to within 150 mm of the finished grade elevations or as directed by the Engineer.

Conduit shall be installed in accordance with the details included in the plans and shall be placed true to line and grade. Conduit shall have a minimum of 750 mm cover as measured from finished grade. Conduit bends, where required, shall be made using standard fittings without appreciably reducing the internal diameter. PVC conduit shall be joined by solvent welding belled ends and couplings.

Unless otherwise shown or specified, the first 1.5 m of the conduit at vaults shall be laid perpendicular to the end of the vault at a level grade. Splaying of conduit at vaults shall be gradual, no bends or fittings will be permitted within the splay area.

All conduits shall be bedded in a minimum of 50 mm compacted sand. Backfill 75 mm around conduit and 75 mm above the uppermost conduit shall be compacted sand. Conduits located under roadways shall be encased in concrete with a minimum of 75 mm of cover above and on either side of the outermost conduits. The contractor is cautioned that backfill will be required over each row of conduit in order to prevent voids and to achieve satisfactory compaction.

ITEM 01662.20 M - INSTALL XX NPS COMPANY FURNISHED PVC CONDUITS

All installed conduit shall be tested by the Contractor before the installation will be accepted. The Contractor shall test for clear bore and correct installation by the use of a ball mandrel, brush and snake. The ball shall be of lignum vitae, or other material of equal hardness, as determined by the Engineer. The ball shall be turned to approximately 85% of the internal diameter of the conduit to be tested. Two short wire brushes shall be included in the mandrel assembly.

Snaking of the mandrel through the conduit shall be done in the presence of the Engineer. Any conduit which rejects the mandrel shall be cleared immediately. All conduit which cannot be cleared shall be repaired or replaced as determined by the Engineer. Replacement conduit shall be equal in all respects to the conduit originally supplied. Repair and replacement work shall be done at the Contractor's expense.

The Company may furnish, at no cost to the Contractor or State, an inspector during the installation of conduit. The inspector will advise the Engineer regarding proper methods of work. He will not direct the Contractor's operation.

All conduit shall be capped or plugged, unless otherwise indicated in the contract plans or proposal or by the Engineer.

METHOD OF MEASUREMENT:

Conduit shall be measured for payment by the actual number of linear meters installed in accordance with the plans, specifications, or as directed by the Engineer.

BASIS OF PAYMENT:

The price bid per meter shall include the cost of furnishing all labor and equipment necessary to complete the work as shown on the plans or as directed by the Engineer, and in accordance with the appropriate specifications and standards of the Company. No separate payment will be made for installing measuring/pull cords, solvent cements, adaptors, couplings, warning tape, but the cost of these items shall be included in the unit price for this item.

The cost of excavation, select backfill and concrete encasement will be paid for under the appropriate items shown in the contract documents.

Payment will be made under
I

ITEM NO.	ITEM DESCRIPTION	PAY UNIT
01662.20XX	Install XX NPS Company Furnished PVC Conduits	M

Where XX as indicated shall represent the diameter of the PVC conduit being installed in Nominal Pipe Size format.

ITEM 08662.8101 M - INSTALL STEEL GAS MAIN PIPE ON STRUCTURE (CON EDISON)

DESCRIPTION:

This work shall consist of installing steel gas main pipe as well as associated fittings and connections at locations shown on the plans and as directed by the Engineer.

The contractor shall completely install permanent and/or temporary gas main pipe, on the designated structure, as shown on the plans.

MATERIALS:

The gas main pipe, fittings, couplings and appurtenances shall be furnished by the Consolidated Edison Company. This includes skids and link seals required to install and seal the annular space between sleeve and carrier pipe, if necessary.

The contractor shall furnish all other material required for the installation including, but not limited to, brackets, rollers, hangers, and bolts.

The materials and their necessary construction details shall conform to the latest NYSDOT and Con Edison Specifications.

The contractor shall notify the Con Edison Company of the installation schedule at least thirty (30) days prior to the planned installation date. Should Con Edison fail to deliver the necessary material according to schedule, the State shall not be responsible for any delays.

It is the contractor's responsibility to inspect and unload the material immediately upon delivery and advise Con Edison promptly of all damaged material. The contractor shall visually inspect all pipes for defects and gouges. Any material damaged or lost after the contractor's inspection shall be replaced by the contractor at his own expense.

CONSTRUCTION DETAILS:

The contractor shall install steel gas main pipe as shown on the NYSDOT contract plans as well as Con Edison’s associated drawings. Con Edison shall be notified at least 48 hours prior to the installation in order to provide inspector(s) at the site.

The nature of the work is such that certain specified requirements of the Consolidated Edison Company of New York, 1615 Bronxdale Avenue, Bronx, NY 10462, be followed. The contractor is responsible for obtaining copies of Con Edison's specifications and plans as necessary.

All gas main pipe joints shall be welded. Welding shall be performed in accordance with Con Edison Specifications. This work also includes the welding of valves, gas stopping devices and by-passes as deemed necessary by Con Edison, either off or on the structure.

All pipe welds shall have 100% X-ray examination. Radiographic inspection shall be in accordance with Con Edison Specifications G-1066 (Qualification of Radiographers & Radiographic Procedures) and G-1070 (Radiographic Inspection of Pipeline Welds). This work shall be performed by the contractor.

ITEM 08662.8101 M - INSTALL STEEL GAS MAIN PIPE ON STRUCTURE (CON EDISON)

The contractor shall install all cathodic protection equipment and associated material. All field coating of pipes exposed on the bridge shall be performed in accordance with Con Edison Specification G-8209, "Field Coating of Steel Gas Pipe and Fittings Installed Underground and in Subsurface Structures".

All welded joints, elbows, offsets, sleeves, and pipe with damaged coating shall be coated with cold applied tape. Before any cold applied tape coating is put on, the contractor doing this work shall be pre-approved by the Con Edison Company.

Pressure test of the pipe shall be performed by the contractor prior to the tie-in of the completed installation. Pressure tests shall be performed in accordance with Con Edison Specs. Weld end caps are to be utilized for the tests. All defects found shall be corrected by the contractor in a manner and to the satisfaction of the Engineer at no additional cost.

Link seals and skids shall be installed, if necessary, between the carrier pipe and any sleeve in accordance with Con Edison's specifications and as shown on plans.

After the gas main pipe has been welded and installed, Cathodic Protection Acceptance Testing by Con Edison shall be performed, prior to live tie-in work being conducted. If the test fails, the contractor shall make all necessary corrections at no additional cost.

Con Edison will perform all live gas work. The contractor shall be responsible for notifying Con Edison when the connection to the existing gas main is completed. The State accepts no responsibility for delays or any other construction problem, which might arise from failure of the utility to make the connection in accordance with the contractor's construction schedule.

METHOD OF MEASUREMENT:

Payment will be made at the fixed lump sum price for the pipe installed in accordance with this specification.

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of all labor, equipment and materials (other than material furnished by Con Edison) necessary to complete the work, and an allowance for overhead and profit. The cost of welding, radiographic inspection, and testing of pipe joints shall be included in the price bid for this item. Any bid other than the amount noted in the Proposal may cause the bid to be considered informal.

Monthly payment will be made for this work in proportion to the amount of work completed.

No payment will be made for work specifically excluded from payment by the terms of this item.

Payment will be made under:

ITEM 08662.8101 M - INSTALL STEEL GAS MAIN PIPE ON STRUCTURE

ITEM 08662.8331 M - INSTALL STEEL GAS MAIN PIPE OFF STRUCTURE (CON EDISON)

ITEM 08662.8332 M - INSTALL PLASTIC GAS MAIN PIPE OFF STRUCTURE (CON EDISON)

DESCRIPTION:

This work shall consist of installing gas main pipe as well as associated fittings and/or connections at locations shown on the plans and as directed by the Engineer.

The contractor shall completely install permanent and/or temporary gas main pipe as shown on the plans.

MATERIALS:

The gas main pipes, fittings, couplings and appurtenances shall be furnished by the Consolidated Edison Company.

The contractor shall furnish all other material required for the installation including but not limited to, backfill sand, concrete and pavement.

The material and their necessary construction details shall conform to the latest NYSDOT and Con Edison Specifications.

The contractor shall notify the Consolidated Edison Company of the construction schedule at least thirty (30) days prior to the actual planned construction date. Should Con Edison fail to deliver the necessary material according to schedule, the State shall not be responsible for any delays.

It is the contractor's responsibility to inspect and unload the material immediately upon delivery and advise Con Edison promptly of all damaged material. Contractor shall visually inspect all pipes for defects and gouges. Any material damaged or lost after the contractor's inspection shall be replaced by the contractor at his own expense.

CONSTRUCTION DETAILS:

The contractor shall install gas main pipe as shown on the NYSDOT contract plans as well as Con Edison's associated drawings and specifications as directed by the Engineer. Con Edison shall be notified at least 48 hours prior to the construction in order to provide inspector(s) at the site.

The nature of work is such that certain specified requirements of the Consolidated Edison Company of New York, 1615 Bronxdale Avenue, Bronx, New York 10462, shall be followed. The contractor is responsible for obtaining copies of Con Edison's specifications and plans as necessary.

Installation of gas main shall be in accordance with Con Edison Company Specification G-8005 "General Specification for the Installation of Gas Distribution Mains" and its listed associated specifications and drawings. Con Edison shall approve all deviations from the trench width and

ITEM 08662.8331 M – INSTALL NPS STEEL GAS MAIN PIPE OFF STRUCTURE (CON EDISON)
ITEM 08662.8332 M - INSTALL NPS PLASTIC GAS MAIN PIPE OFF STRUCTURE (CON EDISON)

depth as documented in the contract documents for the installation of the gas main. Tracer wires shall be installed on all plastic main.

All PE pipe joints shall be joined by heat fusion except where otherwise indicated. Pipe line butt fusion shall be performed in accordance with Con Edison Specifications. This work shall also include the welding of valves, gas stopping/vent devices and by-passes as deemed necessary by Con Edison. All welders and PE pipe fusers shall have in their possession the appropriate current Con Edison Welder or Plastic Pipe Certification.

All steel pipe welds shall have 100 % X-ray examinations. Radiographic inspection shall be in accordance with Con Edison Specifications G-1066 and G-1070. This work shall be performed by the contractor.

The contractor shall install all cathodic protection equipment and associated material. All field coating of pipes and appurtenances shall be performed as per Con Edison Specification G-8209 "Field Coating of Steel Gas Pipe and Fittings Installed Underground and in Subsurface Structures". Valves and irregular surface pipe fittings shall be coated with hot coal tar enamel. Hot tar coating contractor shall be pre approved by the Con Edison Company.

The contractor shall pressure test all piping after construction prior to tie-in. Pressure test shall be performed in accordance with Con Edison Specification. Weld end or PE caps shall be used for the tests. Any defects found shall be corrected by the contractor in a manner acceptable to Con Edison and the Engineer at no additional cost.

Con Edison shall perform all live work. The contractor shall be responsible for notifying Con Edison when the connection to the existing gas main in completed. The State accepts no responsibility for delays or any other construction problems, which might arise from the failure of the utility to make the connection in accordance with the contractor's construction schedule.

After the gas main pipe is fused and welded, X-ray tested, installed and pressure tested, backfill sand shall be installed and compacted around the pipe. Cathodic protection acceptance testing shall be performed by Con Edison prior to live tie-in work. If this test fails, the contractor shall make all necessary corrections at no additional cost.

Excavation and backfill shall be in accordance with the provisions of Item 206.04 M of the NYSDOT Standard Specifications and any installation requirements by the Company as directed by the Engineer.

METHOD OF MEASUREMENT:

Payment will be made at the fixed lump sum price for the pipe installed in accordance with this specification.

ITEM 08662.8331 M - INSTALL STEEL GAS MAIN PIPE OFF STRUCTURE (CON EDISON)

ITEM 08662.8332 M - INSTALL PLASTIC GAS MAIN PIPE OFF STRUCTURE (CON EDISON)

BASIS OF PAYMENT:

The amount set forth in the Proposal is a fixed price for all bidders and shall not be changed. The published price has been prepared taking into account the cost of furnishing all labor and equipment necessary to complete the work, including excavation, backfill, materials, and an allowance for overhead and profit. Any bid other than the amount noted in the Proposal may cause the bid to be considered informal.

Monthly payment will be made for this work in proportion to the amount of work completed.

No payment will be made for work specifically excluded from payment by the terms of this item.

Payment will be made under:

Item No.	Item	Pay Unit
08662.8331	Install Steel Gas Main Pipe (Con Edison)	LS
08662.8332	Install Plastic Gas Main Pipe (Con Edison)	LS

ITEM 664.40XX--06 M - PRECAST SANITARY SEWER MANHOLE

DESCRIPTION

This specification covers the requirements for furnishing and installing precast sanitary sewer manholes as shown on the plans and in accordance with these specifications. The work shall conform to the requirements of NYSDOT Section 604 – Drainage Structures with the following modifications:

MATERIALS

Under Section 604-2.01 Drainage Structure and Manholes, **ADD** the following:

"Exterior coating for manhole shall be either Mobil 78-J-2 Val-Chem Tar-Coat, Rust-Oleum 9300 Epoxy System or approved equal.

Precast reinforced concrete top slab and/or precast landing if required shall be manufactured in accordance with the detail shown on the contract plans. The concrete used in the manufacturing of these slabs shall be minimum 30 MPa concrete as specified under Section 706-04, "Precast Concrete Drainage Units" of the NYSDOT Standard Specifications."

Pipe Connections into the Sanitary Sewer Manholes shall be as follows

a. The precast reinforced concrete manhole base shall be provided with circular openings at the locations and elevations for the proper connection of pipes. The pipe connections shall be sealed with flexible manhole seal assemblies.

b. The flexible manhole seal assemblies shall be installed in accordance with the recommendations of the seal assembly manufacturer and shall conform to ASTM C923-02.

c. Flexible manhole seal assemblies shall permit at least an eight (8) degree deflection from the centerline of the opening in any direction while maintaining a watertight connection.

d. The flexible manhole seal assemblies shall be as manufactured by Interpace Corp. (Lock Joint Flexible Manhole sleeve), National Pollution Control Systems, Inc. (Kor-N-Seal) or Press-Seal Gasket Corp. or approved equal.

A cast-in-place concrete invert shall be formed within the precast concrete manhole base as shown on the contract drawings with Class A concrete.

CONSTRUCTION DETAILS

At the end of Section 604-3.02 Concrete Drainage Structure and Manholes, **ADD** the following:

Manhole Bases

For precast manhole bases, the area underneath the manhole base shall be excavated to the required elevation. The soil below the base shall not be disturbed. The manhole base shall then be lowered into the trench and checked for proper bearing on the subgrade, proper elevation and orientation to receive the incoming and outgoing sewers at the designated invert elevation. If the invert elevation varies by more than plus or minus 13 mm from the designated invert elevation, the base shall be removed and reset.

ITEM 664.40XX--06 M - PRECAST SANITARY SEWER MANHOLE

Cast In Place Inverts

The concrete invert fill shall be installed following the connection of all sewer pipes to the manhole. The invert fill shall be true to the sewer pipe invert elevations, with smooth channels of uniform cross section and slope, either straight or with a continuous curve between inlet and outlet of pipes. The concrete invert fill shall be placed in accordance with dimensions and details shown on the Contract Plans.

To eliminate free fall conditions in a manhole resulting from invert elevation differentials between incoming and outgoing pipes, the Contractor shall form and construct suitable channels in the bottom of the manhole connecting the inverts.

The complete exterior, flow channel, and bench shall receive a prime and finish coat of the specified coating. Application shall be in strict conformance with the manufacturer's recommendations.

Masonry Collar

The brick masonry or precast concrete collar be constructed on the Precast Concrete Top Slab to bring the manhole frame and cover to the proper grade in accordance with the detail on the Contract Plans. The minimum height shall be 100 mm and the maximum height shall not exceed 400 mm.

Following the placement of the brickwork, a 13 mm layer of Portland cement mortar shall be applied to the exterior surface of the brick and trowelled to a smooth finish.

Leakage Tests

For leakage test purposes, a section of sewer line shall be construed as being that portion of a sewer line between two (2) consecutive manholes inclusive of upstream manhole and appurtenances unless otherwise specified.

The Contractor shall be required to notify the Engineer not less than forty-eight (48) hours prior to the time he intends to begin testing at any particular location.

Prior to undertaking any repairs, the Engineer's written approval of method and material to be used in the repair shall be secured. Items which in the opinion of the Engineer cannot be repaired shall be replaced.

a. All gravity and pressure sewer lines, including but not limited to pipe, fittings, manholes, risers, stubs, specials an appurtenances shall be tested for water tightness as hereinafter specified.

b. The Contractor shall furnish all necessary material, equipment, labor and other facilities required to satisfactorily perform the tests and shall make all necessary repairs or replacements and retests as required at his own expense.

c. The Contractor is warned that the Engineer may refuse to allow exfiltration testing, or void those already underway if, in his judgment, heavy rain or rainwater inflow will distort test results. Retests of the affected lines shall be done at no cost to the County, State or other agency having jurisdiction. No claims for delays will be considered by the County, State or other agency having jurisdiction, in the event testing is suspended by the Engineer, as specified above.

d. All sewer pipes and manholes must be clean prior to any work described in this section. They shall be free from dirt, debris, sand, stones, etc. and accumulated water must be removed.

ITEM 664.40XX--06 M - PRECAST SANITARY SEWER MANHOLE

e. The testing of new manholes will be performed using the water exfiltration test or air test. Air pressure testing on manholes shall be done in accordance with ASTM C-828-03 and NYSDEC Technical Information Pamphlet No. 15 (7/29/77). This specification describes the testing process for an exfiltration test.

f. Prior to the exfiltration test, all pipes in the new manhole to be tested shall be plugged. All plugs shall be installed in the presence of the Engineer or his representative. Each new manhole shall be filled with water to a level not less than 1.2m above the exterior crown of the upstream pipe or above the normal groundwater level whichever is higher.

g. A twenty four (24) hour stabilization period will be required prior to taking measurements. Should the water level during the stabilization period drop below the test level as specified above, the Contractor, in the presence of the Engineer or his representative shall add make-up water for water lost during the stabilization period to increase the water level to the required height for the test.

h. The actual test period shall begin following the stabilization period. Addition of make-up water will not be allowed once the test has begun. *Any deviation* from the aforementioned will *void* the test.

i. The test shall be conducted for a period of at least two (2) hours. The Engineer or his representative will take three (3) readings of the water level at the beginning of the test period, and another three (3) readings of the water level at the end of the test period. The average of the readings will be used by the Engineer to calculate the leakage quantity.

j. The maximum allowable quantity of exfiltration from any manhole under test shall not exceed 1.0 liters per 300 mm diameter of manhole per 300 mm of water depth measured from the invert of the downstream pipe per twenty-four (24) hours.

Prior to making any repairs, the Contractor shall submit to the Engineer, in writing, the proposed method of repair and secure his written approval of methods and material to be incorporated in the repair. The Engineer shall be the sole judge as to whether the pipes or manholes shall be repaired or replaced.

All repairs and retesting must be made in the presence of a representative of the Engineer and to the satisfaction of the Engineer.

Should a section or sections of pipe, or manholes fail to meet the leakage criteria, the Contractor shall at no cost to the County, State, or other agency having jurisdiction, locate the leaks and repair pipe and manholes, as necessary, until the leakage is within the permitted allowance.

Regardless of the results of the infiltration test, it is required that all visible leaks be repaired.

The injection of gel, sealant, or any other product to seal cracks, porous section, or any other structural defect of the pipe or manhole will not be permitted.

ITEM 664.40XX--06 M - PRECAST SANITARY SEWER MANHOLE

All tests and repairs shall be repeated as many times as necessary, at no cost to the County, State or other agency having jurisdiction, until the requirements hereinbefore specified have been met.

METHOD OF MEASUREMENT

The quantity to be measured under this item will be the number of linear meters of height, measured to the nearest tenth of a meter, from the bottom of the manhole base to the top of the masonry collar.

BASIS OF PAYMENT

The unit price bid per meter shall include the cost of all labor, equipment, and materials necessary to complete the work including flexible gaskets between manhole sections, concrete invert fill, precast top slab and landings, and all necessary testing and any repairs to the manhole required in connection with the sewerage tests on the manhole.

Manhole frames and covers will be paid for under separate items.

Excavation (dewatering included in Excavation), backfill, select fill, geotextile and any necessary sheeting will be paid for under separate items.

Payment will be made under:

Item No.	Description	Pay Unit
664.4048--06	Precast Sanitary Sewer Manhole (1220 mm DIA.)	Meter
664.4060--06	Precast Sanitary Sewer Manhole (1525 mm DIA.)	Meter
664.4072--06	Precast Sanitary Sewer Manhole (1830 mm DIA.)	Meter
664.4084--06	Precast Sanitary Sewer Manhole (2135 mm DIA.)	Meter
664.4096--06	Precast Sanitary Sewer Manhole (2440 mm DIA.)	Meter

ITEM 04680.520910 M - CONDUIT, FIBERGLASS - MULTI-CELL – 4 DUCT

DESCRIPTION

The Contractor shall furnish and install conduit, fiberglass - multi-cell - 4 duct, at the locations shown on the plans and in accordance with these specifications or as ordered by the Engineer.

MATERIALS

General

The conduit, fiberglass - multi-cell - 4 duct, shall consist of a fiberglass outer conduit with four (4) - 1 ¼ NPS PVC innerducts.

The outer conduit shall be a filament wound fiberglass reinforced epoxy.

The PVC innerduct assembly shall be pre-assembled in the factory and factory inserted into the outer conduit.

The outerduct and PVC innerduct shall comply with the specifications in ASTM, ANSI, NEMA, National Electronic Industry Standards (EIA/TIA), Bellcore and National Electric Code (NEC).

The outer conduit, outer conduit fittings, innerducts and innerduct fittings shall be free from defects including delaminations and foreign inclusions.

The outer conduit, outer conduit fittings, innerducts and innerduct fittings shall be nominally uniform in color, density and physical properties.

Material Requirements

Outer Conduit

The outer conduit and outer conduit fittings shall meet the minimum following requirements:

Ultimate tensile strength	75.8 MPa (minimum)
Ultimate elongation	2%
Modulus of elasticity	10 MPa
Dielectric strength	500Volts/mil
Water absorption	<1%
Specific gravity	1.9 - 2.0
Glass content	68%±2%
Barcol hardness	50
Operating temperature range	-46°C to +113°C

Outer conduit shall be manufactured to comply with the following dimensional requirements: nominal size - 4 NPS; inside diameter - 4 NPS; and a wall thickness of 2.3 mm.

The outer conduit shall be pigmented light gray and supplied with an integrally wound tapered bell and ground tapered spigot. The outer conduit shall be straight and the ends cut square to the inside diameter.

ITEM 04680.520910 M - CONDUIT, FIBERGLASS - MULTI-CELL – 4 DUCT

The outer conduit shall be have a factory installed gasket at the base of the end bell to prevent the entrance of water into the conduit system.

The outer conduit and outer conduit fittings shall contain an ultraviolet inhibitor.

Innerduct Assembly
The innerduct assembly shall consist of four (4) PVC ducts. Each duct shall be a nominal 1-1/4 NPS outside diameter with an internal diameter of 30 mm.

The innerduct shall be free from holes, splits, blisters, inclusions and other performance affecting imperfections.

Innerducts and any spacers used internally shall all be dielectric. Internal spacers shall hold the innerducts in a proper spacing and alignment and be certified to withstand all handling pressures and stresses.

Innerducts shall be pre-lubricated during the manufacturing process to provide a dynamic co-efficient of friction of .06 to .09 in accordance with Bellcore Standard GR-TSY-356-CORE, Oct. 1995, section 4.1.5.

The lubricant shall be compatible with the proposed fiber optic cable jacket.

Operating temperature range -20°C to +60°C.

The coupling system shall be designed to allow the innerducts to float within their seals to provide a non-binding, flexible connection to eliminate binding forces between the outer and innerducts.

Innerduct bends shall be tested for cut through resistance in accordance with Bellcore Standard TR-TSY-000356, minimum demonstrated cut through resistance 100 minutes or greater.

Each innerduct is to have a factory installed gasket assembly to provide a water and airtight sealing system.

The innerduct shall have an airburst rating of 1.4 MPa.

Underground Warning Tape
Underground Warning Tape shall be a heavy-duty polyethylene material that is compounded for direct burial service and which will resist acids, alkalis and other soil substances. The tape shall be orange with a continuous legend " CAUTION BURIED FIBER OPTIC CABLE" print in black. The underground warning tape shall be 152 mm wide and have a minimum thickness of 4 mils.

Pulling Tape
Pulling tape shall be a detectable woven polyester, aramid fiber or combination of the two fibers

with a minimum tensile strength of 8 KN. The pulling tape shall have two (2) 24 gage (minimum gage size), insulated tracer wires installed as part of the pulling tape construction.

Innerduct Plugs
Innerduct plugs shall be corrosion-proof, chemical-resistant, removal, reusable and provide a light, air and gas tight seal to seal the innerduct. The plug shall have a tie tab for securing pulling tapes.

Terminating Plug
Terminating plug shall be corrosion-proof, chemical-resistant, removal, reusable, and provide a light, air and gas tight seal around the installed wire or cable. The terminating plug shall have an individual entry port for each installed wires or cables.

CONSTRUCTION DETAILS
Subsections 680-3.03, 680-3.04, 680-3.05, 680-3.06, 680-3.07, 680-3.08, 680-3.09 and 680-3.13 of the Standard Specifications shall apply.

Conduit, fiberglass - multi-cell - 4 duct shall be installed in accordance with industry standards, manufacturer's written instructions, as shown on the Plans or as ordered by the Engineer.

Outer conduit shall be cemented together using epoxy adhesives recommended by the manufacturer and as approved by the Engineer. Conduit, fiberglass - multi-cell - 4 duct shall be installed by direct burial method or in conduit systems or methods as approved by the Engineer.

Transition adapters shall maintain the integrity of the innerduct system.

Conduit, fiberglass - multi-cell - 4 duct that terminate in a pullbox or splice/pullbox shall be sealed using manufacturer's recommended termination kit as approved by the Engineer.

All empty innerducts terminating in pullboxes or splice/pullboxes shall have a pulling tape installed. The Contractor shall leave three (3) meters of pulling tape at each end of the innerduct run. After the installation of the pulling tape, the tape shall be secured to the innerduct sealing plug and the plug installed in accordance with the manufacturer's instructions.

A watertight seal shall be installed between the indices of the innerducts and outer conduit.

All innerducts, at the terminating ends, with installed wire or cable shall be sealed with a compression type termination plug. The terminating plug shall have an individual entry port for each installed wire or cable.

No repairs shall be permitted to any outer conduit, outer conduit fittings, innerduct, and innerduct fittings. All broken, chipped, cracked or impaired lengths or fittings shall be removed and replaced with new material.

At the end of each days work, all conduit, fiberglass - multi-cell - 4 duct will be sealed. The

proposed sealing method shall be approved by the Engineer.

The fiber optic cable will be installed in the orange innerduct of the multi-cell conduit or as ordered by the Engineer.

The underground warning tape will be installed during trench backfilling for the fiberglass multi-cell conduit. The underground warning tape shall be located directly above the conduit 300 mm below finished grade.

Documentation is as specified under other items of these Contract Documents.

METHOD OF MEASUREMENT

Conduit, Fiberglass, Multi-Cell, 4 Duct will be measured as the number of linear meters installed in accordance with the Contract Documents or as ordered by the Engineer.

BASIS OF PAYMENT

The unit price bid per linear meter for Conduit, Fiberglass, Multi-Cell, 4 Duct shall include the cost of furnishing all labor, materials, tools, equipment, sealing the indices between the inner duct and outer conduit, innerduct plugs, pullbox terminator, splice/pullbox terminator, pull tape, underground warning tape, safety requirements, expansion joints, and incidentals necessary to complete the work.

Conduit excavation, backfill, conduit hangers, attachment hardware, and documentation shall be paid under other contract items.

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ITEM 18685.08 M - EPOXY REFLECTORIZED PAVEMENT MARKINGS - 0.38 MM (WET NIGHT VISIBILITY SPHERES)

DESCRIPTION

Under this work the contractor shall furnish and apply epoxy reflectorized pavement markings in accordance with these specifications, the Contract Documents, the NYSMUTCD, or as ordered by the Engineer.

The epoxy marking material shall be hot-applied by spray methods onto bituminous and portland cement concrete pavement surfaces at the thickness and width shown on the Contract Documents. Following a simultaneous application of Type I and Type II glass beads, the cured epoxy marking shall be an adherent reflectorized stripe that will provide wet night reflectivity.

MATERIALS REQUIREMENTS

A. Epoxy Material

1.0 Composition

The epoxy resin composition shall be specifically formulated for use as a pavement marking material and for hot-spray application at elevated temperatures. The type and amounts of epoxy resins and curing agents shall be at the option of the manufacturer, providing the other composition and physical requirements of this specification are met.

The epoxy marking material shall be a two-component (Part A and Part B), 100% solids type system formulated and designed to provide a simple volumetric mixing ratio (e.g. two volumes of Part A to one volume of Part B).

The epoxy marking material shall be supplied as either a regular-dry or a slow-dry material. Regular-dry may be used for all marking patterns. Slow-dry material is intended for marking hatchlines, edgelines, and other marking patterns located out of the general path of traffic.

Part A of both white and yellow shall conform to the following requirements:

PERCENT BY WEIGHT OF PART A

WHITE
- *Pigment - 18 Minimum, Titanium Dioxide (ASTM D476, Type II)
- Epoxy Resin - 75 to 82

YELLOW
- *Pigment - 23 Minimum, Medium Chrome Yellow (ASTM D211, Type III)

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Epoxy Resin - 70 to 77

*The entire pigment composition shall consist of either titanium dioxide or medium chrome yellow. No extender pigments are permitted. The white pigment, upon analysis, shall contain a minimum of 16.5% TiO_2 (100% purity). The yellow pigment, upon analysis, shall contain a minimum of 20% $PbCrO_4$ (100% purity).

The epoxy content of the epoxy resin in Part A will be tested in accordance with ASTM D1652 and calculated as the weight per epoxy equivalent (WPE) for both white and yellow. The epoxy content will be determined on a pigment free basis. The epoxy content (WPE) shall meet a target value provided by the manufacturer and approved by the Director, Materials Bureau. A ±50 tolerance will be applied to the target value to establish the acceptance range.

The amine value of Part B shall be tested in accordance with ASTM D2074* to determine its total amine value. The total amine value shall meet a target value provided by the manufacturer and approved by the Director, Materials Bureau. A ±50 tolerance will be applied to the target value to establish the acceptance range.

*The manufacturer may specify an alternate test method for determining the amine value subject to the approval of the Director, Materials Bureau.

2.0 Physical Properties of Mixed Components (Part A & Part B)

Unless otherwise noted, all samples are to be prepared and tested at an ambient temperature of 23± 2°C

a. Color. The white epoxy composition, when applied at a wet film thickness of 0.38 ± 0.02 mm and allowed to cure, shall be a reasonable visual match to Munsell Book Notation N9.5/0 (ASTM D1535).

The yellow epoxy composition, when applied at a wet film thickness of 0.38 ± 0.02 mm and allowed to cure, shall be a reasonable visual match to Munsell Book Notation 10YR 8/14 (ASTM D1535).

b. Directional Reflectance. The white epoxy composition (without glass spheres) shall have a daylight directional reflectance of not less than 84% relative to a magnesium oxide standard when tested in accordance with ASTM E1347.

The yellow epoxy composition (without glass spheres) shall have a daylight

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directional reflectance of not less than 55% relative to a magnesium oxide standard when tested in accordance with ASTM E1347.

c. **Drying Time (Laboratory).** When tested in accordance with ASTM D711 as modified below, regular-dry epoxy marking material shall reach a no-pick-up time in 30 minutes or less. Under these same test conditions, slow-dry epoxy marking material shall reach a no-pick-up time in 60 minutes or less. A Bird Applicator or other suitable instrument shall be used to spread a uniform 0.38 ± 0.02 mm thick wet film.

Type I reflective glass spheres shall be immediately dropped onto the epoxy composition, followed by application of Type II glass spheres. Each type shall be applied at the rate of 1.2 kg/L of epoxy (total 2.4 kg/L).

d. **Drying Time (Field).** When installed at 25°C at the specified wet film thickness and reflectorized with Type I and Type II glass spheres, regular-dry and slow-dry epoxy markings shall reach a no-track condition in approximately 30 minutes, and 60 minutes, respectively.

Dry to "no-tracking" shall be considered as the condition where no visual deposition of the epoxy marking to the pavement surface is observed when viewed from a distance of 15 m, after a passenger car is passed over the line.

e. **Abrasion Resistance.** The wear index of the composition shall not exceed 82 when tested in accordance with ASTM C501 using a CS-17 wheel and under a load of 1000 grams for 1000 cycles. Samples shall be allowed to cure for not less than 72 hours nor more than 96 hours prior to testing.

f. **Hardness.** The epoxy composition when tested in accordance with ASTM D2240 shall have a Shore D hardness of between 75 and 100. Samples shall be allowed to cure for not less than 72 hours nor more than 96 hours prior to testing.

g. **Infrared Spectrophotometer Analysis (ASTM D2621).** Samples of both Part A and Part B shall be analyzed by infrared spectrography to verify that the materials submitted for use are of an identical formulation as originally accepted by the Materials Bureau for the Department's "Approved List" of materials. Significant deviations, as determined by comparison with acceptable formulations, shall not be allowed.

B. **Reflective Glass Spheres**

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Type I and Type II reflective glass spheres for drop-on application shall conform to the following requirements.

The glass spheres shall be colorless, clean, transparent, free from milkiness or excessive air bubbles, and essentially clean from surface scarring or scratching. They shall be spherical in shape and at least 70% of the glass beads shall be true spheres. Type I spheres shall be tested for roundness according to the procedural directives of the Materials Bureau. Type II spheres shall be tested in accordance with ASTM D1155, Procedure A.

The refractive index of the spheres shall be a minimum of 1.50 as determined by the liquid immersion method at 25°C.

The silica content of the glass spheres shall not be less than 60%.

The glass spheres, Type I and II, shall be coated with a silane-type adherence coating designed to interact with and adhere to epoxy pavement markings.

The glass spheres shall have the following gradation when tested in accordance with ASTM D1214.

TYPE I		TYPE II	
U.S. Standard Sieve No.	**Total % Passing**	**U.S. Standard Sieve No.**	**Total % Passing**
Passing 2.00 mm	100	Passing 850 µm	100
Passing 1.70 mm	95-100	Passing 600 µm	80-95
Passing 1.40 mm	75-95	Passing 300 µm	9-42
Passing 1.18 mm	10-47	Passing 180 µm	0-10
Passing 1.00 mm	0-7		
Passing 850 µm	0-2		

C. Packaging and Shipment

Epoxy pavement marking materials shall be shipped to the job site in strong, substantial containers.

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Individual containers shall be plainly marked with the following information:

1. Name of Product
2. Item Number
3. Lot Number
4. Batch Number
5. Test Number
6. Date of Manufacture
7. Date of Expiration of Acceptance (6 months from date of manufacture)
8. The Statement (as appropriate)
   Part A - Contains Pigment & Epoxy Resin
   Part B - Contains Catalyst
9. Quantity
10. Mixing proportions, Application Temperature and Instructions
11. Safety Information
12. Manufacturer's Name and Address

Reflective glass spheres shall be shipped in moisture resistant bags. Each bag shall be marked with the name and address of the manufacturer, the type (I or II) of glass sphere, and net weight of the material.

D. Basis of Acceptance

Only epoxy pavement marking materials from manufacturers appearing on the Department's Approved List shall be considered for acceptance. Details for obtaining Approved List status are available from the Materials Bureau.

Epoxy pavement marking materials will be sampled and tested in accordance with the procedural directives of the Materials Bureau. Samples will be taken at the manufacturing location and considered for acceptance in stock lot quantities.

Department red and green metal security seals will be placed on containers of pavement marking materials that meet specifications. The colored metal security seals serve as the evidence of acceptance for epoxy material delivered to the job site.

All acceptances of uninstalled epoxy marking material shall expire six (6) months after the date of

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manufacture.

Type I and Type II reflective glass spheres shall be accepted on the basis of the manufacturer's brand name or product code appearing on the Department's Approved list. Details for obtaining approved list status are available from the Materials Bureau.

EPOXY APPLICATING EQUIPMENT

Mobile applicating equipment for the placement of epoxy reflectorized pavement markings shall be approved by the Director (Materials Bureau) prior to the start of work.

In general, a mobile applicator shall be a truck mounted, self-contained pavement marking machine, specifically designed to apply epoxy resin materials and reflective glass spheres in continuous and skip-line patterns. The applicating equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. In addition, the truck mounted unit shall be provided with accessories to allow for the marking of legends, symbols, crosswalks, and other special patterns.

At any time throughout the duration of the project, the Contractor shall provide free access to his epoxy applicating equipment for inspection by the Engineer or his authorized representative.

The Engineer may approve the use of a portable applicator in lieu of mobile truck mounted accessories for use in applying special markings only, provided such equipment can demonstrate satisfactory application of reflectorized epoxy markings in accordance with these specifications.

Mobile applicating equipment shall be capable of installing up to 30 000 m of epoxy reflectorized pavement markings in an eight hour day and shall include the following features:

1. Individual tanks for the storage of Part A and Part B of the epoxy resin.

2. Individual tanks for the storage of Type I and Type II glass spheres. Each tank shall have a minimum capacity of 1360 kg.

3. Heating equipment of sufficient capacity to maintain the individual epoxy resin components at the manufacturer's recommended temperature for spray application.

4. Individual dispensers for the simultaneous application of Type I and Type II glass spheres. Each dispenser shall be capable of applying spheres at a minimum rate of 1.2 kg/L of epoxy resin composition.

5. Metering devices or pressure gauges on the proportioning pumps, positioned to be readily

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visible to the Engineer.

6. All necessary spray equipment, mixers, compressors, and other appurtenances for the placement of epoxy reflectorized pavement markings in a simultaneous sequence of operations as described in Construction Details, D. Application of Epoxy Reflectorized Pavement Markings.

CONSTRUCTION DETAILS

A. General

All pavement markings and patterns shall be placed as shown on the Contract Documents and in accordance with the New York State, Manual of Uniform Traffic Control Devices (MUTCD).

Before any pavement marking work is begun, a schedule of operations shall be submitted for the approval of the Engineer.

At least five (5) days prior to starting striping, the Contractor shall provide the Engineer with the epoxy manufacturer' s written instructions for use. These instructions shall include, but not be limited to, material mixing ratios and application temperatures.

When pavement markings are applied under traffic, the Contractor shall provide all necessary flags, markers, signs, etc. in accordance with the MUTCD to maintain and protect traffic, and to protect marking operations and the markings until thoroughly set.

The application of pavement markings shall be done in the general direction of traffic. Striping against the direction of traffic flow shall not be allowed.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, all tracking marks, spilled epoxy, and epoxy markings applied in unauthorized areas.

When necessary the Contractor shall establish marking line points at nine (9) meter intervals throughout the length of the pavement or as directed by the Engineer.

B. Atmospheric Conditions

Epoxy pavement markings shall only be applied during conditions of dry weather and on substantially dry pavement surfaces. At the time of installation the pavement surface temperature shall be a minimum of 10°C and the ambient temperature shall be a minimum of 10°C and rising. The Engineer shall be the sole determiner as to when atmospheric conditions and pavement surface conditions are such to produce satisfactory results.

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C. Surface Preparation

The Contractor shall clean the pavement and existing durable markings to the satisfaction of the Engineer.

Surface cleaning and preparation work shall be performed only in the area of the epoxy markings application.

At the time of application all pavement surfaces and existing durable markings shall be free of oil, dirt, dust, grease and similar foreign materials. The cost of cleaning these contaminants shall be included in the bid price of this item.

In addition, concrete curing compounds on new portland cement concrete surfaces and existing painted pavement markings on both concrete and bituminous pavement surfaces shall be cleaned and paid for in accordance with Section 635, Cleaning and Preparation of Pavement Surfaces for Pavement Markings.

D. Application of Epoxy Reflectorized Pavement Markings

Epoxy reflectorized pavement markings shall be placed at the width, thickness, and pattern designated in the Contract Documents.

Marking operations shall not begin until applicable surface preparation work is completed and approved by the Engineer, and the atmospheric conditions are acceptable to the Engineer.

Pavement markings shall be applied by the following simultaneous operation:

1. The pavement surface is air-blasted to remove dirt and residues.

2. The epoxy resin, mixed and heated in accordance with the manufacturer's recommendations, is uniformly hot-sprayed onto the pavement surface at the minimum specified thickness.

3. Type I and Type II reflective glass spheres are injected into or dropped onto the liquid epoxy marking. Type I beads shall be applied first immediately followed by the application of Type II beads. Each type shall be applied at a minimum rate of 1.2 kg/L of epoxy resin (minimum total application = 2.4 kg/L).

E. Defective Epoxy Pavement Markings

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Epoxy reflectorized pavement markings, which after application and curing are determined by the Engineer to be defective and not in conformance with this specification, shall be repaired. Repair of defective markings shall be the responsibility of the Contractor and shall be performed to the satisfaction of the Engineer as follows:

1. Insufficient film thickness and line width; insufficient glass bead coverage or inadequate glass bead retention.

   Repair Method. Prepare the surface of the defective epoxy marking by grinding or blast cleaning. No other cleaning methods will be allowed. Surface preparation shall be performed to the extent that a substantial amount of the reflective glass spheres are removed and a roughened epoxy marking surface remains.

   Immediately after surface preparation remove loose particles and foreign debris by brooming or blasting with compressed air.

   Repair shall be made by restriping over the cleaned surface in accordance with the requirements of this specification and at the full thickness indicated on the Contract Documents.

2. Uncured or discolored epoxy*; insufficient bond (to pavement surface or existing durable marking).

   Repair Method. The defective epoxy marking shall be completely removed and cleaned to the underlying pavement surface in accordance with the requirements of Section 635 - Cleaning and Preparation of Pavement Surfaces, at the Contractor's expense.

   The extent of removal shall be the defective area plus any adjacent epoxy pavement marking material extending one meter in any direction.

   After surface preparation work is complete, repair shall be made by reapplying epoxy over the cleaned pavement surface in accordance with the requirements of this specification.

   *Uncured epoxy shall be defined as applied material that fails to cure (dry) in accordance with the requirements of this specification: MATERIALS, A., 2.0 paragraph d. Drying Time (Field); or applied material that fails to cure (dry) within a reasonable time period under actual field conditions, as defined by the Engineer.

   Discoloration shall be defined as localized areas or patches of brown,

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grayish or black colored epoxy marking material. These areas often occur in a cyclic pattern and often are not visible until several days or weeks after markings are applied.

Other defects not noted above, but determined by the Engineer to need repair, shall be repaired or replaced as directed by and to the satisfaction of the Engineer.

All work in conjunction with the repair or replacement of defective epoxy reflectorized pavement markings shall be performed by the Contractor at no additional cost to the State.

METHOD OF MEASUREMENT

Pavement striping will be measured in meters along the centerline of the pavement stripe and will be based on a 100 mm wide stripe. Measurement for striping with a width greater than the basic 100 mm, as shown on the plans or directed by the Engineer, will be made by the following method:

$$\frac{\text{Plan Width of Striping (millimeters)} \times \text{Meters}}{100 \text{ mm}}$$

Letters and symbols will be measured by each unit applied. A unit will consist of one letter or one symbol. Example: "SCHOOL" would be paid as six units.

BASIS OF PAYMENT

The accepted quantities of markings will be paid for at the contract unit price, which shall include the cost of furnishing all labor, materials and equipment to satisfactorily complete the work. The cost for maintaining and protecting traffic during the marking operations shall be included in the price bid. The cost of removal of concrete curing compounds and existing pavement markings will be paid under separate items and are not included in this item.

No payment will be made for the repair or replacement of defective epoxy reflectorized pavement markings.

No payment will be made for the number of linear meters of skips in the dashed line.

PAY ITEM NO.	ITEM	PAY UNIT
18685.072001	White Epoxy Reflectorized	Meter

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	Pavement Stripes - 0.51 mm (Wet Night Visibility Spheres)	
18685.072002	Yellow Epoxy Reflectorized Pavement Stripes - 0.51 mm (Wet Night Visibility Spheres)	Meter
18685.072003	White Epoxy Reflectorized Pavement Letters - 0.51 mm (Wet Night Visibility Spheres)	Each

PAY ITEM NO.	ITEM	PAY UNIT
18685.072004	White Epoxy Reflectorized Pavement Symbols - 0.51 mm (Wet Night Visibility Spheres)	Each
18685.081501	White Epoxy Reflectorized Pavement Stripes - 0.38 mm (Wet Night Visibility Spheres)	Meter
18685.081502	Yellow Epoxy Reflectorized Pavement Stripes - 0.38 mm (Wet Night Visibility Spheres)	Meter
18685.081503	White Epoxy Reflectorized Pavement Letters - 0.38 mm (Wet Night Visibility Spheres)	Each
18685.081504	White Epoxy Reflectorized Pavement Symbols - 0.38 mm (Wet Night Visibility Spheres)	Each

ITEM 691.03 20 M – TRAINING REQUIREMENTS

DESCRIPTION

This item of work shall consist of the meaningful and effective training of one or more apprentices/trainees leading to their qualification as journeyworkers in trades for the highway construction industry. The statutory authority for training requirements is described in §102-11 *Equal Employment Opportunity Requirements*. This specification establishes the specific requirements for a Contractor to provide training pursuant to 23 CFR 230.111 as part of Equal Employment Opportunity responsibilities. This specification, with referenced Standard Specifications, constitutes "Training Special Provisions" (TSP) pursuant to 23 CFR 230.111. The TSP supercedes any conflicting portions of Form FHWA 1273 *Required Contract Provisions, Federal Aid Construction Contracts* found in contract proposals.

MATERIALS

None Specified.

CONSTRUCTION DETAILS

GENERAL. The objective of these training requirements is to provide training opportunities to minorities, women and disadvantaged persons for the following reasons:

1. To address the current under-representation of minorities and women in skilled trades, and;
2. To maintain a pool of qualified minorities, women and disadvantaged persons to compete for those journeyworker positions which are created as others leave the workforce.

Disadvantaged means a person who is either a) a member of a family that receives public assistance, or b) a member of a family whose income during the previous six (6) months, on an annualized basis, was such that the family qualified for public assistance, or whose income was at or below either the poverty level or 70% of the lower living standard income (LLSI) level for the person's county of residence.

The Contractor shall make every effort to recruit and hire minority, women and disadvantaged apprentices/trainees to the extent that such persons are available within a reasonable area of recruitment. Such training commitment is not intended to, and shall not be used to, discriminate against any applicant for training, whether a member of a minority group or not. Apprentices/trainees shall be employed and offered meaningful and effective training opportunities. Meaningful and effective training is defined as occurring when contract work provides a realistic and practical opportunity of reasonable duration for the apprentice/trainee to complete elements of the apprenticeship/OJT program in order to achieve journeyworker status.

TRAINING PROGRAMS. In accordance with §102-10D *Training*, an apprentice is defined as an individual who is enrolled in an apprenticeship training program that is registered with the NYS Department of Labor, and a trainee is defined as an individual who is enrolled in an On-the-Job Training (OJT) program that is approved by the Federal Highway Administration (FHWA). NYSDOT administers the trainee training programs.

Although the terms apprentices and trainees are generally used interchangeably in this specification, in Regions 1, 2, 3, 4, 5, 8, 10 and 11, the Department will only approve the use of apprentices and apprenticeship training programs, where available, in fulfillment of these requirements. In Regions 6, 7 and 9, the Department will approve the use of either apprenticeship or FHWA approved OJT trainee programs.

Prospective bidders can obtain additional information about apprentice programs from the Director of Apprenticeship Training Programs, NYS Department of Labor, State Office Building Campus, Building 12, Rm 436, Albany, NY 12240 ; (518) 457-6820; fax (518) 457-7154; atco@labor.state.ny.us.

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Approval to use a training program shall be obtained from the Department prior to commencing work involving the trade(s) covered by the program.

APPRENTICES/TRAINEES.

Recruitment. The Contractor shall decide who is hired as an apprentice/trainee. Such apprentice/trainee shall be enrolled in a registered apprenticeship or OJT program approved by the Department and satisfy the requirements under *Work History*.

Prior to engaging in the recruitment of new apprentice/trainees, the Contractor shall employ apprentices/trainees who are partially trained, if available, in order to facilitate completion of their apprenticeship/OJT program. Training and upgrading of minorities and women toward journeyworker status is a primary objective of the TSP requirements.

The Contractor shall make every effort to enroll minority and women apprentice/trainees (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentice/trainees, such as the Department's OJT supportive services program) to the extent that such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that have been taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with the TSP requirements.

Work History. The Contractor shall not propose or use any person under this item if such person has successfully completed a training program providing journeyworker status in the same trade or work classification as will be used for training under this contract. The Contractor shall not use or propose a person who has been gainfully employed as a journeyworker in that trade by virtue of informal on-the-job training or otherwise. The Contractor shall ascertain, before training a person and before requesting payment therefore, whether the person qualifies. The Contractor shall include appropriate questions on employee application forms and shall check the personal references of an applicant for a position in order to ensure that the person is qualified for training. The Contractor shall maintain records of these findings and provide them to the Department upon request.

Termination. An apprentice/trainee may be terminated at any time during training for: excessive absenteeism; lack of punctuality; accident-proneness; lack of interest; poor attitude; and continued failure to behave in a business-like manner. However, termination will not occur without:

1. Documented counseling by the Contractor's Trainer about the reason(s) for termination; and
2. Documented efforts by the Contractor's Trainer to resolve the problem; and
3. Documented notification to the Engineer and Regional Compliance Specialist about the problem; and
4. Written notification of intent to terminate to the Engineer and the Regional Compliance Specialist stating the reason(s) therefore; and
5. An opportunity for Department representatives to discuss the impending termination with the Contractor in order to ensure compliance with Steps 1 through 4 above.

REQUIRED TRAINING EFFORT.

CHART A
NUMBER OF APPRENTICE/TRAINEE FTEs REQUIRED

Contract Bid Amount	AA Component	RGN Component	Total (AA + RGN)
< $15M	1	1	2
$15M to < $30M	2	2	4
≥ $30M	3	3	6

Full-Time Equivalents (FTEs). The number of apprentice/trainee full-time equivalents (FTEs) the

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Contractor is required to train is identified in *Chart A*. For the purposes of this specification, FTEs are used to designate the desired and expected level of training effort, in terms of full-time workers employed for the duration of the contract. Although the value of one FTE is not fixed, a general estimation of expected effort is approximately 1,000+ hours of work per construction season for upstate Regions and 2,000+ hours of work per construction season for downstate Regions. One FTE could be achieved with one individual working for the contract duration or with multiple individuals working full-time on a daily basis for portions of the contract duration so long as they are collectively employed for the equivalent amount of time as one full-time employee working for the entire duration of the contract. Accordingly, the Contractor may propose a different number of trainees/apprentices and a different duration of their training activities to achieve the required number of FTEs, but the proposal is subject to the approval of the Department.

Affirmative Action (AA) Component. The affirmative action (AA) component identifies locations and trades with programmatic under-representation of minorities and/or females as journeyworkers. The Contractor shall provide the appropriate number of apprentices/trainees FTEs to fulfill the affirmative action (AA) requirements of this specification in the specified trade(s) and classification(s) (minority or female). The number of AA apprentice/trainee FTEs required are identified in *Chart A* and the required trade/classification targets for each NYSDOT Region are identified in *Chart B.*

CHART B
AFFIRMATIVE ACTION TARGETS

TRADE	NYSDOT REGION										
	1	2	3	4	5	6	7	8	9	10	11
Laborer (Female)										●	
Laborer (Minority)				●							●
Equip. Operator (Female)	●	●	●	●		●		●	●		
Equip. Operator (Minority)		●	●	●	●			●		●	●
Iron Worker (Female)	●				●			●		●	●
Iron Worker (Minority)			●					●		●	●
Carpenter (Female)	●		●				●				●
Carpenter (Minority)	●		●	●				●		●	●
Mason (Female)	●				●						
Mason (Minority)					●						
Painter (Female)			●						●	●	●
Painter (Minority)											●
Electrician (Female)									●		
Electrician (Minority)			●	●				●			●

Race/Gender Neutral (RGN) Component. The Contractor shall also provide the appropriate number of apprentices/trainees FTEs to fulfill the race/gender neutral (RGN) requirements in accordance with *Chart A*. The RGN component allows the Contractor to hire apprentices without imposed race, gender or specific trade requirements. Training shall be provided to anyone (minorities/non-minorities, males/females, and disadvantaged/non-disadvantaged persons) at the Contractor's discretion.

Although there are not designated trades for the RGN apprentices/trainees, training should be provided in the construction trades rather than in clerical/administrative positions. Training is permissible, by Department authorized exception only, in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. On a voluntary basis, the Contractor has the option to help address areas with programmatic under-representations, by hiring the RGN apprentices/trainees to the designated areas outlined in *Chart B – Affirmative Action Targets*.

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Implementation and Distribution. The number of apprentices/trainees FTEs shall be distributed among the trades based upon the AA component requirements, maximum opportunity for work, required journeyworker/apprentice ratios outlined in the prevailing wage rate schedule, distribution of multiple persons among multiple trades, the Contractor's needs and the availability of apprentices/trainees within a reasonable area of recruitment.

When multiple apprentices/trainees are required, effort shall be made to hire apprentices/trainees whom are at a variety of different stages in their training programs (first year, third year, etc.) Where feasible, 25 percent of apprentices/trainees shall be in their first year of apprenticeship or training.

The Contractor may allow apprentices/trainees to be trained by a subcontractor. However, the Contractor retains the primary responsibility to meet the TSP requirements and compensation is the same.

Compliance. A Contractor will have fulfilled the primary responsibilities under this Training Special Provision if acceptable training is provided to the number of apprentice/trainee FTEs specified or good faith efforts to attempt to provide the required training is demonstrated consistently throughout the duration of the contract.

Training Coordinator. The Contractor shall designate one individual who will function as the training coordinator and act as the contact person for training related concerns. The training coordinator should be someone that has regular dealings and familiarity with the actual training direction and guidance being provided. As conditions and apprentices/trainees may change throughout the duration of the contract, notify the Department if at any point a new training coordinator is designated.

TSP PROCESS.

Prior to Letting. Bidders are advised that there are a number of procedural steps in the approval of a training (apprenticeship or OJT) program, including preparation of an application, review, and resolution of questions and comments. Approval of a training program is not guaranteed, and may take 30 to 60 days. It is highly recommended to have an approved apprenticeship or OJT trainee program prior to bidding.

Within 7 Days After Letting. As a requirement of the contract award process, the apparent low bidder shall submit a TSP Letter to the Department within 7 work days after letting, signed and dated by an authorized company officer. A recommended form, which includes the mailing address, for the TSP Letter is available from the Department's website at:
http://www.dot.state.ny.us/constr/contractor_download/forms.html.

The minimum content requirements for the TSP Letter include:

- A statement acknowledging the TSP requirements and a pledge to make every effort to meet them
- Recognition of the number of apprentices required under the AA component, under the RGN component, and the total
- Recognition of the Region–specific affirmative action apprentice/trainee targets by trade and candidate classification (ex., female equipment operators, minority electricians, etc.)
- Identification of how the TSP requirements will be met (ex., union-sponsored apprentice program, contractor-sponsored apprentice program or OJT program)
- Status of program/application (if pending, attach a copy of the letter from NYSDOL verifying receipt of the application, for Department verification and consultation with NYSDOL.)
- Contact information: contact person, telephone number, E-mail address and mailing address.

At the Pre-Construction Meeting. The Contractor shall submit a conceptual plan for how they will fulfill the training requirements on the contract. They shall identify anticipated contract work suitable for apprentices/trainees, any timeline/scheduling issues, anticipated sources for apprentices/trainees, steps taken to date to comply with the training requirements, and how they will address the development of a

training plan for each apprentice/trainee.

Within 90 Days of Award. The Contractor shall submit a formalized training plan for each of the apprentices/trainees. All coordination with the Engineer and the Regional Compliance Specialist (RCS) regarding the training plan should be completed at this point. The training plan may be adjusted throughout the duration of the contract as necessary. Written requests to submit the plan, or portions of the plan, at a specified latter date will be considered depending on the reason for the request. The cost estimate shall be submitted within 90 calendar days of the contract award date regardless of whether or not the training plan is allowed to be submitted at a latter date.

The minimum content requirements for the training plan(s) include:

- Name of the apprentice/trainee, trade, starting level (i.e., year of apprenticeship) and which TSP requirement (AA or RGN) the candidate is fulfilling.
- Apprentice/trainee projected start date, projected end date and the reason for ending the training (e.g., training program completed, no remaining training opportunities, contract completion, etc.).
- An outline of the training program requirements the candidate has already completed and the requirements which the candidate still has left to complete. Provide the associated number of hours for each requirement. List classroom and on-site training requirements separately.
- Total number of on-site (non-classroom) hours left to complete the training program.
- Projection of the hours and components of the remaining training program requirements which the candidate will be able to accomplish on the contract.
- A cost estimate for compensation which shows how the amount was calculated.
- Any known outside factors that might affect the training plan, such as if the apprentice/trainee will be working on other contracts or there may be time constraints of the apprentice (ex., planned future reassignment, leave to attending school, moving/relocating, etc.).
- Copies of the NYSDOL Form AT 14 (blue book), or acceptable equivalent, for each apprentice shall be made available.
- A copy of NYSDOL form AT 401 – *Apprenticeship Agreement/Documentation Form*.

Monthly Training Progress Report. The Contractor shall submit Form AAP 26 - *Monthly Training Progress Report* whenever an apprentice/trainee employed pursuant to this item begins work on a contract and monthly thereafter. In addition to each Monthly Training Progress Report, the Contractor shall provide the Engineer a summary of hours required to complete the various work elements of the training program, hours completed this period, and hours completed to date. This summary shall be provided in sufficient detail to allow the Engineer to determine whether the hours in the previous period are qualified hours under this pay item.

Periodic Auditing / End of Service. Periodically copies of the training program and the NYSDOL Form AT 14 (blue book) may be required for auditing purposes and verification of the training. Whenever an apprentice/trainee ceases to be employed on a contract, a copy of their NYSDOL Form AT 14 (blue book) shall be provided.

WAIVER REQUEST. A request for a waiver of all or a portion of the TSP requirements may be submitted based on unusual circumstances which make the TSP requirements impractical or unduly burdensome to complete. The TSP requirements may be reduced or completely waived if the Contractor can clearly present a case for the TSP waiver (ex., no reasonable training opportunities will exist, lack of available apprentices/trainees, lack of available work for apprentices/trainees based on apprentice-to-journeyworker ratio restrictions). A TSP waiver request may be submitted at any point in the process after the contract letting date.

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TSP waiver requests made within 7 work days after contract letting may be submitted in lieu of the TSP Letter. The TSP waiver request should provide a detailed explanation for the request, steps taken to try to comply, and contact person information (name, telephone number, E-mail address).

If the TSP waiver request is for elimination of all apprentice/trainee requirements and the TSP waiver is approved, no further TSP submissions are required. If the TSP waiver request is for a reduction or an alteration to the requirements and it is approved the Contractor shall submit a TSP Letter with the authorized revisions within 3 work days of notification of the TSP waiver request being approved.

In the event that a TSP waiver request is not approved, the Contractor shall submit a TSP Letter within 3 work days of notification of the TSP waiver request being declined.

The pre-award review of the TSP waiver request will focus on the apparent low bidder's good faith efforts to comply with these requirements, and will not eliminate the detailed review process of the contractor's workforce planning efforts and TSP compliance efforts after contract award.

TSP waivers are not necessarily permanent, particularly if based on available workforce reasons. Throughout the contract duration, the Contractor shall continue to try to meet the original requirements under this pay item. Whenever there are changes in the construction schedule, scope of work, availability of apprentices/trainees, or any other factor that might affect the ability to hire apprentices/trainees to reasonable training opportunities, any TSP waivers shall be reevaluated. The Contractor is required to bring any such factors to the attention of the Department in a timely manner.

TRAINING DURATION.

Start-Up. An apprentice/trainee shall begin training as soon as feasible in trade related work and remain on the contract as long as training opportunities exist in the trade, until completion of the training program or until completion of the contract.

After approval of an apprentice/trainee, the individual shall be employed in the designated trade in accordance with the currently approved Form AAP 35 *Workforce and Training Utilization Schedule* to the extent that training opportunities exist in the contract work. At the time an apprentice/trainee reports to the Contractor for training under this item, the Training Coordinator shall notify the Engineer to ensure that appropriate records are kept.

Throughout Contract Duration. The Contractor is expected to provide maximum opportunity to the apprentice/trainee for completion of their apprenticeship/OJT program. The Contractor shall monitor the apprentice/trainee's progress, paying particular attention to completion of work elements within the training program. When a work element of the training program is completed, the Contractor shall rotate the apprentice/trainee to other work processes to the extent that training opportunities exist. Should no such training opportunities exist, the apprentice/trainee may continue to work as long as there is work. However any work not in the training program or beyond the number of hours indicated in the training program for each work element will not qualify for payment under this pay item. This continued work will not make the apprentice/trainee ineligible for continued future training in the trade.

Retention. The Contractor is expected to retain, as a journeyworker, an apprentice/trainee that completes their training program and attains journeyworker status prior to contract completion, provided there is contract work remaining. Continued work by a journeyworker will not qualify for payment under this item.

Maintaining Compliance with the FTE Requirement. The Contactor is responsible for maintaining compliance with the required number of apprentice/trainee FTEs for the duration of the contract. If the number of employed TSP apprentice/trainee FTEs falls below the required number (e.g., apprentice/trainee attains journeyworker status, leave the contract, etc.) and there are substantial training opportunities remaining, the Contractor is required to make every effort to recruit and hire additional

apprentices/trainees. Although, consideration to waive the remaining training requirements will be given when there is limited contract work remaining or when, due to the retention of TSP apprentices/trainees who have reached journeyworker status, available employment opportunities are limited.

If at any point during the contract the amount of training being accomplished is significantly below the projected amount stated in the training plan(s), the Contractor is required to adjust their training efforts such that the approved number of hours of training in the training plan(s) is achieved by contract completion.

COMPENSATION. This specification provides for partial compensation to the contractor towards the cost of managing and operating the training program(s). Compensation is not intended as reimbursement towards the apprentices' wages, but rather as general compensation for administrating the training program along with the loss of productivity on the behalf of the journeyworker(s) providing the training, guidance and supervision.

A combined negotiated amount for partial compensation of all the TSP apprenticeship/OJT programs will be added to the contract by order-on-contract. During the contract duration, revisions to the training plan(s) can be submitted. If a revised training plan, including the cost estimate, is approved then the previously negotiated amount can be adjusted by order-on-contract.

The Contractor shall attach to each Monthly Training Progress Report (form AAP 26), a monthly summary of hours of qualifying training for each apprentice/trainee that shows the number of hours trained each day of the progress period by training program work element.

Only training hours verified and approved of by the Engineer or his designee will be considered as qualifying training. Any hours of work performed which are not in the training program or are beyond the number of hours indicated for each work element in the training program will not qualify for payment under this pay item. Off-site training or training performed at other work sites does not qualify for compensation. Classroom training hours do not qualify for compensation.

The total verified hours of training provided during the month will be used to determine the monthly payment due. Regardless of the amount approved for the pay item, payments will be made only for the number qualifying hours of training accomplished.

Payment for training under the affirmative action component of this specification is contingent upon the Contractor fulfilling or demonstrating satisfactory good faith efforts to fulfill the corresponding equal employment opportunity (EEO) goals in accordance with §102-11 *Equal Employment Opportunity Requirements.* [*Example Situation #1* - For contracts with a minority EEO goal and a female EEO goal: If achieve the minority EEO goal but not the female EEO goal, then compensation may still be allowed for a minority TSP AA apprentice/trainee but not for a female TSP AA apprentice/trainee. *Example Situation #2* - For contracts with trade specific minority/female EEO goals (i.e., applicable in New York City): If achieve the minority equipment operator EEO goal but not the minority iron worker EEO goal, then compensation may still be allowed for a minority equipment operator TSP AA apprentice/trainee but not for a minority iron worker TSP AA apprentice/trainee.]

Any apprentices/trainees hired towards attempting to attain fulfillment of the EEO goals do not qualify for payment under this specification nor are they considered as TSP apprentices/trainees (i.e., still required to hire additional apprentices/trainees under this specification's requirements).

Payment for training under the race/gender neutral component of this specification is contingent upon the Contractor fulfilling or demonstrating satisfactory good faith efforts to fulfill all of the equal employment opportunity (EEO) goals in accordance with §102-11 *Equal Employment Opportunity Requirements* and fulfilling or demonstrating satisfactory good faith efforts to fulfill the affirmative action component.

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METHOD OF MEASUREMENT

This work will be measured on a Dollars-Cents basis. The amount shown in the proposal is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded, and the original price will be used to determine the total amount bid.

BASIS OF PAYMENT

Compensation towards the training program for each apprentice/trainee will be made as such:

= (0.35) x (Base Journeyworker Prevailing Wage Rate) x (Hours of Qualifying Training Accomplished)

No adjustments to the base rate shall be allowed, such as for: fringes/supplemental benefits, premium rates (overtime, holiday, etc.), worker's compensation insurance, FICA, state or federal unemployment insurance, commercial general liability (CGL) insurance, etc. When determining compensation, use the prevailing wage rate that was current at the time the training was provided.

Qualified training time will include only verified training properly completed and accounted for, including only those hours the apprentice/trainee is actually receiving on-site training in the work elements included in his/her approved apprenticeship/OJT program. Off-site or related classroom training will not be considered as qualifying training time under this item.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment , or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant

of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation

with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

i. The number of minority and non-minority group members and women employed in each work classification on the project;

ii. The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

iii. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

iv. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, 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, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on

roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

i. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

ii. the additional classification is utilized in the area by the construction industry;

iii. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

iv. with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

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

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

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

a. Apprentices:

i. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

ii. The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

iii. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

iv. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

i. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

ii. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

iii. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

iv. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be

withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

i. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

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

iii. that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take

any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:
(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an

explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "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 department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal 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 entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that 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 portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. 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 participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f 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 may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. 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 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.

c. 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 by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "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.

e. The prospective lower tier participant agrees by submitting this proposal 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.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that 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.

h. 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 participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e 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.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor 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.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. 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 Federal 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, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. 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 Federal 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, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. 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 31 U.S.C. 1352. 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.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

PREVAILING WAGE RATES

D260694

SPECIAL NOTE
STATE PREVAILING WAGE RATES

The Contractor shall ensure that workers are paid the appropriate wages and supplemental (fringe) benefits. Throughout the contract, the Contractor shall obtain and pay workers in accordance with periodic wage rate schedule updates from the NYS Department of Labor (NYSDOL). Wage rate amendments and supplements are available on the NYSDOL web site at **www.labor.state.ny.us.** All changes or clarification of labor classification(s) and applicability of prevailing wage rates shall be obtained in writing from the Office of the Director, NYSDOL Bureau of Public Work.

The NYSDOL prevailing wage rate schedule for this contract has been determined and is available on the internet. The prevailing wage rate schedule is accessed by visiting the NYSDOL web site, navigating to the appropriate web page, and entering the Prevailing Rate Case No. (PRC#). The PRC# is provided on NYSDOL Form PW-200 included in this contract Proposal.

A copy of the project specific prevailing wage rate schedule will be provided to the successful bidder upon award of the contract. Upon written request, the schedule will be provided by the Department of Transportation to prospective bidders without internet access.

Eliot Spitzer, Governor

M. Patricia Smith, Commissioner

NYSDOT

William Meyer, Civil Engineer II
NYSDOT
DQAB, POD # 23
50 Wolf Road
Albany NY 12232

Schedule Year	2007 through 2008
Date Requested	11/13/2007
PRC#	2007008129

Location	SH C59-7
Project ID#	D260694
Project Type	Route 9: Bay Street to Route 6 - PIN 8040.94

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2007 through June 2008. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.state.ny.us. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission: a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.state.ny.us.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.state.ny.us.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.state.ny.us.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three (3) years from the project's date of completion. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Social Security number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provide, and Daily and weekly number of hours worked in each classification.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall receive and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, by are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed $100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds $25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. 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 rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

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. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 and Article 9 of the Labor Law) constitute a misdemeanor punishable by fine or imprisonment, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, 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 the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of $50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

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1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.

Prevailing Wage Rates for 07/01/2007 - 06/30/2008 Published by the New York State Department of Labor
Last Published on Nov 01 2007 PRC Number 2007008129

Introduction to the Prevailing Rate Schedule

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.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

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

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

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) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker	1:1,1:3
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 - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-775-3568	212-775-3579
Bureau of Public Work - Patchogue	631-687-4883	631-687-4904
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

GENERAL DECISION: **NY20070018** 01/04/2008 NY18

Date: January 4, 2008
General Decision Number: **NY20070018** 01/04/2008

Superseded General Decision Number: NY20030018

State: New York

Construction Types: Building, Heavy, Highway and Residential

County: Westchester County in New York.

BUILDING CONSTRUCTION PROJECTS, RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories), AND HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	02/09/2007
1	02/16/2007
2	04/06/2007
3	05/04/2007
4	05/25/2007
5	06/15/2007
6	06/22/2007
7	07/06/2007
8	07/13/2007
9	07/20/2007
10	08/03/2007
11	08/17/2007
12	11/16/2007
13	12/07/2007
14	01/04/2008

ASBE0091-003 06/28/2007

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Duties limited to preparation, wetting, stripping, removal, scraping, vacuuming, bagging and disposing of all insulation materials whether they contain asbestos or not from mechanical systems)	$ 25.55	9.95
Insulator/asbestos worker (Includes application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical sytems)	$ 34.76	21.04

BOIL0005-001 01/01/2007

	Rates	Fringes

BOILERMAKER.....$ 44.98 28.95+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial Day, Independence Day, Labor Day and Good Friday, Friday after Thanksgiving, Christmas Eve Day and New Year's Eve

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BRNY0001-002 07/01/2007

	Rates	Fringes
Pointer, cleaner and caulker.....	$ 37.39	19.29

BRNY0003-001 07/01/2006

	Rates	Fringes
TERRAZZO FINISHER.....	$ 38.75	21.75
TERRAZZO WORKER/SETTER.....	$ 40.09	21.75

BRNY0004-001 07/01/2007

	Rates	Fringes
MARBLE SETTER.....	$ 47.83	22.20

BRNY0005-006 06/01/2007

HEAVY & HIGHWAY CONSTRUCTION

	Rates	Fringes
BRICKLAYER Bricklayers, Stone Masons, Cement Masons, Plasterers, Pointers, Caulkers and Cleaner.....	$ 36.50	21.26+a

FOOTNOTE: a. One hour voting time with pay on Election Day.

BRNY0005-007 06/01/2007

BUILDING/RESIDENTIAL CONSTRUCTION

	Rates	Fringes
Bricklayer, Cement Mason, Plasterer & Stonemason.....	$ 36.00	21.26+a

FOOTNOTE:
a. One hour voting time with pay on Election Day

BRNY0020-001 07/01/2007

	Rates	Fringes
MARBLE FINISHER.....	$ 39.65	22.03

BRNY0024-001 01/01/2007

	Rates	Fringes
BRICKLAYER		
MARBLE POLISHERS	$ 35.66	17.40

BRNY0052-001 06/01/2007

	Rates	Fringes
Tile Layer	$ 42.94	22.33

BRNY0088-001 06/01/2007

	Rates	Fringes
TILE FINISHER	$ 34.95	18.90

CARP0011-003 07/01/2005

	Rates	Fringes
Carpenters:		
Building	$ 30.07	23.82
Heavy & Highway	$ 29.76	23.82
Residential	$ 23.00	5.60

CARP0740-001 07/01/2005

	Rates	Fringes
MILLWRIGHT	$ 38.13	35.40

CARP1456-005 07/01/2005

	Rates	Fringes
Diver Tender	$ 36.44	29.86
Diver	$ 49.79	29.86

CARP1456-010 07/01/2005

	Rates	Fringes
Dock Builder & Piledrivermen	$ 40.27	29.86

CARP1536-001 07/01/2003

	Rates	Fringes
Carpenters:		
TIMBERMEN	$ 34.47	26.05

ELEC0003-003 05/12/2005

	Rates	Fringes
ELECTRICIAN (Teledata Technician)	$ 39.75	25.34+a

a. $2.00 per hour not to exceed $14.00 per day.

ELEC1249-001 05/07/2007

	Rates	Fringes
LINE CONSTRUCTION: Lineman (LIGHTING AND TRAFFIC SIGNAL WORK Including any and all Fiber Optic Cable necessary for Traffic Signal Systems, Traffic monitoring systems and Road Weather Information systems)		
Flagman	$ 23.66	11.75+6.5%+a
Ground Digging Machine Operator	$ 35.50	11.75+6.5%+a
Ground Truck Driver	$ 31.55	11.75+6.5%+a
Tractor, Trailer Unit	$ 33.52	11.75+6.5%+a
Lineman & Technician	$ 39.44	11.75+6.5%+a
Mechanic	$ 31.55	11.75+6.5%+a

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, President's Day, Good Friday, Decoration Day, Election Day for the President of the Untied States and Election Day for the Governor of the State of New York provided the employee works two days before and two days after the holiday

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ELEC1249-006 05/07/2007

	Rates	Fringes
Line Construction: Substation and switching structures pipetype cable, underground fuild and gas filled transmission conduit and cable installation, fiber optic ground wire, fiber optic shield wire or any other like product having ground protection or fiber optic capabilities, maintenance jobs or projects; rail-road catenary installation and maintenance bonding of rails; Overhead & underground distribution work & Maintenance; Overhead and under- ground transmission line work:		
Cable Splicer	$ 44.10	11.75+7%+a
Flagman	$ 24.05	11.75+7%+a
Groundman digging machine operator	$ 36.08	11.75+7%+a
Groundman truck driver		

(tractor trailer unit).....	$ 34.08	11.75+7%+a
Groundman truck driver;....	$ 32.07	11.75+7%+a
Lineman & Technician.....	$ 40.09	11.75+7%+a
Mechanic.....	$ 32.07	11.75+7%+a
TELEPHONE, CATV FIBEROPTICS CABLE AND EQUIPMENT		
Cable Splicer/Central Office Person.....	$ 23.07	3.05+3%
Groundman.....	$ 11.61	3.05+3%
Installer Repairman-Teledata		
Lineman/Technician-Equipment Operator.....	$ 21.91	3.05+3%
TREE TRIMMER.....	$ 18.92	4.05+3%+b

PAID HOLIDAYS:

a. New Year's Day, President's Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

b. New years Day, Washington's Birthday, Good Friday, Decoration Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving Day and Christmas Day

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ELEV0001-002 03/17/2007

	Rates	Fringes
ELEVATOR MECHANIC		
Elevator Constructor.....	$ 45.98	19.48+a+b
Modernization and Repair....	$ 36.80	19.33+a+b

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Good Friday, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

b. PAID VACATION: An employee who has worked less than 5 years shall recieve vacation pay credit on the basis of 4% of his hourly rate for all hours worked; an employee who has worked 5 to 15 years shall receive vacation pay credit on the basis of 6% of his hourly rate for all hours worked; an employee who has worked 15 or more years shall receive vacation pay credit on the basis of 8% of his hourly rate for all hours worked.

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* ELEV0138-003 01/01/2008

WESTCHESTER COUNTY (Towns of Bedford, Cortland, Lewisboro, Mt. Kisco, North Salem, Pound Ridge, Somers, and Yorktown)

	Rates	Fringes

ELEVATOR MECHANIC.....$ 45.485 19.925 a+b

FOOTNOTES:
a. 8 PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.

b. Employer contributes 8% of basic hourly rate for 5 year or more of sevice or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

ENGI0137-005 03/05/2007

BUILDING

	Rates	Fringes
Power equipment operators:		
GROUP 1-A	$ 39.15	21.77+a
GROUP 1-B	$ 36.06	21.77+a
GROUP 2-A	$ 37.78	21.77+a
GROUP 3-A	$ 36.37	21.77+a
GROUP 3-B	$ 34.59	21.77+a
GROUP 4-A	$ 36.00	21.77+a
GROUP 4-B	$ 30.32	21.77+a
GROUP 5-A	$ 34.59	21.77+a
GROUP 5-B	$ 32.75	21.77+a
GROUP 6-A-1	$ 41.16	21.77+a
GROUP 6-A-2	$ 39.87	21.77+a
GROUP 6-A-3	$ 38.46	21.77+a
GROUP 6-A-4	$ 45.52	21.77+a
GROUP 6-A-5	$ 35.63	21.77+a
GROUP 6-A-6	$ 44.87	21.77+a
GROUP 6-B-1	$ 31.03	21.77+a
GROUP 6-B-2	$ 32.56	21.77+a
GROUP 6-B-3	$ 32.62	21.77+a
GROUP 6-B-4	$ 35.76	21.77+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Good Friday, Memorial Day; Independence Day, Labor Day; Veteran's Day, Columbus Day, November Election Day, Thanksgiving Day, and Christmas Day, provided employee works two or more days in the calendar week in which the holiday falls.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (BUILDING):

GROUP 1-A: Carrier-trailer horse, concrete-portable hoist, crane & hoist engineer-steel (concrete, material, super structure sub- structure), derrick (stone-steel), elevator & cage, host-single- double-or triple drum), hoist-portable mobile unit, hoist engineer - concrete (crane-derrick-mine hoist), hoist engineer material, overhead crane, power house plant, telephies (cable way), whirly, maintenance engineer, lull highlift or similar, hydraulic crane 25 ton and over, cherry picker 25 ton and over; backhoe: Oliver 88, Fordson, Dynahoe, Dual purpose and similar machines,

Barber Green Loader, Euclid loader or similar type machine, conway or similar mucking machines; dragline, gradall, shovel, backhoe etc. (crawler or truck); front end loaders, hydraulic boom, Jersey spreader, lift slab console (etc), Letouneau or Tournapull (scrapers over 20 yds struck), mucking machines, pavement breaker (air ram), paver (concrete), road boring machine, road mix machines, Ross carrier and similar machines, post hole digger, shovels (tunnels), side boom, spreader (asphalt), scoopmobile-tractor-shovel over 1 1/2 yds., trenching machines-Vermeer concrete saw trencher and similar, tractor type demolition equipment, winch truck ("a" frame), hydraulic crane over 10 tons up to 25 ton, cherry picker over 10 tons up to 25 ton.

GROUP 1-B: Compressor (steel erection); pulse meter and push button buzz box; elevator, mechanic (out-side) all types, welder, scraper-20 yds struck and under, shop foreman, machine pulling sheep's foot roller, vibratory rollers (etc), roller 4 ton and over.

GROUP 2-A: Compactor self-propelled; grader; bulldozer D6 and under, machine pulling sheep's foot roller, vibratory rollers (etc).

GROUP 3-A: Asphalt plant; boiler (high pressure); concrete mixing plants; concrete pump; firemen; forklift; forklift (electric); joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes); mixer concrete - 21E and over; portable asphalt plant; portable batch plant; portable crusher; quarry master; stone crusher; well drilling machine and well point system; cherry picker under 10 tons; hydraulic crane under 10 tons, concrete buggy one yard and up ride on dumster, Benford or similar.

GROUP 3-B: Compressor over 125 cu. feet; conveyor belt machine regardless of size; lighting unit (portable & generator); welding machine (steel erection and excavation); and compressor plant, stud machine, ladder hoist.

GROUP 4-A: Air tractor drill; batch plant; bending machines; concrete breaker; concrete spreader; curb cutter machine; farm tractor (all types); finishing machine-concrete; hepa vac clean air machine all similar types ofr removal of asbestos; material hopper-sand-stone-cement; mixer-concrete-under 21E; mulching grass spreader; pump-gypsum, etc., pump-plaster-grout fireproofing, roller under 4 ton, shop mechanic (not employed on job site), spreading & fine grading machine, steel cutting machine, syphon pump - air steam, tar joint machine, television cameras-water-sewer-gas-etc, Turbo jet burner or simlar equipment, vibrator (1 to 5), fine grading machine, roof hoist (tugger hoist).

GROUP 4-B: Compressor to 125 feet; dust collector; heater all types; pump; pump station (water and sewer); steam jenny; sweeper; chipper; mulcher.

GROUP 5-A: Concrete saw; oiler fuel truck and oiler grease truck.

GROUP 5-B: Oiler; stockroom attendant; paint compressor; motorized roller (walk behind).

GROUP 6-A-1: Master mechanic

GROUP 6-A-2: Helicopter host operator

GROUP 6-A-3: Welder certified

GROUP 6-A-4: Helicopter pilot

GROUP 6-A-5: Helicopter signalman

GROUP 6-A-6: Engineer-all tower cranes-all climbing cranes and all cranes of 100 ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged (except for pile rigs).

GROUP 6-B-1: Utility man

GROUP 6-B-2: Warehouse man

GROUP 6-B-3: Second engineer

GROUP 6-B-4: Cable splicer.

NOTES:

Hazmat premium	20%
Pumping Operation Premium	.50
Loader Operator (over 5 cu yd)	.50
Crane Operator (100-149 ft.)	2.00
Crane Operator (149 ft.+)	3.00
Shovel Operator (over 4 cu. yd)	1.00

ENGI0137-006 03/05/2007

HEAVY & HIGHWAY

	Rates	Fringes
Power equipment operators:		
GROUP 1	$ 43.33	22.73+a
GROUP 1-A	$ 38.13	22.73+a
GROUP 1-B	$ 39.52	22.73+a
GROUP 2-A	$ 36.49	22.73+a
GROUP 2-B	$ 36.65	22.73+a
GROUP 3	$ 35.84	22.73+a
GROUP 4-A	$ 32.52	22.73+a
GROUP 4-B	$ 27.84	22.73+a
GROUP 5-A-1	$ 40.41	22.73+a
GROUP 5-A-2	$ 39.13	22.73+a
GROUP 5-A-3	$ 49.16	22.73+a
GROUP 5-A-4	$ 43.80	22.73+a
GROUP 5-A-5	$ 37.62	22.73+a
GROUP 5-A-6	$ 43.80	22.73+a
GROUP 5-A-7	$ 36.31	22.73+a

GROUP 5-A-8	$ 36.65	22.73+a
GROUP 5-B-1	$ 26.47	22.73+a
GROUP 5-B-2	$ 30.36	22.73+a
GROUP 5-B-3	$ 26.04	22.73+a

Loader Operator (over 5 cu yd.)	.50
Shovel Operator (over 4 cu yd.)	1.00
Hazmat Premium Over Regular Rate	20%

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day; Lincoln's Birthday; Washington's Birthday; Good Friday; Columbus Day; November Election Day and -Veterans Day, provided the employee works two or more days in the calendar week in which the holiday occurs.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (HEAVY & HIGHWAY)

GROUP 1: Boom Truck; Cherry Picker; Clamshell; Crane, (Crawler Truck); Dragline; Rough Terrain Crane

GROUP 1-A: Auger; auto grader; dynahoe; dual purpose and similar machines; Boat Captain; Boring Machine (all types); Bull Dozer- all sizes; Central Mix Plant Operator; Chipper-all types; Close Circuit T.V.; Compactor with Blade; Concrete Portable Hoist; C.M.I. or similar; Conway or similar mucking machines; Gradall, Shovell Backhoe, etc. Grader; Derrick (Stone-Steel); Elevator & cage, materials or passengers; Front End Loaders over 1 1/2 yds; Hoist Single, Double, Triple Drum; Hoist Portable Mobile Unit; Hoist Engineer-Concrete (Crane-Derrick-Mine Hoist); Hoist Engineer-Material; Hydraulic Boom; Letourneau or Tournapull (Scrapers over 20 yds. struck); Log Skidder; Movable Concrete Barrier Transfer & Transport Vehicle; Mucking Machines; Overhead Crane; Paver (concrete); Pulsemeter; Push Button (Buzz Box) Elevator; Road Mix Machines; Robot Hammer (Brock or Similar); Robotic Equipment (scope of Engineer schedule); Ross Carrier and similar machines; Shovels (Tunnels); Side Boom; Slip Form Machine; Spreader (Asphalt); Scoopmobile-Tractor-Shovel over 1 1/2 yds; Trenching Machines, Telephies-Vermeer Concrete Saw Trencher and/or similar; Tractor type demolition equipment; Whirly

GROUP 1-B: Road Paver: Asphalt

GROUP 2-A: Balast Regulators; Compactor self-propelled; Cow Tracks; Fusion Machine; Rail Anchor Machines; Roller 4 ton and over; Scrapers--20 yd struck and under; Swich Tampers; Vibratory Roller, etc.; Welder

GROUP 2-B: Mechanic (outside) all types

GROUP 3-A: Air tractor drill; asphalt plant; batch plant; boiler (high pressure; concrete breaker; concrete pump; concrete spreader; curb cutter machine; farm tractor (all types); finishing machine (concrete); fine grading machine; fireman; forklift; forklift (electric); John Henry Drill or

similar; joy drill or similar tractor drilling machine; loader - 1 1/2 yards and under; locomotive (all sizes), maintenance engineer; machine pulling sheeps foot roller;material hopper; mixer concrete - 21-E and over; mulching grass spreader; portable asphalt plant, portable batch plant, portable crusher; powerhouse plant; quarry master; roller under 4 ton; spreading and fine grading machine; steel cutting machine; stone crusher; sweeper; turbo jet burner or similar ; well drilling machine (except water well drilling); winch truck "A" frame;

GROUP 4-A: Service man (fuel or grease truck).

GROUP 4-B: Compressor-Compressor Plant-Paint; Compressor-Steel Erection; Conveyor Belt machine; Lighting Unit (Portable & Generator); Pilot/Assistant Engineer/2 seated; Pumps-Pump Station-Water-Sewer-Gypsum-Plaster, etc.; Pump Truck (Sewer Jet or Similar); Roller-Motoraized (Walk behind); Welding Machine (Steel Erection); Bending Machine; Dust Collector; Mixer Concrete under 21-E; Heater-all types; Steam Jenny; Syphon Pump-Air- Steam; Tar Joint Machine; Vibrator (1 to 5); Compressor Truck Mounted (2-6)

GROUP 5-A-1: Master Mechanic

GROUP 5-A-2: Helicopter hoist operator.

GROUP 5-A-3: Engineer - all tower cranes, all climbing cranes and all cranes of 100 ton capacity or greater (3900 Manitowac or similar) irrespective of manufacturer and regardless of how the same is rigged (except for pile rigs).

GROUP 5-A-4: Hoist Engineer - steel - sub-structure; Engineer-- Pile Driver

GROUP 5-A-5: Welder-Certified

GROUP 5-A-6: Helicopter - pilot.

GROUP 5-A-7: Helicopter - signalman.

GROUP 5-A-8: Jersey-spreader, pavement breaker (air ram); post hole digger;

GROUP 5-B-1: Utility Man

GROUP 5-B-2: Concrete Saw

GROUP 5-B-3: Oiler

IRON0040-001 07/01/2007

WESTCHESTER COUNTY

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	$ 38.40	48.01

IRON0046-003 07/01/2005

	Rates	Fringes
IRONWORKER		
METALLIC LATHERS	$ 40.55	27.37

* IRON0197-001 01/01/2008

	Rates	Fringes
IRONWORKER		
STONE DERRICKMAN	$ 39.00	35.72

IRON0580-001 07/01/2006

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 38.60	34.90

LABO0060-002 04/01/2007

HEAVY/HIGHWAY

	Rates	Fringes
Laborers:		
GROUP 1	$ 31.65	14.90+a
GROUP 2	$ 30.30	14.90+a
GROUP 3	$ 29.90	14.90+a
GROUP 4	$ 29.55	14.90+a
GROUP 5	$ 29.20	14.90+a
GROUP 6	$ 22.85	14.90+a
GROUP 7	$ 31.20	14.90+a
SHAFT AND TUNNEL IN FREE AIR		
GROUP 1	$ 36.32	14.90+a
GROUP 2	$ 35.07	14.90+a
GROUP 3	$ 34.57	14.90+a
GROUP 4	$ 34.07	14.90+a
GROUP 5	$ 33.82	14.90+a
GROUP 6	$ 33.42	14.90+a
GROUP 7	$ 33.22	14.90+a
GROUP 8:	$ 33.07	14.90+a
GROUP 9	$ 32.92	14.90+a

LABORERS CLASSIFICATIONS (HEAVY/HIGHWAY):

GROUP 1: Blasters.

GROUP 2: Burner, Jumbo Driller, Joy Driller, Wagon Driller, Air Track Driller, Hydraulic Driller, Concrete Form Aligner, Concrete Form and Curb Form Highway (Steel), Asphalt Screedman, Asphalt Raker.

GROUP 3: Asphalt Curb Machine Operator, Jeeper Operator, Pavement Breaker Operator, Power Saw Operator, Jack Hammer Driller. All types of pheumatic tools gasoline driller, concrete saw, gunniting, railroad spike puller and sandblasting, pipe layer, deck winches on scows, power buggy operator, power wheelbarrow operator.

GROUP 4: General concrete laborers-anything pertaining to concrete, aggregate or concrete material handling, puddlers, asphalt worker, rock scalers, vibrator operator, bit grinder, concrete grinder, air tampers and all tampers not covered by any other classification, form pin puller, pumps and their operation, service of air power, epoxy and waterproofing worker, fine grade person between forms, barco rammer, guard and guide rail and link fence, steel kings.

GROUP 5: Common laborers, signal person and pit person , truck spotters, powder person, landscape and nursery person, dump person.

GROUP 6: Flagperson

GROUP 7: Asbestos and Toxic Waste laborer

SHAFT AND TUNNEL IN FREE AIR CLASSIFICATIONS

GROUP 1: Blaster

GROUP 2: Concrete and form setters

GROUP 3: Miners, drill runners, air tuggers, chippers, pneumatic tools, and source of airpower, pumps and their operations, vibrator operators

GROUP 4: Puddlers

GROUP 5: Chuck tenders, nippers, concrete laborers tunnel sewer and water pipeliners, boring

GROUP 6: Laborers

GROUP 7: Powder carriers, signalmen

GROUP 8: Brakemen

GROUP 9: Outside laborers

FOOTNOTE: a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, November Election Day, Veterans' Day, Thanksgiving Day and Christmas Day.

LABO0235-001 05/01/2002

BUILDING

	Rates	Fringes
LABORER	$ 23.50	13.85

LABO0235-002 05/01/2002

RESIDENTIAL

	Rates	Fringes

LABORER	$ 20.50	11.80

PAIN0009-003 05/01/2007

	Rates	Fringes
Painters:		
GLAZIERS	$ 36.40	25.04
Painters, Paperhanger, Drywall Finishers & Lead Abatement Worker	$ 34.50	19.84
Spray, Scaffold, Sandblasting	$ 37.50	19.84

PLUM0021-003 05/01/2007

	Rates	Fringes
Plumber and Steamfitter	$ 38.21	26.07

ROOF0008-003 04/01/2006

	Rates	Fringes
ROOFER, Including Built Up, Composition and Single Ply Roofs	$ 33.08	22.47

SFNY0669-002 04/06/2006

	Rates	Fringes
SPRINKLER FITTER	$ 37.65	13.90

SHEE0038-001 07/01/2007

	Rates	Fringes
Sheet metal worker	$ 36.58	25.90

TEAM0456-001 07/01/2006

HEAVY & HIGHWAY CONSTRUCION

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 34.83	16.35+a
GROUP 2	$ 32.58	16.35+a
GROUP 3	$ 33.03	16.35+a
GROUP 4	$ 33.20	16.35+a
GROUP 5	$ 32.70	16.35+a
GROUP 6	$ 33.33	16.35+a
GROUP 7	$ 33.58	16.35+a
GROUP 8	$ 34.08	16.35+a
GROUP 9	$ 34.45	16.35+a
GROUP10	$ 33.45	16.35+a

Hazardous/Toxic Waste - An additional 20% of the basic hourly

wage rate set forth in this wage determination.

CLASSIFICATION DESCRIPTIONS

GROUP 1: Lowboy (carrying equipment)

GROUP 2: Straight jobs: 6-Wheeler, 10-Wheeler, A-Frame Trucks (inside cab), Winch Truck (inside cab), Dynamite Truck, Seeding Truck, Mulching Truck, Agitator Truck, Water Truck, Cement Trucks (all types), Suburbans, Station Wagons, Cars, Pickups.

GROUP 3: Fuel and tire trucks.

GROUP 4: Tractor trailers (all types)

GROUP 5: 14 Wheeler

GROUP 6: Off-Road Equipment under 40 tons: Athey wagon, D.J.B., Belly dumps, Articulated Dumps, Trailer wagons.

GROUP 7: Off-Road Equipment over 40 tons: Euclid, Athey Wagon, D.J.B., Belly Dumps, Articulated Dumps, Trailer Wagons.

GROUP 8: Darts.

GROUP 9: RXS

GROUP 10: Off Road Equipment (Under 40 Tons): Euclid

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Columbus Day, November Election Day, Thanksgiving Day, and Christmas Day, provided employee works two or more days in the calendar week in which the holiday falls.

PAID VACATION: 4 weeks paid vacation after 20 years of service and 30 days of employment in current contract year; 3 weeks after 10 years of seniority service; 3 weeks after 10 years and 60 days of employment in contract year, 3 weeks and 1 day after 16 years of seniority service, 3 weeks and 2 days after 17 years of seniority service; 3 weeks and 3 days after 18 years of seniority service; 3 weeks and 4 days after 19 years of seniority service; The third week and every additional day shall be granted to employee in the calendar year in which he completes his tenth or other years of seniority service; 2 weeks after 130 days of employment in the calendar year; 2 weeks after 5 years and 90 days seniority service in calander year; 1 week and 1 additional day for each additional 18 days of employment not exceeding 10 days in any one calander year after 90 days of employment. Casual employees 1 day for every 18 days of employment. An employee who does not qualify for vacation shall be paid pro rata on a daily basis. Holiday shall be counted as days worked for vacation benefits.

LEGAL SERVICES FUND: Employer shall contribute $.20 to the fund on the same basis for all hours paid to employees in the form of holiday pay or vacation pay. In addition to the benefits paid for Health-Welfare and Pension for up to 40 hours worked an additional $.25 is paid for each hour worked. The employer shall grant 3 calendar days off without loss of pay to an employee who has death in his/her immediate family, inclusive of the day of the funeral.

TEAM0813-002 12/01/1998

BUILDING & RESIDENTIAL CONSTRUCTION

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 19.19	3.61+a
GROUP 2	$ 19.47	3.61+a
GROUP 3	$ 19.62	3.61+a
GROUP 4	$ 19.95	3.61+a
GROUP 5	$ 20.11	3.61+a
GROUP 6	$ 21.00	3.61+a
GROUP 7	$ 21.98	3.61+a
GROUP 8	$ 19.62	3.61+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr.'s Birthday, Presidents' Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Thanksgiving Day, Christmas Day, Employee's Birthday, Two (2) Personal Days and any holiday or day of mourning proclaimed as such by the State or Federal Government.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Closed body trucks with self-contained loading unit up to and including 22 yard capacity.

GROUP 2: Open trucks, rack body, or trucks which have no self contained mechanical loading device, up to 22 yard capacity. One-container tractor hoist.

GROUP 3: 10 wheel, open trucks, container loaders, dino-master, over-cab loaders, rack body trucks, or trucks 22 yards to and including 25 yards capacity.

GROUP 4: Rubbish and garbage trucks 26 yards to and including 31 yards capacity.

GROUP 5: Single axle working non-compactor containers up to 15 yards capacity on rubbish and garbage removal only.

GROUP 6: Roll-off trucks up to and including 42 yards capacity.

GROUP 7: Roll-off truck with more than 42 yards capacity or any tractor-trailer trucks.

GROUP 8: One-container tractor hoist on construction and alteration debris removal.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

ESTIMATE OF QUANTITIES

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	201.06	CLEARING AND GRUBBING	LS	1.000
0001	202.01	DISPOSAL OF BUILDINGS	LS	1.000
0001	202.120001	REMOVING EXISTING SUPERSTRUCTURES	LS	1.000
0001	202.120002	REMOVING EXISTING SUPERSTRUCTURES	LS	1.000
0001	202.120003	REMOVING EXISTING SUPERSTRUCTURES	LS	1.000
0001	202.120004	REMOVING EXISTING SUPERSTRUCTURES	LS	1.000
0001	202.19	REMOVAL OF SUBSTRUCTURES	CM	4130.000
0001	203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CM	68403.000
0001	203.03	EMBANKMENT IN PLACE	CM	20700.000
0001	203.07	SELECT GRANULAR FILL	CM	5095.000
0001	203.11	SUBSURFACE SETTLEMENT GAGES	EACH	2.000
0001	203.1601	APPLYING WATER	PDD	230.000
0001	203.17410117	PERMANENT GROUTED TIEBACKS, FURNISHED, INSTALLED ANDA	EACH	30.000
0001	203.17410217	PERFORMANCE TESTS FOR PERMANENT GROUTED TIEBACKS	EACH	30.000
0001	203.17500117	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	17.000
0001	203.17500217	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	10.000
0001	203.17500317	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	2.000
0001	203.17500417	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	3.000
0001	203.17500517	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	22.000
0001	203.17500617	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	20.000
0001	203.17500717	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	54.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	203.17500817	TEMPORARY ANCHOR TIEBACK SYSTEM	EACH	24.000
0001	203.18	CLEANING CLOSED DRAINAGE SYSTEMS	M	530.000
0001	203.19	CLEANING DRAINAGE STRUCTURES AND MANHOLES	EACH	50.000
0001	203.21	SELECT STRUCTURE FILL	CM	14915.000
0001	203.24 15	SHOULDER BACKUP MATERIAL	MT	40.000
0001	203.5195 06	CLEANING EXISTING CONCRETE OR ASPHALT GUTTERS	M	500.000
0001	203.96700104	REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION ANDD	MT	0.100
0001	203.96700204	REMOVAL, PACKAGING FOR TRANSPORT, TRANSPORTATION ANDD	M	100.000
0001	204.01	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	CM	210.000
0001	204.02	CONTROLLED LOW STRENGTH MATERIAL (CLSM) (NO FLY ASH)	CM	770.000
0001	206.01	STRUCTURE EXCAVATION	CM	24992.000
0001	206.02	TRENCH AND CULVERT EXCAVATION	CM	540.000
0001	206.0312 10	CONDUIT INSTALLATION ON ABOVE GRADE STRUCTURES	M	34.000
0001	206.04	TRENCH AND CULVERT EXCAVATION - O.G.	CM	21400.000
0001	206.05	TEST PIT EXCAVATION	EACH	20.000
0001	207.11	GEOTEXTILE SEPARATION	SQM	5742.000
0001	207.12	GEOTEXTILE DRAINAGE	SQM	520.000
0001	207.15	PREFABRICATED COMPOSITE STRUCTURAL DRAIN	SQM	4376.000
0001	209.1003	SEED AND MULCH - TEMPORARY	SQM	7005.000
0001	209.110101	CHECK DAM (DITCH BOTTOM WIDTH 0.0 TO 1.0 M), STONE -	EACH	86.000
0001	209.13	SILT FENCE-TEMPORARY	M	4400.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	209.1703	DRAINAGE STRUCTURE INLET PROTECTION, PREFABRICATED-TE	M	920.000
0001	209.1901	ROLLED EROSION CONTROL PRODUCT, CLASS II TYPE A, INTE	SQM	714.000
0001	209.200401	ROLLED EROSION CONTROL PRODUCT, CLASS III TYPE D, PER	SQM	26320.000
0001	209.2103	SOIL STABILIZERS, CLASS IV TYPE C	SQM	7005.000
0001	209.22	CONSTRUCTION ENTRANCE	SQM	8500.000
0001	210.1002	REMOVAL AND DISPOSAL OF ROOFING ACM	SQM	136.000
0001	210.290101	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM	M	3.400
0001	210.290201	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM	SQM	0.080
0001	210.290301	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM	LS	1.000
0001	210.3011	REMOVAL AND DISPOSAL OF CONCRETE-ENCASED PIPE ACM(BV1	M	918.000
0001	210.3111	REMOVAL AND DISPOSAL OF UNDERGROUND PIPE ACM (BV14)	M	183.000
0001	210.3411	REMOVAL AND DISPOSAL OF CAULKING ACM (BV14)	M	109.500
0001	210.481101	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM (BV14)	M	22.900
0001	210.481103	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM (BV14)	M	2.000
0001	210.481201	REMOVAL AND DISPOSAL OF MISCELLANEOUS ACM (BV14)	SQM	277.600
0001	304.01970608	CRUSHED STONE AGGREGATE SUBBASE COURSE	CM	40.000
0001	304.11 08	SUBBASE COURSE (MODIFIED)	CM	16280.000
0001	402.00004118	PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 1	QU	108.000
0001	402.00005118	PAVEMENT RIDE QUALITY ADJUSTMENT LEVEL 2	QU	206.000
0001	402.017901	TRUE & LEVELING F9, SUPERPAVE HMA, 70 SERIES COMPACTI	MT	1005.000
0001	402.058901	SHIM COURSE F9, HOT MIX ASPHALT	MT	20.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	402.125101	12.5MM F1 SUPERPAVE HMA, 50 SERIES COMPACTION	MT	9772.000
0001	402.125111	PLANT PRODUCTION QUALITY ADJUSTMENT TO 402.125101 M	QU	490.000
0001	402.125121	PAVEMENT DENSITY QUALITY ADJUSTMENT TO 402.125101 M	QU	490.000
0001	402.255901	25MM F9 SUPERPAVE HMA, 50 SERIES COMPACTION	MT	8160.000
0001	402.255911	PLANT PRODUCTION QUALITY ADJUSTMENT TO 402.402.255901	QU	408.000
0001	402.255921	PAVEMENT DENSITY QUALITY ADJUSTMENT TO 402.255901 M	QU	408.000
0001	402.256901	25MM F9 SUPERPAVE HMA, 60 SERIES COMPACTION	MT	3980.000
0001	402.256911	PLANT PRODUCTION QUALITY ADJUSTMENT TO 402.256901 M	QU	199.000
0001	402.376901	37.5MM F9 SUPERPAVE HMA, 60 SERIES COMPACTION	MT	23430.000
0001	402.376911	PLANT PRODUCTION QUALITY ADJUSTMENT TO 402.376901 M	QU	1180.000
0001	407.0101	TACK COAT	L	63380.000
0001	490.10	PRODUCTION COLD MILLING BITUMINOUS CONCRETE	SQM	42700.000
0001	490.30	MISCELLANEOUS COLD MILLING OF BITUMINOUS CONCRETE	SQM	6730.000
0001	520.09 10	SAW CUTTING ASPHALT CONCRETE	M	3900.000
0001	551.04600117	HOLES IN EARTH FOR SOLDIER PILE AND LAGGING WALL	M	1030.000
0001	551.04610117	ROCK SOCKETS FOR SOLDIER PILE AND LAGGING WALL	M	371.000
0001	551.0462 17	INSTALLING SOLDIER PILES FOR SOLDIER PILE AND LAGGING	M	125.000
0001	551.04620117	INSTALLING SOLDIER PILES FOR SOLDIER PILE AND LAGGING	M	1393.000
0001	551.04620217	INSTALLING SOLDIER PILES FOR SOLDIER PILE AND LAGGING	M	63.000
0001	551.0463 17	INSTALLING LAGGING FOR SOLDIER PILE AND LAGGING WALL	SQM	250.000
0001	551.04630217	INSTALLING LAGGING FOR SOLDIER PILE AND LAGGING WALL	SQM	200.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER		DESCRIPTION	UNIT	QUANTITY
0001	551.04631017		INSTALLING LAGGING FOR SOLDIER PILE AND LAGGING WALL	SQM	2215.000
0001	551.11		CAST-IN-PLACE CONCRETE PILES	M	1198.000
0001	551.13		FURNISHING EQUIPMENT FOR DRIVING PILES	LS	1.000
0001	551.60	17	FURNISHING EQUIPMENT FOR INSTALLING DRILLED SHAFTS	LS	1.000
0001	551.99492017		DRILLED SHAFTS	M	175.000
0001	552.13		TEMPORARY STEEL SHEETING	SQM	1258.000
0001	552.15		INTERIM STEEL SHEETING	SQM	174.000
0001	552.16		EXCAVATION PROTECTION SYSTEM	SQM	14010.000
0001	554.20	17	TERRACED GEOCELL SYSTEM	SQM	100.000
0001	554.9610	17	GEOSYNTHETIC REINFORCED EARTH SYSTEM (PERMANENT)	SQM	1786.000
0001	554.9620	17	GEOSYNTHETIC REINFORCED EARTH SYSTEM (TEMPORARY)	SQM	457.000
0001	555.0105		CONCRETE FOR STRUCTURES, CLASS A	CM	75.000
0001	555.9701	16	CONCRETE FOR STRUCTURES, CLASS HP (REINFORCEMENT INCL	CM	7520.000
0001	555.9702	16	FOOTING CONCRETE, CLASS HP (REINFORCEMENT INCLUDED AN	CM	3147.000
0001	556.03		STUD SHEAR CONNECTORS FOR BRIDGES	EACH	17544.000
0001	557.0101		SUPERSTRUCTURE SLAB WITH INTEGRAL WEARING SURFACE - B	SQM	4931.000
0001	557.2001		STRUCTURAL APPROACH SLAB WITH INTEGRAL WEARING SURFAC	SQM	1451.000
0001	557.30		SIDEWALKS AND SAFETY WALKS	SQM	225.000
0001	558.02		LONGITUDINAL SAWCUT GROOVING OF STRUCTURAL SLAB SURFA	SQM	5864.000
0001	559.1896	18	PROTECTIVE SEALING OF STRUCTURAL CONCRETE ON NEW BRID	SQM	5864.000
0001	560.01		DIMENSION STONE MASONRY	SQM	76.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	560.0401	STONE MASONRY	SQM	3214.000
0001	564.0501	STRUCTURAL STEEL, TYPE 1	LS	1.000
0001	564.0502	STRUCTURAL STEEL, TYPE 2	LS	1.000
0001	564.0503	STRUCTURAL STEEL, TYPE 3	LS	1.000
0001	564.0504	STRUCTURAL STEEL, TYPE 4	LS	1.000
0001	565.1522	TYPE M.R. EXPANSION BEARING (1001 TO 2000 KN)	EACH	22.000
0001	565.1724	TYPE M.R. FIXED BEARING (3001 TO 4000 KN)	EACH	11.000
0001	565.2023	TYPE E.B. FIXED BEARING (501 TO 750 KN)	EACH	10.000
0001	565.2024	TYPE E.B. FIXED BEARING (751 TO 1000 KN)	EACH	16.000
0001	565.2033	TYPE E.B EXPANSION BEARING (501 TO 750 KN)	EACH	10.000
0001	565.2034	TYPE E.B EXPANSION BEARING (751 TO 1000 KN)	EACH	16.000
0001	567.60	ARMORLESS BRIDGE JOINT SYSTEM	M	135.000
0001	568.70	TRANSITION BRIDGE RAILING	M	130.000
0001	569.03	VERTICAL FACED CONCRETE PARAPET	M	124.000
0001	569.04	SINGLE SLOPE (HALF SECTION) CONCRETE BRIDGE BARRIER	M	504.000
0001	569.05	SINGLE SLOPE (FULL SECTION) CONCRETE BRIDGE BARRIER	M	208.000
0001	570.01	LEAD EXPOSURE CONTROL PLAN	LS	1.000
0001	570.02	MEDICAL TESTING	DC	500.000
0001	570.03	PERSONAL EXPOSURE MONITORING SAMPLE ANALYSIS	DC	1000.000
0001	570.04	DECONTAMINATION FACILITIES	CW	50.000
0001	570.09	ENVIRONMENTAL GROUND PROTECTION	LS	1.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	571.010003	TREATMENT AND DISPOSAL OF PAINT REMOVAL WASTE	CM	2.000
0001	572.010001	STRUCTURAL STEEL PAINT SYSTEM: SHOP APPLIED	SQM	925.000
0001	572.010002	STRUCTURAL STEEL PAINT SYSTEM: SHOP APPLIED	SQM	1501.000
0001	572.010003	STRUCTURAL STEEL PAINT SYSTEM: SHOP APPLIED	SQM	8467.000
0001	572.010004	STRUCTURAL STEEL PAINT SYSTEM: SHOP APPLIED	SQM	824.000
0001	585.01	STRUCTURAL LIFTING OPERATIONS - TYPE A	EACH	28.000
0001	585.02	STRUCTURAL LIFTING OPERATIONS - TYPE B	EACH	14.000
0001	586.01	DRILLING AND GROUTING BOLTS, OR REINFORCING BARS	MM	53400.000
0001	587.3920 25	THRIE BEAM RAILING/CORRUGATED BEAM ROCK FENCE	M	370.000
0001	603.6101	REINFORCED CONCRETE PIPE CLASS IV, 300 MILLIMETER DIA	M	1420.000
0001	603.6102	REINFORCED CONCRETE PIPE CLASS IV, 375 MILLIMETER DIA	M	60.000
0001	603.6103	REINFORCED CONCRETE PIPE CLASS IV, 450 MILLIMETER DIA	M	620.000
0001	603.6104	REINFORCED CONCRETE PIPE CLASS IV, 525 MILLIMETER DIA	M	350.000
0001	603.6105	REINFORCED CONCRETE PIPE CLASS IV, 600 MILLIMETER DIA	M	640.000
0001	603.6107	REINFORCED CONCRETE PIPE CLASS IV, 750 MILLIMETER DIA	M	84.000
0001	603.77	CONCRETE COLLARS	EACH	5.000
0001	603.9810 04	DUCTILE IRON SEWER PIPE AND FITTINGS 10 NPS	M	170.000
0001	603.9812 04	DUCTILE IRON SEWER PIPE AND FITTINGS 12 NPS	M	65.000
0001	604.070801	ALTERING DRAINAGE STRUCTURES, LEACHING BASINS AND MAN	EACH	34.000
0001	604.10	PREFABRICATED ADJUSTMENT RINGS FOR MANHOLES	EACH	2.000
0001	604.300603	RECTANGULAR DRAINAGE STRUCTURE TYPE F FOR #3 WELDED F	M	123.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	604.300992	RECTANGULAR DRAINAGE STRUCTURE TYPE I FOR PARALLEL BA	M	23.000
0001	604.301122	RECTANGULAR DRAINAGE STRUCTURE TYPE K FOR #22 WELDED	M	49.000
0001	604.301873	RECTANGULAR DRAINAGE STRUCTURE TYPE R FOR CAST IRON F	M	17.000
0001	604.302122	RECTANGULAR DRAINAGE STRUCTURE TYPE U FOR #22 WELDED	M	29.000
0001	604.4048	ROUND PRECAST CONCRETE MANHOLE TYPE 48	M	66.000
0001	604.4060	ROUND PRECAST CONCRETE MANHOLE TYPE 60	M	46.000
0001	604.4072	ROUND PRECAST CONCRETE MANHOLE TYPE 72	M	57.000
0001	604.4096	ROUND PRECAST CONCRETE MANHOLE TYPE 96	M	13.000
0001	604.51020415	STORMWATER TREATMENT SYSTEM (SWTS) (MAXIMUM FLOW CAPA	EACH	1.000
0001	604.51020515	STORMWATER TREATMENT SYSTEM (SWTS) (MAXIMUM FLOW CAPA	EACH	1.000
0001	604.51020615	STORMWATER TREATMENT SYSTEM (SWTS) (MAXIMUM FLOW CAPA	EACH	2.000
0001	604.51020815	STORMWATER TREATMENT SYSTEM (SWTS) (MAXIMUM FLOW CAPA	EACH	1.000
0001	605.0902 08	UNDERDRAIN FILTER TYPE 1 (MODIFIED)	CM	480.000
0001	605.1001	UNDERDRAIN FILTER TYPE 2	CM	1065.000
0001	605.1602	PERFORATED POLYVINYL CHLORIDE UNDERDRAIN PIPE 150MILL	M	241.000
0001	605.1701	OPTIONAL UNDERDRAIN PIPE, 100 MILLIMETER DIAMETER	M	1980.000
0001	605.99 17	UNDERDRAIN VIDEO INSPECTION	M	240.000
0001	606.10	BOX BEAM GUIDE RAILING	M	1270.000
0001	606.100001	BOX BEAM GUIDE RAILING (SHOP CURVED)	M	310.000
0001	606.1201	BOX BEAM GUIDE RAIL END ASSEMBLY, TYPE I	EACH	13.000
0001	606.3041	SINGLE-SLOPE CONCRETE MEDIAN BARRIER (OPTIONAL)	M	1170.000

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CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER		DESCRIPTION	UNIT	QUANTITY
0001	606.3062		SINGLE-SLOPE CONCRETE HALF SECTION BARRIER (PRECAST)	M	1150.000
0001	606.71		REMOVING AND DISPOSING CORRUGATED BEAM GUIDE RAILING	M	190.000
0001	606.73		REMOVING AND DISPOSING BOX BEAM GUIDE RAILING	M	700.000
0001	606.74		REMOVING AND DISPOSING BOX BEAM MEDIAN BARRIER	M	118.000
0001	606.75		REMOVING AND DISPOSING CONCRETE BARRIER	M	1670.000
0001	606.79		REMOVING AND DISPOSING ANCHORAGE UNITS FOR CABLE GUID	EACH	21.000
0001	606.7910		REMOVING AND DISPOSING ANCHORAGE UNITS FOR CORRUGATED	EACH	5.000
0001	606.7920		REMOVING AND DISPOSING BOX BEAM GUIDE RAILING END ASS	EACH	19.000
0001	606.8803		TRANSITION BETWEEN BOX BEAM GUIDE RAIL AND SINGLE SLO	EACH	12.000
0001	606.8804		TRANSITION BETWEEN SINGLE SLOPE HALF SECTION CONCRETE	EACH	10.000
0001	606.90	11	CONCRETE MEDIAN BARRIER TRANSITION (CAST IN PLACE)	M	10.000
0001	607.0640	16	PEDESTRIAN FENCING FOR BRIDGES	M	37.000
0001	607.19		RIGHT-OF WAY FENCING	M	260.000
0001	607.3201		OPTIONAL CHAIN-LINK FENCE, TYPE II, WITH TOP RAIL1220	M	375.000
0001	607.9110	10	DECORATIVE PROTECTIVE FENCE	M	66.000
0001	607.96	08	REMOVE AND DISPOSE OF EXISTING FENCE	M	310.000
0001	608.0101		CONCRETE SIDEWALKS AND DRIVEWAYS	CM	150.000
0001	609.0301		STONE CURB - BRIDGE (TYPE A)	M	177.000
0001	609.0302		STONE CURB - BRIDGE (TYPE F1)	M	124.000
0001	609.0401		CAST-IN-PLACE CONCRETE CURB TYPE VF150	M	1520.000
0001	609.0403		CAST-IN-PLACE CONCRETE CURB TYPE M150	M	575.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

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CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	609.06 08	CURB REMOVAL	M	1630.000
0001	610.0203	ESTABLISHING TURF	SQM	17095.000
0001	611.010154	PLANTING MAJOR DECIDUOUS TREE SPECIES (SEE CONTRACTDO	EACH	47.000
0001	611.020183	PLANTING MINOR DECIDUOUS TREE SPECIES (SEE CONTRACTDO	EACH	44.000
0001	611.030153	PLANTING CONIFEROUS TREE SPECIES (SEE CONTRACT DOCUME	EACH	47.000
0001	611.030183	PLANTING CONIFEROUS TREE SPECIES (SEE CONTRACT DOCUME	EACH	29.000
0001	613.03	PLACING TOPSOIL-TYPE B	CM	800.000
0001	615.03	WATERING VEGETATION	KL	1330.000
0001	615.0301 24	VEGETATION CONTROL MATTING (25.0 MM THICKNESS)	SQM	1330.000
0001	619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	1.000
0001	619.04	TYPE III CONSTRUCTION BARRICADE	EACH	230.000
0001	619.0601	TEMPORARY STRUCTURES AND APPROACHES NO 1	EACH	1.000
0001	619.0801	REMOVE EXISTING PAVEMENT MARKING STRIPES	M	10000.000
0001	619.0901	TEMPORARY PAVEMENT MARKINGS STRIPES (TRAFFIC PAINT)	M	34330.000
0001	619.110204	PORTABLE, VARIABLE MESSAGE SIGN (PVMS) (LED)(CELLULAR	EACH	9.000
0001	619.1704	TEMPORARY CONCRETE BARRIER, (PINNED) WITHWARNING LIGH	M	4427.000
0001	619.1802	TEMPORARY IMPACT ATTENUATOR - REDIRECTIVE (TEST LEVEL	EACH	2.000
0001	619.21	TEMPORARY SAND BARREL MODULE	EACH	1.000
0001	619.22	TEMPORARY RUMBLE STRIPS	M	530.000
0001	619.24	NIGHTTIME OPERATIONS	LS	1.000
0001	619.25	TRAFFIC CONTROL SUPERVISOR	MNTH	26.000

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CONTRACTOR :_____

SEC NUM	ITEM NUMBER		DESCRIPTION	UNIT	QUANTITY
0001	619.9002	08	TOW TRUCK SERVICE	DAY	565.000
0001	620.03		STONE FILLING (LIGHT)	CM	337.000
0001	620.04		STONE FILLING (MEDIUM)	CM	20.000
0001	620.05		STONE FILLING (HEAVY)	CM	250.000
0001	620.06		DRY RIP-RAP	CM	60.000
0001	620.08		BEDDING MATERIAL	CM	700.000
0001	623.12	08	CRUSHED STONE (IN PLACE MEASURE) MODIFIED	CM	70.000
0001	624.020101		ASPHALT CONCRETE GUTTERS	MT	75.000
0001	625.01		SURVEY OPERATIONS	LS	1.000
0001	625.05		STEEL PIN AND CAP RIGHT-OF-WAY MARKER	EACH	10.000
0001	633.0504	08	CLEANING & FILLING JOINTS AND CRACKS IN ASPHALT CONCR	LS	1.000
0001	633.11		CLEANING EXISTING PAVEMENT AND/OR SHOULDERS	SQM	6730.000
0001	634.9901	17	BUILDING CONDITION SURVEY	LS	1.000
0001	634.9902	17	VIBRATION MONITORING (NONBLASTING)	LS	1.000
0001	637.01		LABORATORY BUILDING	EACH	1.000
0001	637.03		CONCRETE CYLINDER CURING BOX	EACH	6.000
0001	637.15		ENGINEER'S FIELD OFFICE - TYPE 5	MNTH	26.000
0001	637.21		MOBILE TELEPHONE	DC	70200.000
0001	637.23		TWO-WAY RADIO SYSTEM	MNTH	26.000
0001	637.24		DIGITAL CAMERA	DC	2000.000
0001	637.26		RAIN GAUGE	EACH	1.000

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CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	637.34	OFFICE TECHNOLOGY AND SUPPLIES	DC	5000.000
0001	637.35	PARTNERING WORKSHOP	DC	5000.000
0001	637.3551 20	CPM SCHEDULING	LS	1.000
0001	645.34010104	BRIDGE MOUNTING CONNECTION FOR SIGN PANELS	EACH	2.000
0001	645.5102	GROUND-MOUNTED SIGN PANELS LESS THAN OR EQUAL TO2.78	SQM	80.000
0001	645.5202	GROUND-MOUNTED SIGN PANELS LESS THAN OR EQUAL TO2.78	SQM	10.000
0001	645.81	TYPE A SIGN POSTS	EACH	60.000
0001	645.830102	TYPE B SIGN POST, GALVANIZED, S75X8.5 SECTION,BI-DIRE	EACH	4.000
0001	645.830201	TYPE B SIGN POST, GALVANIZED, W150X13.5 SECTION,NON-B	EACH	4.000
0001	645.830202	TYPE B SIGN POST, GALVANIZED, W150X13.5 SECTION,BI-DI	EACH	4.000
0001	645.85	POLE MOUNTED SIGN SUPPORT SYSTEM (BAND MOUNTED)	EACH	2.000
0001	646.0701	REFERENCE MARKER, 1.2 METER MOUNTING HEIGHT	EACH	24.000
0001	647.01	REMOVAL OF SIGNS - SIZE A (0.0-1.0 SQUARE METERS)	EACH	5.000
0001	647.02	REMOVAL OF SIGNS - SIZE B (1.1 TO 2.0 SQUARE METERS)	EACH	5.000
0001	647.03	REMOVAL OF SIGNS-SIZE C (2.1 TO 4.0 SQUARE METERS)	EACH	5.000
0001	647.04	REMOVAL OF SIGNS - SIZE D (4.1 TO 10.0 SQUARE METERS)	EACH	5.000
0001	647.05	REMOVAL OF SIGNS-SIZE E (OVER 10.0 SQUARE METERS)	EACH	5.000
0001	647.1301 03	RESTORING AND RELOCAING CAST ALUMINUM HISTORIC MARKER	EACH	1.000
0001	647.18	REMOVAL OF OVERHEAD SIGN PANELS	EACH	12.000
0001	647.20	REMOVAL OF CANTILEVER SIGN STRUCTURE	EACH	2.000
0001	647.92 11	REMOVE SIGN POST	EACH	50.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	647.93 10	REMOVE SIGN POST STUB	EACH	50.000
0001	655.0101	FRAMES AND GRATES (CASTINGS)	SQM	52.000
0001	655.0201	FRAMES AND GRATES (FABRICATED)	SQM	37.000
0001	655.0301	FRAMES AND GRATES (PARALLEL BAR TYPE)	SQM	26.000
0001	655.0501	STEEL FABRICATED GRATES IN CAST FRAMES	SQM	96.000
0001	659.1007 08	INSTALL CABLE TV PULLBOX	LS	1.000
0001	659.17030108	FURNISH AND INSTALL FIBERGLASS CONDUIT ONSTRUCTURE	LS	1.000
0001	659.18100108	FURNISH AND INSTALL FIBERGLASS CONDUIT ON STRUCTURE (	LS	1.000
0001	659.18180108	FURNISH AND INSTALL FIBERGLASS CONDUIT OFF STRUCTURE(	LS	1.000
0001	659.18190108	FURNISH AND INSTALL PVC CONDUIT(S) OFF STRUCTURE(CABL	LS	1.000
0001	659.60540108	FURNISH AND INSTALL PRECAST MANHOLES (TELEPHONE)	EACH	1.000
0001	660.19020603	INSULATION FOR WATER OR SEWER MAIN	M	66.310
0001	660.3412 10	DUCTILE IRON SANITARY SEWER PRESSURE PIPE, 12 NPS	M	66.310
0001	660.75 10	PLUGGING PIPES AND CONDUITS	EACH	35.000
0001	661.1702 08	INSTALL FIBERGLASS CONDUIT ON STRUCTURE (ELECTRIC)	LS	1.000
0001	662.17000104	INSTALL UTILITY HANGER SYSTEM,FIXED PRICE	LS	1.000
0001	662.1711 10	INSTALL ELECTRICAL COMPANY CONDUIT OFF STRUCTURE	LS	1.000
0001	662.18200108	FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES	LS	1.000
0001	662.18200208	FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES	LS	1.000
0001	662.18200308	FURNISH AND INSTALL CONDUIT FOR BRIDGE AND APPROACHES	LS	1.000
0001	662.20000201	INSTALL 2 NPS COMPANY FURNISHED PVC CONDUITS	M	100.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	662.8101 08	INSTALL STEEL GAS MAIN PIPE ON STRUCTURE (CON EDISON)	LS	1.000
0001	662.8331 08	INSTALL STEEL GAS MAIN PIPE OFF STRUCTURE CON EDISON)	LS	1.000
0001	663.0104	DUCTILE IRON CEMENT LINED WATER PIPE, 4 NPS	M	70.000
0001	663.0106	DUCTILE IRON CEMENT LINED WATER PIPE, 6 NPS	M	100.000
0001	663.0112	DUCTILE IRON CEMENT LINED WATER PIPE, 12 NPS	M	320.000
0001	663.1206	DOUBLE DISK GATE VALVE & VALVE BOX, 6 NPS	EACH	2.000
0001	663.1212	DOUBLE DISK GATE VALVE & VALVE BOX, 12 NPS	EACH	2.000
0001	663.1301	HYDRANT	EACH	2.000
0001	663.2001	IRON WATER MAIN FITTINGS (3 NPS - 8 NPS)	KG	970.000
0001	663.2002	IRON WATER MAIN FITTINGS (10 NPS - 16 NPS)	KG	2980.000
0001	663.2504	WATER SERVICE CONNECTION, 1 NPS	EACH	8.000
0001	663.4104	REMOVE AND DISPOSE OF EXISTING WATER MAIN, 4 NPS	M	10.000
0001	663.4106	REMOVE AND DISPOSE OF EXISTING WATER MAIN, 6 NPS	M	90.000
0001	663.46	REMOVE AND STORE EXISTING HYDRANT	EACH	2.000
0001	664.4048 06	PRECAST SANITARY SEWER MANHOLE (1220 MM DIA.)	M	20.000
0001	680.52091004	CONDUIT, FIBERGLASS - MULTI-CELL - 4 DUCT	M	200.000
0001	680.54	INDUCTANCE LOOP INSTALLATION	M	280.000
0001	680.72	INDUCTANCE LOOP WIRE	M	840.000
0001	685.07200118	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES- 0.51 MM (	M	17300.000
0001	685.07200218	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES- 0.51 MM	M	10757.000
0001	687.0301	WHITE THERMOPLASTIC REFLECTORIZED PAVEMENT LETTERS	EACH	11.000

QUANTITY SHEET SUMMARY FOR PROPOSAL

CONTRACT ID: D260694 PROJECT(S): 804094

CONTRACTOR :_____

SEC NUM	ITEM NUMBER		DESCRIPTION	UNIT	QUANTITY
0001	687.0401		WHITE THERMOPLASTIC REFLECTORIZED PAVEMENT SYMBOLS	EACH	22.000
0001	688.03		WHITE PREFORMED REFLECTORIZED PAVEMENT LETTERS	EACH	16.000
0001	688.04		WHITE PREFORMED REFLECTORIZED PAVEMENT SYMBOLS	EACH	5.000
0001	691.03	20	TRAINING REQUIREMENTS	DC	1000.000
0001	697.03		FIELD CHANGE PAYMENT	DC	1633000.000
0001	698.04		ASPHALT PRICE ADJUSTMENT	DC	100.000
0001	698.05		FUEL PRICE ADJUSTMENT	DC	100.000
0001	698.06		STEEL/IRON PRICE ADJUSTMENT	DC	100.000
0001	699.040001		MOBILIZATION	LS	1.000