SYRACUSE DIVISION
BUNDLED BRIDGES

TAS 17-37B, Contract D800001

DB CONTRACT DOCUMENTS
PART 8

SPECIAL SPECIFICATIONS

DRAFT August 31, 2017

This *Part 8 – Special Specifications* provides access to, and details the Project-specific requirements for the use of, the following documents:

1. NYSDOT/Authority Standard Specifications and Construction Materials
2. NYSDOT/Authority Engineering Information Issuances
3. NYSDOT/Authority Special Specifications.

NYSDOT Standard Specifications and Construction Materials

The Design-Builder shall use the NYSDOT Standard Specifications Construction Materials in coordination with *Part 5 – Special Provisions*.

The NYSDOT Standard Specifications Construction Materials can be accessed at the following internet link:

https://www.dot.ny.gov/main/business-center/engineering/specifications/busi-e-standards-usc.

NYSDOT/Authority Engineering Information Issuances

The Design-Builder shall use the relevant NYSDOT/Authority engineering information issuances, which include:

1. Engineering Instructions (EI);
2. Engineering Bulletins (EB);
3. Engineering Directives (ED).

The above listed engineering information issuances can be accessed at the following internet link:

https://www.dot.ny.gov/main/business-center/consultants/forms-publications-and-instructions/engineering-information-issuance-system

NYSDOT Special Specifications

The Design-Builder *may* use NYSDOT/Authority Special Specifications which are listed in the Electronic Pay Item Catalog (e-PIC) and which have received General Approval, and **shall** use any NYSDOT/Authority Special Specifications which are referenced in this Part 8 or elsewhere in the Contract Documents. Delete and ignore sections in the NYSDOT/Authority Special Specifications titled *Method of Measurement* and *Basis of Payment* from the NYSDOT/Authority Special Specifications.

NYSDOT Special Specifications can be accessed at the following internet link:

https://www.dot.ny.gov/main/business-center/engineering/specifications/special-specifications-us.

The NYSTA Special Specifications may be accessed at the following internet link:

The following Special Specifications are attached herein:

ITEM 557.2101XX09 – INTERNAL CURING HIGH PERFORMANCE CONCRETE WITH CORROSION INHIBITOR – TYPE XX FRICTION

ITEM 557.21020016 – FIELD CAST JOINTS BETWEEN PRECAST CONCRETE UNITS

ITEM 557.51090018 – INTERNAL CURING CONCRETE FOR SUPERSTRUCTURE SLABS WITH INITEGRAL WEARING SURFACE – BOTTOM FORMWORK REQUIRED – TYPE 09 FRICTION

ITEM 557.54090018 – INTRENAL CURING CONCRETE FOR STRUCTURAL APPROACH SLAB WITH INTERGRAL WEARING SURFACE – TYPE 09 FRICTION

ITEM 611.19010024 – POST-PLANTING CARE WITH REPLACEMENT

ITEM 634.99020017 – VIBRATION MONITORING (NONBLASTING)

ITEM 800.01000015 – DESIGN BUILD – DESIGN SERVICES
ITEM 800.02000015 – DESIGN BUILD – CONSTRUCTION INSPECTION SERVICES
ITEM 800.03000015 – DESIGN BUILD – QUALITY CONTROL SERVICES
ITEM 800.04000015 – DESIGN BUILD – FORCE ACCOUNT WORK
ITEM 800.05000015 – DESIGN BUILD – SITE MOBILIZATION
ITEM 800.06000115 – DESIGN BUILD – CONSTRUCTION WORK

In the event of a discrepancy between the version of any Special Specification attached herein and the version available from the NYSDOT/Authority web site listed above, the version included in these Contract Documents shall apply.

ITEM 557.2101XX09 – INTERNAL CURING HIGH PERFORMANCE CONCRETE WITH CORROSION INHIBITOR - TYPE XX FRICTION

DESCRIPTION

This specification covers internal curing high performance concrete with corrosion inhibitor, including batching, transportation, casting and curing.

MATERIALS

Internal Curing High Performance Concrete

Manufacture HP concrete according to §501, and the following modifications:

1. The slump range is 4-7 inches. High Range Water-Reducing Admixtures (§711-08, ASTM Type F), are permitted.

2. The maximum w/c ratio is reduced to 0.35.

3. Substitute lightweight fine aggregate, meeting the requirements of AASHTO M 195, for 30% (by volume) of standard fine aggregate.

4. Construct lightweight fine aggregate stockpile(s) at the production facility so as to maintain uniform moisture throughout the pile. Using a sprinkler system approved by the Materials Engineer. continuously and uniformly sprinkle the stockpile(s) with water for a minimum of 48 hours, or until the "Absorbed Moisture content" of the aggregate in the stockpile is at least 15% by weight (as determined by Test Method NY 703-19E). If a steady rain of comparable intensity occurs, turn off the sprinkler system at the direction of the Materials Engineer, until the rain ceases. At the end of the wetting period, or after the rain ceases, allow stockpiles to drain for 12 to 15 hours immediately prior to use, unless otherwise directed by the Materials Engineer.

5. The moisture content of the lightweight fine aggregate must be determined immediately prior to batching, using Materials Procedure 703-19E. If the supplied mix design is based on "oven dry" weight of lightweight fine aggregate, a corresponding adjusted weight must be supplied to account for the actual absorbed moisture content, so that the mix design entered in to the automated batching system is based on SSD weight. After the adjusted mix design is entered into batching system, additional adjustments must be made to the fine aggregate and water quantities to account for the "surface" moisture of the fine aggregates.

6. Use Calcium Nitrate Based Corrosion Inhibitor (CNBCI) in the mix at a rate of 5.4 gallons per cubic yard. Account for the water contained within the CNBCI when determining the amount of water used in the mix.

The Materials Engineer, or his representative, will approve the batch weights prior to use. Use these values to manufacture all high performance concrete with corrosion inhibitor for this project, and periodically correct the batch weights to account for changes in the fine aggregate fineness modulus and aggregate moisture contents.

High Weight Methyl Methacrylate

The high molecular weight methacrylate (HMWM) resin shall be low viscosity and non-fuming. Acceptance is based on the manufacturer certifying that it conforms to the following, and the contractor forwarding the certification to the DCES:

ITEM 557.2101XX09 – INTERNAL CURING HIGH PERFORMANCE CONCRETE WITH CORROSION INHIBITOR - TYPE XX FRICTION

Viscosity	Less than 25 cps when measured according to ASTM D2849
Density	Greater than 8.4 lb/gal. @ 77º F.
Flash Point	Greater than 200º F.
Vapor Pressure	Less than 1.0 mm Hg @ 77º F. (ASTM D 323)
TG (DSC)	Greater than 136º F (ASTM D3418)
Gel Time	Greater than 40 minutes for a 100 gram mass
Percent Solids	Greater than 90 % by weight
Bond Strength	Greater than 1522.3 psi (ASTM C882)

Sand for coating HMWM shall be commercial quality dry blast sand. 95% of the sand shall pass the #8 sieve, and 95% shall be retained on the #30 sieve. The container shall include the following information: The name of the manufacturer, the brand name of the product, the date of manufacture.

Water shall meet the requirements of §712-01.

Curing Compound shall meet the requirements of §711-05.

CONSTRUCTION DETAILS

Form Work, Batching and Curing

The design and fabrication of forms shall follow approved installation drawings and shall be constructed from plywood or approved equal. The forms shall be removable and shall not absorb water.

Add the following to §557-3.01, Concrete Manufacturing and Transporting:

The lightweight fine aggregate, at the time of batching must be at least 15% absorbed moisture content . Batch the lightweight fine aggregate first, then routinely batch the fine aggregate, coarse aggregate, admixtures, cement, pozzolan, Microsilica, and remaining mixing water and mix completely.

Place the concrete when the ambient temperature is at least 60 F and no more than 85 F. Curing shall be as per §502-3.11.

Quality Control

The contractor shall take four sets of compressive strength test samples for each day of placement. Each set consists of 2 cylinders 6 inches X 12 inches. All sets shall be cured in an environment similar to the material they represent. The contractor's concrete cylinder curing procedure shall be included on the installation drawings. Cylinders shall be provided to the Engineer at least 12 hours prior to the proposed testing.

The following tests shall be performed:
Compressive strengths shall be according to ASTM C 39. The timing of the testing shall be as needed to open to traffic and as ordered by the Engineer, except that one set shall be tested at 28 days. The cylinders will be broken by the Department.

ITEM 557.2101XX09 – INTERNAL CURING HIGH PERFORMANCE CONCRETE WITH CORROSION INHIBITOR - TYPE XX FRICTION

Application of HMWM

Abrasive blast clean the area to be treated, removing all contaminants from the surface. Clean adjacent surfaces of the area to be treated using compressed air which is free of oil and moisture.

Do not apply HMWM if rain is expected within 12 hours of completion. Apply HMWM to clean, dry surfaces when the surface temperature is at least 50º F, and if near 50º F, rising. The HMWM shall be mixed and applied according to the manufacturer's instructions and no more than 5 gallons at a time. Apply the HMWM as shown in the plans and to all cracks as directed by the Engineer.

When the HMWM surface will be used as a driving surface, sand must be applied to provide friction. After the HMWM has been applied, at least 20 minutes shall elapse before applying the sand. The sand shall be broadcast at a rate of approximately two pounds per square yard, completely covering the HMWM.

Opening to traffic

The HMWM must be tack-free before construction traffic is permitted to resume. The concrete must have a minimum compressive strength of 3000 psi, unless a different strength is shown in the Plans. If the concrete does not achieve the proper strength, contact the Deputy Chief Engineer of Structures.

METHOD OF MEASUREMENT

Measurement will be by volume of concrete placed in cubic feet. The volume of in-place concrete shall be calculated to the nearest cubic foot.

BASIS OF PAYMENT

Payment at the contract price for the above item shall be full compensation for all labor, equipment, and material to do the work.

XX = Friction Type
01 - Type 1 Friction
02 - Type 2 Friction
03 - Type 3 Friction
09 - Type 9 Friction

ITEM 557.21020016 - FIELD CAST JOINTS BETWEEN PRECAST CONCRETE UNITS

SCOPE

This specification covers field casting of joints for precast concrete units, including batching, transportation, casting and curing.

MATERIAL

High Weight Methyl Methacrylate (used as repair for leaking joint)
The high molecular weight methacrylate (HMWM) resin shall be low viscosity and non-fuming. Acceptance is based on the manufacturer certifying that it conforms to the following, and the contractor forwarding the certification to the DCES:

Viscosity	Less than 25 cps when measured according to ASTM D2849
Density	Greater than 8.4 lb/gal. @ 77º F.
Flash Point	Greater than 200º F.
Vapor Pressure	Less than 1.0 mm Hg @ 77º F. (ASTM D 323)
TG (DSC)	Greater than 136º F (ASTM D3418)
Gel Time	Greater than 40 minutes for a 100 gram mass
Percent Solids	Greater than 90 % by weight
Bond Strength	Greater than 1522.3 psi (ASTM C882)

Sand The sand shall be commercial quality dry blast sand. 95% of the sand shall pass the #8 sieve, and 95% shall be retained on the #30 sieve.

The container shall include the following information: The name of the manufacturer, the brand name of the product, the date of manufacture.

Water shall meet the requirements of §712-01.

UHPC material shall meet the following, 28 days unless otherwise noted:

Minimum Compressive Strength (ASTM C39)	
Heat-Treated*	≥ 25 ksi
Not Heat-Treated**	≥ 20 ksi
Not Heat-Treated 3 day**	≥ 12 ksi
Prism Flexural Tensile toughness (ASTM C1018; 10 in. span)	$I_{30} \geq 48$
Long-Term Shrinkage (ASTM C157; initial reading after set)	≤ 766 microstrain
Chloride Ion Penetrability (ASTM C1202)	≤ 250 coulombs
Chloride Ion Penetrability (AASHTO T259; 1/5 in. depth)	< 0.07 oz/ft^3
Scaling Resistance (ASTM C672)	$y < 3$
Abrasion Resistance (ASTM C944 2x weight; ground surface)	< 0.025 oz. lost
Freeze-Thaw Resistance (ASTM C666A; 600 cycles)	RDM > 96%
Alkali-Silica Reaction (ASTM C1260; tested for 28 days)	Innocuous

* Heat-Treated - According to manufacturer's recommendation, temperature not to exceed 250ºF.
** Not Heat-Treated - Cured at a temperature of 50° F ± 3°.

Casting and testing must include the following (The DCES may waive tests if these tests have been previously performed for material supplied by the manufacturer):

A minimum of 12 cylinders 3 in. X 6 in. shall be cast.

All cylinders shall be cured using the same method of curing proposed to be used in the field. The temperature during curing shall be within 18ºF of the low end of the proposed temperature range for curing in the field. 2 cylinders shall be tested each testing day. Testing times are at 4 days, 7 days, 14 days, and 28 days. The compressive strength shall be measured by ASTM C39 and shall meet 12 ksi minimum at 4 days and 21 ksi minimum at 28 days. Only a UHPC mix design that passes these tests may be used to form the joint.

Cast 6 additional cylinders 12 in. diameter and 7 ½ in. deep. Each cylinder shall have one 32 in. long epoxy-coated reinforcing bar cast in the center of the circular face. The axis of the bar shall be perpendicular to the formed surface. 3 of the bars shall be #6 bars embedded 5 inches deep and 3 of the bars shall be #4 bars embedded 3 inches deep. These cylinders will be kept wet for four days then delivered to the Materials Bureau for testing according to Test Method No. NY 701-14 E. Contact the Materials Bureau prior to casting for specific instructions on preparing the test specimens. The test will be performed as soon as practical after the corresponding samples reach 12 ksi.

This test is a pullout test. The samples pass if the bars yield without the UHPC failing and without the bars pulling out of the UHPC.

Results of all the tests above, conducted by an AASHTO accredited testing lab shall be submitted to the DCES for review and approval a minimum of 60 days prior to the use of UHPC in the field. Provide to the DCES a list of bridge projects in which the proposed UHPC material has been used as joint fill between precast concrete elements (within or outside the USA). The DCES reserves the right to reject a proposed UHPC material which lacks a proven track record in precast concrete joint filling in bridge applications.

CONSTRUCTION

Pre-Pour Meeting: Prior to the initial placement of the UHPC, the contractor shall arrange for an on site meeting with the UHPC representative. The contractor's staff and the NYSDOT Engineer and Inspectors shall attend the site meeting. The objective of the meeting will be to clearly outline the procedures for mixing, transporting, finishing and curing of the UHPC material.

The contractor shall arrange for a representative of the UHPC supplier to be on site during the placement of the joints. The representative shall be knowledgeable in the supply, mixing, delivery, placement, and curing of the UHPC material.

Storage: The contractor shall assure the proper storage of premix, fibers and additives as required by the supplier's specifications in order to protect materials against loss of physical and mechanical properties.

Form Work, Batching and Curing

The design and fabrication of forms shall follow approved installation drawings and shall follow the recommendations of the manufacturer. All the forms for UHPC shall be constructed from plywood. The forms shall be coated to prevent absorption of water.

The contractor shall follow the batching sequence as specified by the supplier and approved by the DCES. The surface of the UHPC field joints shall be filled to plus 1/8 inch above the surface of the precast panels.

The UHPC in the form shall be cured according to Manufacturer's recommendations to attain the required strength shown on the contract documents. A continuous curing temperature of a minimum of 60ºF is recommended.

Quality Control
The contractor shall measure the slump flow on each batch of UHPC. The slump flow will be conducted using a mini-slump cone. The flow for each batch shall be between 7 in. and 10in. The slump flow for each batch shall be recorded in the QA/QC log. A copy of the log shall be given to the Engineer.

The contractor shall take four sets of compressive strength test samples for each day of placement. Each set consists of 3 cylinders 3in. X 6in. All sets shall be cured in an environment similar to the material they represent.

The following tests shall be performed:
Compressive strengths shall be according to ASTM C 39. The timing of the testing shall be as required by the contract documents. The second set shall be tested at 28 days. The third set will be sent to the Materials Bureau between the 4^{th} day and the 14^{th} day. The fourth set shall be treated as a reserve set.

Watertight Integrity Test
After the joint has reached the required strength, a watertight integrity test shall be performed in accordance with §567-3.01.H. If leakage occurs the Contractor must seal the entire length of the leaking joint using High Weight Methyl Methacrylate at no extra cost to the State.

Repair
Abrasive blast clean the area to be treated, removing all contaminants from the surface. Clean adjacent surfaces of the leaking joints using compressed air which is free of oil and moisture.

Do not apply sealers if rain is expected within 12 hours of completion. Apply sealers to clean, dry surfaces when the surface temperature is at least 50º F, and if near 50º F, rising. The sealer shall be mixed and applied according to the manufacturer's instructions and no more than 5 gallons at a time. Pour the sealer over the joints.

When the methacrylate surface will be used as a driving surface, sand must be applied to provide friction. After the resin has been applied, at least 20 minutes shall elapse before applying the sand. The sand shall be broadcast at a rate of approximately two pounds per square yard, completely covering the sealer.

The sealer must be tack-free before construction traffic is permitted to resume.

MEASUREMENT FOR PAYMENT
Measurement will be by volume of UHPC joints placed in cubic feet. The volume of in-place UHPC shall be calculated to the nearest cubic foot.

BASIS OF PAYMENT
Payment at the contract price for the above item shall be full compensation for all labor, equipment, and material to do the work.

ITEM 557.2500NN16 - CRACK SEALING USING HIGH MOLECULAR WEIGHT METHACRYLATE – LINEAR CRACKS

DESCRIPTION

This work shall consist of furnishing and installing Crack Sealing Using High Molecular Weight Methacrylate in accordance with the contract documents and as directed by the Engineer.

MATERIALS

The high molecular weight methacrylate (HMWM) resin shall be low viscosity and non-fuming. Acceptance is based on the manufacturer certifying that it conforms to the following, and the contractor forwarding the certification to the DCES:

Viscosity	Less than 25 cps when measured according to ASTM D2849
Density	Greater than 8.4 lb/gal. @ 77º F.
Flash Point	Greater than 200º F.
Vapor Pressure	Less than 1.0 mm Hg @ 77º F. (ASTM D 323)
TG (DSC)	Greater than 136º F (ASTM D3418)
Gel Time	Greater than 40 minutes for 3.5 ounces
Percent Solids	Greater than 90 % by weight
Bond Strength	Greater than 1522.3 psi (ASTM C882)

Sand The sand shall be commercial quality dry blast sand. 95% of the sand shall pass the #8 sieve, and 95% shall be retained on the #30 sieve.

The container shall include the following information: The name of the manufacturer, the brand name of the product, the date of manufacture.

CONSTRUCTION DETAILS

Abrasive blast clean the area to be treated, removing all contaminants from the surface. Clean all surfaces and cracks using compressed air which is free of oil and moisture.

Do not apply sealers if rain is expected within 12 hours of completion. Apply sealers to clean, dry surfaces when the surface temperature is at least 50º F, and if near 50º F, rising. The sealer shall be mixed and applied according to the manufacturer's instructions and no more than 5 gallons at a time. Pour sealer into the cracks.

After the resin has been applied, at least 20 minutes shall elapse before applying the sand. The sand shall be broadcast at a rate of approximately two pounds per square yard, completely covering the sealer.

The sealer must be tack-free before traffic is permitted to resume.

METHOD OF MEASUREMENT

This work will be measured as the number of feet of Crack Sealing Using High Molecular Weight Methacrylate satisfactorily furnished and installed.

BASIS OF PAYMENT

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

ITEM 557.51XX0018 - INTERNAL CURING CONCRETE FOR SUPERSTRUCTURE SLABS WITH INTEGRAL WEARING SURFACE - BOTTOM FORMWORK REQUIRED - TYPE XX FRICTION

ITEM 557.52XX0018 - INTERNAL CURING CONCRETE FOR SUPERSTRUCTURE SLABS WITH INTEGRAL WEARING SURFACE - BOTTOM FORMWORK NOT REQUIRED - TYPE XX FRICTION

ITEM 557.54XX0018 - INTERNAL CURING CONCRETE FOR STRUCTURAL APPROACH SLAB WITH INTEGRAL WEARING SURFACE - TYPE XX FRICTION

ITEM 557.55000018 - INTERNAL CURING CONCRETE FOR SIDEWALKS AND SAFETY WALKS

DESCRIPTION

Furnish and place reinforcing steel and Internal Curing (IC) concrete to construct superstructure slabs as shown in the contract plans. Internal Curing concrete is a modified Class HP concrete with lightweight fine aggregate substituted for a portion of the standard fine aggregate to aid the curing process internally.

MATERIALS

Manufacture Class HP concrete modified for internal curing according to §501, and the following modifications:

1. The slump range is 4-7 inches. High Range Water-Reducing Admixtures (§711-08, ASTM Type F), are permitted.

2. The maximum w/c ratio is 0.40. Do not include absorbed moisture of the light weight fine aggregate as part of the w/c ratio calculation.

3. Substitute lightweight fine aggregate, meeting the requirements of AASHTO M 195, for 30% (by volume) of standard fine aggregate.

The Regional Materials Engineer, or his representative, will approve the batch weights prior to use. Use these values to manufacture all internally cured high performance concrete and periodically correct the batch weights to account for changes in the fine aggregate fineness modulus and aggregate moisture contents.

CONSTRUCTION DETAILS

Apply the provisions of §557-3 and the following modifications:

1. Add the following to §557-3.01, Concrete Manufacturing and Transporting:

    a. Construct lightweight fine aggregate stockpile(s) at the production facility so as to maintain uniform moisture throughout the pile. Using a sprinkler system approved by the Materials Engineer. Continuously and uniformly sprinkle the stockpile(s) with water for a minimum of 48 hours, or until the "Absorbed Moisture content" of the aggregate in the stockpile is at least 15% by weight as determined by Test Method NY 703-19E (https://www.dot.ny.gov/divisions/engineering/technical-services/materials-bureau/forms-manuals). If a steady rain of comparable intensity occurs, turn off the sprinkler system at the direction of the Materials Engineer, until the rain ceases. At the end of the wetting period, or after the rain ceases, allow stockpiles to drain for 12 to 15 hours immediately prior to use, unless otherwise directed by the Materials Engineer.

    b. The moisture content of the lightweight fine aggregate must be determined immediately prior to batching, using Test Method NY 703-19E. If the supplied mix design is based on "oven dry" weight of lightweight fine aggregate, a

corresponding adjusted weight must be supplied to account for the actual absorbed moisture content, so that the mix design entered in to the automated batching system is based on SSD weight. After the adjusted mix design is entered into batching system, additional adjustments must be made to the fine aggregate and water quantities to account for the "surface" moisture of the fine aggregates.

c. The lightweight fine aggregate, at the time of batching must be at least 15% absorbed moisture content. Batch the lightweight fine aggregate first, then routinely batch the fine aggregate, coarse aggregate, admixtures, cement, pozzolan, Microsilica, and remaining mixing water and mix completely.

d. Have the lightweight aggregate manufacturer supply a service representative at the site for the first two days of concrete placement operations to assist in the control of IC concrete mixing and placement operations.

2. Make any repairs as per the provisions of §557-3.16, Damaged or Defective Concrete.

3. The loading limitations of §557-3.14 apply.

METHOD OF MEASUREMENT
Apply all the provisions of §557-4.

BASIS OF PAYMENT
Apply all the provisions of §557-5.

XX = Friction Type
- 01 - Type 1 Friction
- 02 - Type 2 Friction
- 03 - Type 3 Friction
- 09 - Type 9 Friction

ITEM 611.19010024 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.19020024 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.19030024 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
ITEM 611.19040024 - POST-PLANTING CARE WITH REPLACEMENT - DECIDUOUS SHRUBS
ITEM 611.19050024 - POST-PLANTING CARE WITH REPLACEMENT - EVERGREEN SHRUBS
ITEM 611.19060024 - POST-PLANTING CARE WITH REPLACEMENT– VINES, GROUNDCOVERS
ITEM 611.19070024 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

DESCRIPTION

This work consists of the care of newly planted and transplanted trees, shrubs, vines, groundcovers and other plants and replacement of plants in kind and as necessary, in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Materials shall meet the requirements of the following subsections of Section 700 *Materials and Manufacturing*.

Water	712-01
Topsoil	713-01
Mulch for Landscape Bedding	713-05
Trees, Shrubs and Vines	713-06
Materials for the Protection of Plants	713-08
Pesticides	713-13

CONSTRUCTION

Post-Planting Care. The Contractor shall perform all work as specified under Standard Specification section **611-3.05 Post-Planting Care.**

Replacement Planting. Plants that die, become diseased or badly impaired during Post-Planting Care shall be removed and replaced in kind once with new, healthy plant material, in the same location as the initial planting. Replacement planting shall occur within the planting seasons shown in Standard Specification **Table 611-1**. For any plants replaced during the Post-Planting Care period, Post-Planting Care shall continue to the end of the period.

Replacement plants shall be planted, maintained and accepted per Standard Specification **Section 611-3.01.** Planting soil used in the initial planting shall be reused for replacement plants and shall be supplemented with topsoil at no additional cost if additional material is needed to meet grade and surface finish. Watering shall accompany backfilling, at no additional cost. No replacement tree shall be staked, guyed or anchored.

ITEM 611.19010024 - POST-PLANTING CARE WITH REPLACEMENT - MAJOR DECIDUOUS TREES
ITEM 611.19020024 - POST-PLANTING CARE WITH REPLACEMENT - MINOR DECIDUOUS TREES
ITEM 611.19030024 - POST-PLANTING CARE WITH REPLACEMENT - CONIFEROUS TREES
ITEM 611.19040024 - POST-PLANTING CARE WITH REPLACEMENT - DECIDUOUS SHRUBS
ITEM 611.19050024 - POST-PLANTING CARE WITH REPLACEMENT - EVERGREEN SHRUBS
ITEM 611.19060024 - POST-PLANTING CARE WITH REPLACEMENT– VINES, GROUNDCOVERS
ITEM 611.19070024 - POST-PLANTING CARE WITH REPLACEMENT - HERBACEOUS PLANTS

METHOD OF MEASUREMENT.

The quantity to be measured for payment will be the number of plants of each type cared for and, if necessary, replaced in kind.

BASIS OF PAYMENT.

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

Payment will be made under:

Item No.	Item	Pay Unit
611.19010024	Post Planting Care with Replacement - Major Deciduous Trees	Each
611.19020024	Post Planting Care with Replacement - Minor Deciduous Trees	Each
611.19030024	Post Planting Care with Replacement - Coniferous Trees	Each
611.19040024	Post Planting Care with Replacement - Deciduous Shrubs	Each
611.19050024	Post Planting Care with Replacement - Evergreen Shrubs	Each
611.19060024	Post Planting Care with Replacement– Vines, Groundcovers	Each
611.19070024	Post Planting Care with Replacement - Herbaceous Plants	Each

ITEM 634.99010017 – BUILDING CONDITION SURVEY
ITEM 634.99020017 – 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

A. General. 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 (DCETS) the experience and qualifications of the firm's personnel conducting the work.

B. 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.

C. Vibration Monitoring (Nonblasting). The DCETS may waive the requirements of vibration monitoring based on the results of the building condition survey.

Perform continuous vibration monitoring during construction operations when adjacent construction activities make monitoring prudent. The Contractor shall perform contract work in

a manner that will limit construction vibration at the specified locations to within the limits set within the contract documents.

1. 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:

a. 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.

b. 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.

c. 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).

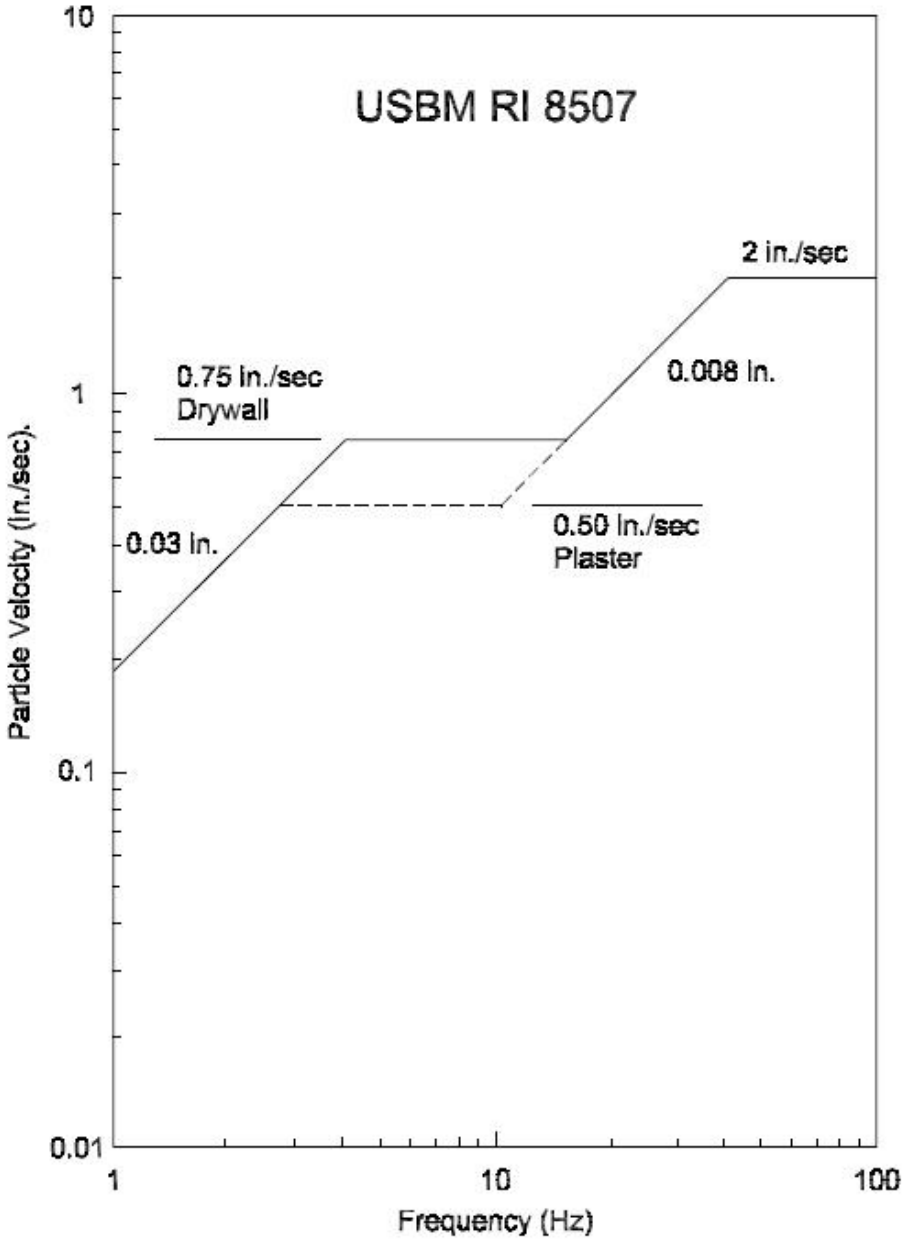

Figure 1—Safe Vibration Limit Recommendations for Residential Structures

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

2. Measuring Vibrations. 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.

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.

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

METHOD OF MEASUREMENT

A. Building Condition Survey. This work will be measured on a lump sum basis.

B. Vibration Monitoring (Nonblasting). This work will be measured on a lump sum basis.

BASIS OF PAYMENT

The unit price bid 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.

Payment will be made under:

Item No.	Item	Pay Unit
634.99010017	Building Condition Survey	Lump Sum
634.99020017	Vibration Monitoring (Nonblasting)	Lump Sum

ITEM 635.04030225 - RECESS DIAMOND GRINDING FOR INLAID PAVEMENT MARKINGS

1. DESCRIPTION:

1.01 This work shall consist of grinding bituminous or portland cement concrete pavement surfaces for recessing pavement markings.

2. MATERIALS:

2.01 None specified.

3. EQUIPMENT:

3.01 Grinding equipment shall have free-floating cutting heads to provide a consistent groove slot depth over irregular pavement surfaces. The cutting heads shall have diamond saw blades only; no other type will be permitted. Grinding equipment shall be capable of producing a final pavement surface that has perpendicular vertical sides and a smooth, flat bottom free of ridges.

4. CONSTRUCTION DETAILS:

4.01 The work required to grind pavement surfaces for inlaid pavement surfaces shall be performed in accordance with these specifications, the contract documents and to the satisfaction of the Engineer.

4.02 Areas receiving pavement markings shall be ground to a depth of 80± mils. The grinding width shall exceed the pavement marking width by a total of 1 inch.

4.03 Line segments in broken lines and dotted lines shall be ground to provide the ±80-mil depth along the entire specified length of the marking.

4.04 **Wet Saw Blade Operation.** If grinding is done with water, the groove shall be immediately flushed with high pressure water to avoid build-up and hardening of slurry. The pavement surface shall be dry prior to application of the pavement markings.

4.05 **Dry Saw Blade Operation.** If grinding is done with dry saw blades, dust and debris shall be immediately removed by vacuuming.

4.06 The pavement shall be returned to a debris-free condition prior to re-opening to traffic.

4.07 **Disposal of Material.** Millings and/or grinding slurry shall be removed and disposed as non-hazardous industrial waste according to Section 107-10.

5. METHOD OF MEASUREMENT:

5.01 Recess diamond grinding will be measured in feet along the centerline of the prepared surface and will be based on a 7-inch-wide groove (6-inch-wide stripe plus ½ inch each side).

6. BASIS OF PAYMENT:

6.01 The unit price bid shall include the cost of all labor, materials, and equipment necessary to complete the work. The cost of maintaining and protecting traffic during recess diamond grinding operations and cleaning and drying the grooved surfaces shall be included in the price bid.

6.02 No payment will be made for grinding beyond the specified length of the line segments in broken lines and dotted lines.

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ITEM 637.15----25 – ENGINEER'S FIELD OFFICE – TYPE 5

1. DESCRIPTION. This work shall consist of providing, for the Engineer's use a building, or a portion thereof, or a modular trailer of a specified type erected at a location approved by the Engineer. In addition, all computer hardware, software and internet communications described in this specification shall be provided for the duration of the contract.

2. MATERIALS:

2.01 **Engineer's Field Office.** The Engineer's Field Office shall be within a secured, weatherproof building or mobile trailer. If two (2) or more mobile trailer units are provided, they shall be joined with weatherproof connections. Mobile trailers shall be in new or like new condition. The Contractor may furnish equivalent facilities in an existing building, provided that the building is located to provide convenient service. The Contractor shall supply the Engineer with a copy of the Certificate of Occupancy for the existing building.

The Engineer's Field Office shall be in accordance with the requirements of the New York State Uniform Fire Prevention and Building Code, 19 NYCRR, and any applicable local codes.

The electrical system shall be able to continuously operate all equipment and be provided with adequate receptacles. To accommodate computer equipment, the field office shall be provided with a dedicated 20 amp electrical service and a vacant floor-to-ceiling area with a 39 inch by 39 inch footprint along a wall for the installation of a computer hardware rack/cabinet. Electric light shall be provided by non glare-type luminaires to provide a minimum illumination level of 1,000 lux at desk-height level. An ambient air temperature of 70 °F ±10 °F shall be maintained.

Fire extinguishers and smoke and carbon monoxide detectors shall be provided and installed.

The Engineer's Field Office shall be partitioned to provide separate rooms, defined as either "small" or "large", with adjoining doors. Table 637-1 contains the minimum area requirements for each of the office types.

TABLE 637-1 ENGINEER'S FIELD OFFICE AREA REQUIREMENTS

Physical Requirement	Engineer's Field Office Type				
	1	2	3	4	5
Min. total floor area (ft^2)	540	860	1300	2475	2700
Min. number of small rooms	2	3	2	3	6
Min. floor area of each small room (ft^2)	100	100	120	150	175
Min. number of large rooms	1	1	2	2	2
Min. floor area of each large room (ft^2)	200	200	240	300	350

A. **Potable Water.** From a local municipal water supply, certified well or bottled with a heating/refrigerator unit to provide hot and cold water. An exterior frost-free hose bib shall be provided in a location adjacent to the Engineer's Field Office. The hose bib need not be installed on a potable water line, and if the water in the line is not potable, it shall be clearly marked as such.

B. **Restroom.** A separately enclosed room, lockable from the inside, that is properly ventilated and in compliance with applicable sanitary codes. The Contractor shall provide all lavatory amenities, necessary paper and soap products, hot and cold running water and a toilet. The toilet shall be flush-type where sanitary facilities are available, and a type approved by the Engineer prior to installation where sanitary facilities are not available. The minimum required number of restrooms to be provided is specified in Table 637-2.

C. **Parking Area.** The Contractor shall provide and/or construct paved or hard surfaced (gravel or bankrun material) secure parking area with dedicated parking spaces adjacent to the Engineer's Field Office. Each parking space shall be 9 feet by 18 feet, and the minimum required number of spaces to be provided is specified in Table 637-2.

D. **Field Office Signs.** The sign panel material shall be aluminum, fiberglass, plywood or lightweight plastic. The sign sheeting shall be ASTM Type III. The sign panel shall be 36 inches high by 48 inches wide with white legend on green background with the phrases as positioned and described below. If erected at a location where the sign might be struck by an errant vehicle, the sign support shall be a breakaway type.

The letters in the phrase "FIELD OFFICE" shall be 6 inch C series with the top of the letters 6 inches below the top of the panel. The letters in the phrase "ENGINEER-IN-CHARGE" shall be 6 inch B series with the top of the letters 18 inches below the top of the panel. The letters in the phrase "N.Y.S. THRUWAY AUTHORITY" shall be 1½ inch E series with the top of the letters 30 inches below the top of the panel. All phrases shall be centered horizontally on the panel.

If the Engineer's Field Office is not located within or adjacent to the contract limits, two (2) additional signs shall be displayed conspicuously within the contract limits. The signs shall be similar to the above description, except that they shall be 48 inches high by 64 inches wide and have an additional bottom line of text containing the street address of the Engineer's Field Office. The letters in the street address shall be 6 inch B series with the top of the letters 36 inches below the top of the panel and centered horizontally on the panel.

E. **Mailbox.** Standard mailbox (with post if necessary) or post office box meeting the requirements of the U.S. Postal Service.

F. **Telephone and Answering System.** A separate telephone and digital answering system for the exclusive use of the inspection staff. The minimum required number of telephone voice lines to be provided is specified in Table 637-2 (these lines are in addition to the separate lines to be provided for the facsimile machine and dial-up computer access if high speed internet access is not available where the field office is located). The telephone and answering system shall provide the ability to answer all voice lines from each voice line, transfer calls to all voice lines and be equipped with a single, dedicated answering system.

A minimum of one (1) telephone shall be cordless and a minimum of one (1) telephone shall be equipped with speaker and conference call capability. The remaining telephones, at least one (1) per required voice line, shall be extension telephones with minimum 25 foot long cords. The digital answering system shall be capable of recording outgoing messages up to 60 seconds long and receiving a minimum of 40 incoming messages of 60 seconds duration. The system must include automated voice marking of time and day of each message received and provide a message mark so

that new messages may be played back without erasing old messages. The system shall include remote programming of playback, backspace, and outgoing message re-record and allow for the retrieval of messages without a remote control unit.

G. **Facsimile Machine.** Plain paper laser or inkjet facsimile machine with a dedicated telephone line. The machine shall be capable of sending and printing a maximum paper size of 8½ x 14 inches, have a minimum 20-page memory storage, a minimum 20-sheet document feeder, a minimum 50-sheet paper capacity, transmit at least 6 pages per minute and have an autodial/redial with a minimum of 50 phone number memory. The machine shall be capable of storing and printing outgoing message confirmation information and printing the sender's name, fax number and page number on incoming faxes.

H. **Photocopier.** Heavy duty, electric, dry-process photocopying machine. The machine shall be an all-in-one copy machine with black & white and color copying, black & white and color printing and black & white and color scanning capabilities. Machine shall have at least three paper bins (8½ x 11 inches, 8½ x 14 inches and 11 x 17 inches), enlarging and reducing capabilities, and collating, sorting stapling and double-sided copying. Set-up, printer drivers, software and networking are required. All on-site staff email addresses shall be set up and programmed for ease of scanning. Maintenance shall be provided, as required, including repairs and all necessary toner cartridges and staples for the life of the contract and until final completion. One (1) case (5,000 sheets, 20 lb, white) of each paper size shall be provided as initial stock.

I. **Paper Shredder.** Automatic start, heavy duty cross-cut paper shredder. The shredder shall be able to receive 8½ inch wide paper and shred a minimum of 15 sheets simultaneously along with CDs and staples.

J. **Pencil Sharpener.** Manual or electric pencil sharpener, minimum 1 per room.

K. **Exterior Bulletin Board.** An installed 4 foot by 8 foot weatherproof bulletin board in front of or adjacent to the Engineer's Field Office. The bulletin board may be attached to an outside wall of the office. The location selected must be handicapped accessible and clearly visible.

L. **Interior Bulletin Board.** An installed, wall-mounted 4 foot by 6 foot bulletin board made of cork or similar material in a large room, and one (1) 2 foot by 4 foot wall mounted bulletin board installed per room.

M. **Dry Erase Board.** Installed, wall-mounted 2 foot by 4 foot dry erase boards, minimum one (1) per room.

N. **Storage Locker.** Metal or wood storage locker with shelves, a tumbler lock and two (2) keys for the storage of survey, GPS and testing equipment. The total locker space footprint provided shall be a minimum of 9 square feet with a minimum height of 6 feet.

O. **Fire Resistant Cabinet.** Fire resistant, legal size filing cabinet with locks and two (2) keys each, meeting the requirements of ANSI/UL Standard 72 for Insulated Filing Devices, Class 350-1 hour. Each office shall be provided with two (2) 2-drawer cabinets, and the required number of additional 4-drawer cabinets as specified in Table 637-2.

P. **Bookcase.** Self-standing, 3-shelf metal or wood bookcase, approximately 4 feet high, 4 feet wide and 1 foot deep. The minimum required number of bookcases to be provided is specified in Table 637-2.

Q. **Wastebasket.** Minimum 7 gallon wastebasket, minimum one (1) per desk.

R. **Refrigerator.** Electric, top-freezer type providing a minimum storage space of 15 cubic feet for Engineer's Field Office Types 1 and 2, and a minimum storage space of 21 cubic feet for Types 3, 4 and 5.

S. **Kitchenette.** To include a minimum 1 cubic foot, 1,300 watt microwave oven, a sink with hot and cold running water with minimum dimensions of 15 inch by 15 inch by 6 inch deep, usable counter space with minimum dimensions of 5 feet long by 2 feet deep and cabinet space with minimum dimensions of 5 feet long by 1½ feet deep by 2½ feet high. If the water in the sink is not potable, it shall be clearly marked as such.

T. **Stove.** Electric, propane or bottle gas stove with a minimum of two (2) burners adequate for rapid drying of soil samples, including fuel or electrical supply. A stove is required when a separate Field Laboratory is not included.

U. **First Aid Kit.** A Type III kit in accordance with ANSI Z308.1 *Minimum Requirements for Workplace First Aid Kits*. The minimum number of first aid kits to be provided is specified in Table 637-2.

V. **Thermometer.** A minimum-maximum thermometer displaying in degrees Fahrenheit and mounted with an external probe to give the temperature both indoors and outdoors.

W. **Coat Rack.** A metal or wood coat rack or closet capable of holding at least 4 coats. The minimum required number of coat racks to be provided is specified in Table 637-2. A single coat rack may be provided as long as it holds the minimum number of coats as per Table 637-2.

X. **Office Desk and Chair.** Fully assembled freestanding office desks and chairs. Each desk shall have a 5 foot long by 2½ foot wide work surface and a height of 30 inches, at least 2 lockable drawers and include an adjustable shelf approximately 1 foot wide and no less than 2½ feet long. Each desk shall also be provided with an adjustable chair with arms, 5 legs with casters and be adjustable from approximately 16 inches to 24 inches in height. Each desk shall have a dedicated electrical outlet receptacle. The required number of office desks and chairs to be provided is specified in Table 637-2.

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TABLE 637-2 ENGINEER'S FIELD OFFICE FURNISHING REQUIREMENTS

Furnishing Description	Required Number per Engineer's Field Office Type				
	1	**2**	**3**	**4**	**5**
Restrooms	1	1	2	2	3
Parking Spaces	6	8	12	18	22
Telephone Voice Lines	2	3	4	4	5
Telephone Line for Computers (when high speed internet is unavailable)	1	1	1	1	1
Telephone Line for Facsimile	1	1	1	1	1
Fire Resistant Cabinets (4-drawer)	2	3	4	6	8
Bookcases	5	7	10	12	16
First Aid Kits	1	1	1	2	2
Coat Racks	1	2	3	4	5
Office Desks and Chairs	4	8	12	18	22
Office/Conference Tables	2	2	3	4	5
Folding Chairs	8	10	10	12	15
Drafting Tables	1	1	2	3	3
Drafting Stools	2	2	4	6	6
Vertical Plan Filing Racks	1	1	2	3	8
Roll File Units	1	1	1	2	4
Flatbed Scanner	1	1	1	1	1
Personal Computer (Hardware and Software)	2	4	6	8	8
LaserJet printer	1	2	3	3	3
Additional Software	1	1	2	2	3
Digital Camera with Motion Picture Functionality	1	1	1	2	2

Y. **Office/Conference Table.** Commercial-grade rectangular table with weather/spill resistant top a minimum of 8 feet long by 2½ feet wide by 30 inches high. The minimum required number of office/conference tables to be provided is specified in Table 637-2.

Z. **Folding Chair.** Commercial-grade, folding steel chair with approximate overall dimensions of 30 inches by 19 inches wide by 21 inches deep. The minimum required number of folding chairs to be provided is specified in Table 637-2.

AA. **Drafting Table.** Adjustable height, tilting top drafting table with brackets and legs and approximate dimensions of 6 feet long by 3 feet wide by 3 feet high. The minimum required number of drafting tables to be provided is specified in Table 637-2.

BB. **Drafting Stools.** Adjustable height stool with backrest. The minimum required number of drafting stools to be provided is specified in Table 637-2.

CC. **Vertical Plan Filing Rack.** Constructed of metal, capable of hanging up to 12 sets of plan drawings up to 3 feet by 4 feet in size, 12 hanging clamps included. The minimum required number of vertical plan filing racks to be provided is specified in Table 637-2.

DD. **Roll File Unit.** Twelve (12) compartments, each measuring approximately 6 inches by 6 inches. The minimum required number of roll file units to be provided is specified in Table 637-2.

2.02 **Information Technology.** The minimum required number of personal computers to be provided is specified in Table 637-2. The minimum requirements for each personal computer are:

A. **Hardware**

- CPU to operate Windows 8.1 for Business (32 bit or 64 bit edition) and all other software listed in this specification;
- Optical Drive – CD-RW/DVD-RW;
- 500 GB minimum hard drive;
- 8 GB minimum RAM;
- USB Port(s);
- 24" LCD monitor (1920 x 1080 resolution minimum);
- One (1) 500 GB External Hard Drive;
- Locking cabinet(s) which encloses all computer hardware;
- Surge protection device;
- External 3 button optical scroll mouse;
- External Speakers;
- Modem with separate phone line for computer (if high speed internet service is unavailable), (minimum 56K baud rate).

B. **Software.** Substitutions for the specified software shall not be permitted unless noted otherwise. All manuals shall be provided.

- Windows 8.1 for Business (32 bit or 64 bit edition);
- Microsoft Word (2013 version or later);
- Microsoft Excel (2013 version or later);
- WINZIP 15;
- Norton Internet Security (latest version for Windows 8) set up to run in Auto-Protect Mode and Auto Update Mode (monthly), or McAfee Internet Security Suite (latest version);

  Note: Microsoft Office 2013 Standard Edition, or later version, may be used in lieu of Word 2013 and Excel 2013.

C. **Additional Software.** The following software shall also be provided on the number of personal computers specified in Table 637-2:

- Microsoft Photo Editor (latest version);
- Adobe Acrobat XI Professional (latest version);

- Primavera scheduling software capable of meeting all scheduling requirements of the NYS Thruway Authority Addendum to the Standard Specifications §108-01 *Start and Progress of Work* and compatible with the operating system supplied under this specification.

D. Internet Communication.

- **Cable Internet Service.** 10/100 Ethernet cable network card and high-speed cable modem capable of transferring data at a minimum of 50 megabits per second;
- Subscription to an Internet Service Provider capable of providing high-speed Internet service;
- Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections.

E. LaserJet Printer. Photo-quality color LaserJet printer capable of printing on 8½ by 11 inch and 8½ by 14 inch paper. Supply with spare toner cartridge, standard LaserJet and photo paper, diskettes and read/write CDs.

F. Digital Camera. The digital camera system shall meet the requirements below. All necessary hardware, cables, operating manuals, and other pertinent media required for the operation of the camera unit itself, including connecting the camera to the office computer system shall be provided. The camera must be able to download the images to a computer without any proprietary software having to be installed on a computer.

- Minimum 16.0 megapixel resolution with 20x optical zoom and autofocus operation;
- 3 inch LCD screen and optical viewfinder;
- Built-in intelligent flash (auto/on/off);
- Time/date stamp on each picture;
- A total of two (2) rechargeable sets of batteries (Lithium-Ion) and high-capacity (approximately 1 hour) charging unit;
- Two (2) SDHC highest capacity and speed (Class) memory cards that are compatible with the camera;
- Soft storage/carry case with shoulder strap;
- Motion Video: 640 x 480 resolution capability at 30 frames per second (MPEG Video).

3. CONSTRUCTION DETAILS. The Contractor shall be responsible, until use and occupancy is relinquished by the Authority, for any and all damage, direct or indirect, of whatever nature, occurring to the property of the Authority and property of the inspection staff which is kept in the Engineer's Field Office. The Engineer will provide the Contractor with a detailed list of items kept in the office, with corresponding dollar values, and will provide the Contractor with updates when something on the list changes. Non-Authority-owned property shall only be those items used in the performance of contract-related work activities. Such property shall be replaced within 30 days of the reported damages and would include any loss caused by, but not limited to, fire, theft, vandalism or malicious mischief. The Contractor shall not be responsible for items kept in the Engineer's Field Office that are not on this list.

The Contractor shall install the Engineer's Field Office sign at a location approved by the Engineer. If the Engineer's Field Office is not located within or adjacent to the contract limits, two (2) additional signs shall be displayed conspicuously within the contract limits in locations directed by the Engineer.

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The Engineer's Field Office shall be fully equipped and made available for use and occupancy by the inspection staff prior to the start of any contract work, and shall be made available after contract final acceptance as directed in writing by the Division Construction Engineer.

All furniture and equipment shall be fully assembled, operational, clean and serviceable. The Engineer's Field Office shall be cleaned weekly or more often if required, and the timing of the cleaning operations shall be coordinated with the Engineer. The Contractor shall remove and dispose of all rubbish generated in the office and shall keep the office free from pests. The Contractor shall remove snow from all areas subject to vehicular circulation and parking.

After completion, all portable buildings or trailers, fencing, surfacing and utilities shall be removed from the location and the areas cleaned, loamed and restored as required. The Contractor shall be responsible for providing all necessary computer hardware, software and peripheral devices as well as high-speed Internet service to the Engineer's Field Office until use and occupancy of the Engineer's Field Office is relinquished by the Authority. Only internet services that can provide a minimum data transfer rate of 768 kilobits per second will be considered acceptable. The Contractor shall be responsible for providing all necessary service connections to the Engineer's Field Office and Engineer's Field Office computer(s). In addition, the Contractor shall provide a cable or DSL modem and any other equipment necessary to provide the minimum specified data transfer rate.

4. **METHOD OF MEASUREMENT.** The Engineer's Field Office will be measured for payment as the number of months satisfactorily provided, measured to the nearest 0.25 months.

5. **BASIS OF PAYMENT.** The unit price bid per month for the Engineer's Field Office shall include the cost of all labor, materials and equipment necessary to complete the work including property rental, utility charges and incidental expenses. Payment will be made for each month of availability for occupancy by the Engineer and inspection field staff.

   No payment will be made under Engineer's Field Office when deficiencies in compliance with these requirements are not promptly addressed by the Contractor after notification by the Engineer. Should the aggregate of non-compliance days exceed 3 days in any one month, no payment shall be made for the entire month in which deficiencies were cited.

   Monthly payments may be terminated prior to contract final acceptance by written notification by the Division Construction Engineer that such office will no longer be required on the contract. Payment for each month's occupancy of the Engineer's Field Office after the date of contract final acceptance will be made as part of the final contract payment. Failure of the Contractor to supply documentation required to complete the final estimate may result in nonpayment during this delaying period.

   During periods of contract extension of time where Engineering Charges are assessed, no payment will be made for occupancy and services, except that payment for each month's occupancy after the date of final acceptance will be made as part of the final estimate.

ITEM 685.17XX--25 - HIGHLY REFLECTORIZED TRIPLE DROP EPOXY PAVEMENT STRIPES, 6 INCH WIDTH

1. DESCRIPTION:

1.01 Under this work, the Contractor shall furnish and apply highly reflectorized epoxy pavement markings in accordance with the contract documents or as ordered by the Engineer, and in conformance with the MUTCD and these specifications.

The epoxy marking material shall be hot-applied by spray methods onto bituminous or portland cement concrete pavement surfaces at a 6-inch width and a 20- or 25-mil wet thickness as indicated in the contract documents. The cured epoxy marking shall be an adherent, highly reflectorized stripe.

1.02 The triple drop system shall consist of a combination of highly reflective particles, defined as a structural center core surrounded by high index microcrystalline ceramic beads or glass spheres consisting of standard glass beads and wet/night visibility beads.

2. MATERIALS:

2.01 All provisions of Section 727-03 *Epoxy Paint* shall apply.

2.02 The highly reflective particles, as defined in Section 1.02, shall contain high index beads with a refractive index (R.I.) between 1.8 and 2.4.

2.03 When the highly reflective particles are tested in accordance with ASTM E2177 Bucket method, the test method for measuring wet recovery under the standard conditions for wetness, the minimum test results shall be 300 mcd/m²/lux.

2.04 The glass spheres of the highly reflective particles shall consist of Standard Glass Beads (Type 2) and Wet/Night Visibility Beads (Type 1) as defined in Section 727-05 *Glass Beads for Pavement Markings.*

2.05 The highly reflective particles shall match the color of the line they are being dropped in, so to not significantly alter the color appearance of the line and shall be either 3M Series A W Wet Elements Wet E, Potters VISIMAX, or approve equal.

2.06 Standard Glass Beads (Type 2) shall be Visibead Plus, or approved equal.

3. CONSTRUCTION DETAILS:

3.01 All provisions of Standard Specification §685-3 shall apply.

3.02 Beads shall be applied as follows:

A. **6 inch by 20 mil applications.** The first drop shall be highly reflective particles at a rate of 7 pounds per gallon; the second drop shall be Wet/Night Visibility Beads (Type 1) at a rate of 7 pounds per gallon; and the third drop shall be Standard Glass Beads (Type 2) at a rate of 10 pounds per gallon.

B. **6 inch by 25 mil applications.** The first drop shall be highly reflective particles at a rate of 5 pounds per gallon; the second drop shall be Wet/Night Visibility Beads (Type 2) at a rate of 5 pounds per gallon; and the third drop shall be Standard Glass Beads (Type 1) at a rate of 8 pounds per gallon.

4. METHOD OF MEASUREMENT:

4.01 Pavement striping will be measured in feet along the centerline of the pavement stripe and will be based on

a 6-inch wide stripe. Measurement for striping with a plan width greater or lesser than the 6 inches as shown on the plans or directed by the Engineer, will be made by the following method:

$$\frac{\textit{Plan Width of Striping (inches)} \times \textit{Feet}}{\textit{6 inches}}$$

5. BASIS OF PAYMENT:

5.01 All provisions of Standard Specification §685-5 shall apply.

Payment will be made under:

Item Number	Item	Pay Unit
685.1707--25	**White Highly Reflectorized Triple Drop Epoxy Pavement Stripes – 6 in x 20 mils**	**LF**
685.1708--25	**Yellow Highly Reflectorized Triple Drop Epoxy Pavement Stripes – 6 in x 20 mils**	**LF**
685.1709--25	**White Highly Reflectorized Triple Drop Epoxy Pavement Stripes – 6 in x 25 mils**	**LF**
685.1710--25	**Yellow Highly Reflectorized Triple Drop Epoxy Pavement Stripes – 6 in x 25 mils**	**LF**

ITEM 698.93010125 - INCENTIVE PAYMENTS/DISINCENTIVE ASSESSMENTS FOR WORK SUBJECT TO THE SPECIAL NOTE "DESIGN-BID-BUILD BEST VALUE SUBMISSION"

1. DESCRIPTION:

1.01 There is no physical work to be accomplished under this item. This item will enable the Authority to make incentive payments (I) to (or disincentive (D) assessments against) the Contractor for early completion (or late completion) of work identified in the Special Note titled "Design-Bid-Build Best Value Submission" based on the time or times specified in that Special Note.

2. MATERIALS:

2.01 Not applicable.

3. CONSTRUCTION DETAILS:

3.01 None.

4. METHOD OF MEASUREMENT:

4.01 The method of measurement shall be fixed lump sum. Actual payments-incentive (or deductions-disincentive) made under this item shall be as stated below.

5. BASIS OF PAYMENT:

5.01 The amount set forth in the Proposal is a fixed price for all Bidders. Any bid, other than the specified amount shown in the Itemized Proposal will be adjusted by the Authority to the fixed price.

5.02 The Contractor shall be entitled to payment for this item as follows: To determine the actual fixed lump sum payment-incentive or fixed lump sum deduction-disincentive under this pay item, the number of calendar days actually required to accomplish the work identified in the Design-Bid-Build Best Value Special Note will be compared to the number of calendar days specified in the Contractor's proposal Best Value Submission for the same work in that Special Note. Should the identified work take longer than the number of calendar days specified, (as may be adjusted under the contract terms), the number of calendar days in excess thereof will be multiplied by the daily cost, and that product (fixed lump sum) will be the disincentive. Should the calendar days required to complete the identified work be fewer than the number specified, (as may be adjusted under the contract terms) in the Contractor's Best Value Proposal, the difference will be multiplied by the daily cost, and the product (fixed lump sum) will be paid to the Contractor as incentive.

5.03 Incentive payments shall be made for each individual I/D work period upon completion of the work included in the particular I/D period. Disincentive assessments shall be made separately for each I/D work period identified in the Design-Bid-Build Best Value Special Note and upon reaching the completion date established for each I/D work period.

5.04 Deductions-disincentive made under the terms of this item shall be in addition to any deductions made as Liquidated Damages (only applied to non-I/D work) as indicated in the special note entitled "Design-Bid-Build Best Value". Any payments made under this item shall be regarded by the parties to include the cost of all overhead, profit, labor, equipment, supplies, materials, scheduling and management necessary to accomplish the work within the actual number of calendar days taken. The work of the other items in the Contract will be measured and paid for separately under their appropriate items of work.

ITEM 800.01000015 – DESIGN BUILD – DESIGN SERVICES

DESCRIPTION. This work shall consist of providing design services in accordance with the contract documents.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall provide Design Services by the appropriately qualified and licensed personnel in accordance with the requirements in the contract documents.

METHOD OF MEASUREMENT. Design Build - Design Services will be measured for payment on a lump sum basis.

BASIS OF PAYMENT. The lump sum price bid for Design Build - Design Services shall include the cost of furnishing all labor, equipment and incidentals to satisfactorily complete the work. Progress payments will be made in accordance with the contract documents.

ITEM 800.02000015 – DESIGN BUILD – CONSTRUCTION INSPECTION SERVICES

DESCRIPTION. This work shall consist of providing Construction Inspection Services in accordance with the contract documents.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall provide Construction Inspection Services by the appropriately qualified and licensed personnel in accordance with the requirements in the contract documents.

METHOD OF MEASUREMENT. Design Build - Construction Inspection Services will be measured for payment on a lump sum basis.

BASIS OF PAYMENT. The lump sum price bid for Design Build - Construction Inspection Services shall include the cost of furnishing all labor, equipment and incidentals to satisfactorily complete the work. Progress payments will be made in accordance with the contract documents.

ITEM 800.03000015 – DESIGN BUILD – QUALITY CONTROL SERVICES

DESCRIPTION. This work shall consist of providing Quality Control Services in accordance with the contract documents.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall provide Quality Control Services by the appropriately qualified and licensed personnel in accordance with the requirements in the contract documents.

METHOD OF MEASUREMENT. Design Build - Quality Control Services will be measured for payment on a lump sum basis.

BASIS OF PAYMENT. The lump sum price bid for Design Build - Quality Control Services shall include the cost of furnishing all labor, equipment and incidentals to satisfactorily complete the work. Progress payments will be made in accordance with the contract documents.

ITEM 800.04000015 – DESIGN BUILD – FORCE ACCOUNT WORK

DESCRIPTION. This work shall consist of performing construction work in accordance with the contract documents and as directed by the Engineer.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall perform construction work in accordance with the contract documents as directed by the Engineer. The Design Builder will maintain and provide agreed price or force account records to document the costs in accordance with DB section 109-9.

METHOD OF MEASUREMENT. Design Build – Force Account Work will be measured for payment on a Dollar Cents basis.

BASIS OF PAYMENT. The price shown for Design Build - Force Account Work shall include the cost of furnishing all labor, materials, equipment and incidentals to satisfactorily complete the work. The total cost shown in the itemized proposal will be considered the price bid even though payment will be made only for actual work performed. The unit price amount 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.

Progress payments will be made in accordance with the contract documents.

ITEM 800.05000015 – DESIGN BUILD – SITE MOBILIZATION

DESCRIPTION. This work shall consist of providing necessary bonds, insurance, prefinancing and set up of necessary general plant, including shops, storage areas, office and such sanitary and other facilities as are required by local or state law or regulation.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall provide the above facilities and service for mobilization in a safe and workmanlike manner in conformance with any pertinent local or State Law, regulation or code to the extent and at the time the Contractor deems them necessary for its operations. Good housekeeping shall be maintained.

METHOD OF MEASUREMENT. Design Build – Site Mobilization will be measured for payment on a lump sum basis.

BASIS OF PAYMENT. The lump sum price bid for Design Build – Site Mobilization shall not exceed four percent (4%) of the total contract bid price for all Construction Work items. Should the bidder exceed the foregoing four percent (4%), the Department will make the necessary adjustment to determine the total amount bid based on the arithmetically correct proposal.

Progress payments in the amount of 4% of the construction work items will be made to the Contractor with the first contract payment made for other contract work at the individual itemized work site.

ITEM 800.0600NN15 – DESIGN BUILD – CONSTRUCTION WORK

DESCRIPTION. This work shall consist of construction work in accordance with the contract documents.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall perform all construction work in accordance with the requirements in the contract documents.

METHOD OF MEASUREMENT. Design Build – Construction Work will be measured for payment on a lump sum basis for each location. The individual locations are identified in the contract documents.

BASIS OF PAYMENT. The lump sum price bid for Design Build – Construction Work shall include the cost of furnishing all labor, materials, equipment, management and supervision to satisfactorily complete the work. Progress payments will be made for each construction work location in accordance with the contract documents.

Note: NN in pay item number denotes serialization by location.

ITEM 800.06XXNN15 – DESIGN BUILD – CONSTRUCTION WORK – STEEL SUPERSTRUCTURE REPAIRS

DESCRIPTION. This work shall consist of steel superstructure repair work (SSRW) in accordance with the contract documents and as directed by the Engineer.

MATERIALS. None Specified.

CONSTRUCTION DETAILS. The Design Builder shall perform all steel superstructure repair work in accordance with the requirements in the contract documents.

METHOD OF MEASUREMENT. Design Build – Construction Work – Steel Superstructure Repairs will be measured for payment on either a lump sum or Dollars-Cents basis.

BASIS OF PAYMENT.

SSRW – directive repairs - The lump sum price bid shall include the cost of furnishing all labor, materials, equipment, management and supervision to satisfactorily complete the work. Progress payments will be made for each construction work location in accordance with the contract documents.

SSRW – unanticipated repairs, and SSRW –strap plate (inspection, repair) - The price shown shall include the cost of furnishing all labor, materials, equipment and incidentals to satisfactorily complete the work. The total cost shown in the itemized proposal will be considered the price bid even though payment will be made only for actual work performed.

Progress payments will be made for each construction work location in accordance with the contract documents.

Payment will be made under:

Item No.	Item	Pay Unit
800.0601NN15	SSRW – directive repairs	Lump Sum
800.06020015	SSRW – unanticipated repairs	Dollars-Cents
800.06030015	SSRW –strap plate (inspection, repair)	Dollars-Cents

Note: NN in pay item number denotes serialization by location.

ITEM 800.0605XX15 – DESIGN BUILD – CONSTRUCTION WORK – PAVEMENT WORK

DESCRIPTION. This work shall consist of pavement work in accordance with the contract documents and as directed by the Engineer.

MATERIALS. None Specified.

CONSTRUCTION DETAILS.

Concrete Pavement Repairs - The Design Builder shall perform all concrete pavement repair work in accordance with the requirements in the contract documents. The Design Builder will maintain and provide agreed price or force account records in accordance with DB section 109-9.

METHOD OF MEASUREMENT. Design Build – Construction Work – Pavement Work will be measured for payment on Dollars-Cents basis.

BASIS OF PAYMENT.

Portland Cement Concrete Pavement Repairs (PCCPR) – Project Limits - The price shown shall include the cost of furnishing all labor, materials, equipment and incidentals to satisfactorily complete the PCCPR work only. No additional payment will be made under this item for other aspects of work, including but not limited to Work Zone Traffic Control. The total cost shown in the itemized proposal will be considered the price bid even though payment will be made only for the actual work performed.

Progress payments will be made for each construction work location in accordance with the contract documents.

Payment will be made under:

Item No.	Description	Pay Unit
800.06050115	Portland Cement Concrete Pavement Repairs – Project Limits	Dollars-Cents

ITEM 800.07000015 - WATER SUPPLY INSTALLATION

DESCRIPTION
This work shall consist of furnishing and installing a water pipe, valve and all necessary fittings in accordance with the contract documents or owner requirements. The "owner" is identified in the contract documents.

MATERIALS
Materials shall be as specified in the contract documents or owner requirements. If none specified, then proposed material shall be approved by the Engineer before any purchase is made. All material for water systems shall meet the appropriate American Water Works Association (AWWA) standards and American National Standards Institute (ANSI) specifications

CONSTRUCTION DETAILS
Current AWWA standards, owner requirements and best industry practices shall be followed. In case of a conflict with owner requirements, the owner requirements shall take precedence. Hydrostatic pressure and leakage tests shall be performed in accordance with appropriate AWWA standards.

METHOD OF MEASUREMENT
This work will be measured on a fixed price lump sum basis.

BASIS OF PAYMENT
The unit price shown shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including but not limited to de-watering or sealing penetrations into manholes, excavation, backfill and surface restoration.

FIXED PRICE ITEM
The unit price shown in the proposal for this pay item is not to be altered in any manner by the bidder. Should the amount be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

ITEM 800.08000015 – DESIGN BUILD - CONDUIT AND VAULT INSTALLATION

DESCRIPTION

This work shall consist of furnishing (all or some material) and installing galvanized steel conduits, pvc conduits, vaults, hanger systems, pulling cables, bushings, connectors, couplings, expansion joints, concrete encasements, and other fittings and appurtenances needed in accordance with the contract documents or owner requirements. The "owner" is identified in the contract documents. Some of the material may be supplied by the "owner", a list of such material would be provided in the contract documents.

MATERIALS

Materials shall be as specified in the contract documents or owner requirements. If none specified, then proposed material shall be approved by the Department before any purchase is made. If not specified by owner, materials shall meet the requirements of NYSDOT standard specifications.

CONSTRUCTION DETAILS

Any required hanger systems and encasements in concrete shall be designed by the Design-Builder. Current National Electrical Code (NEC) standards, owner requirements and best industry practices shall be followed. In case of a conflict with owner requirements, the owner requirements shall take precedence.

METHOD OF MEASUREMENT

This work will be measured on a fixed price lump sum basis.

BASIS OF PAYMENT

The fixed price lump sum shown shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including but not limited to hanger systems, concrete encasements, vaults, excavation, backfill and surface restoration.

FIXED PRICE ITEM

The fixed price lump sum shown in the proposal for this pay item is not to be altered in any manner by the Proposer. Should the amount be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

ITEM 800.09000015 - DESIGN BUILD – PARTNERING WORKSHOP

All the provisions of item 637.35 – *Partnering Workshop* shall apply except:

The Contractor and Project Manager will jointly select a facilitator and a location for the workshop.

For long duration, multiyear projects, a subsequent follow-up workshop may be convened, with the agreement of the Contractor and the Project Manager, at an appropriate point during the progression of the work.

ITEM 800.1000NN15 – DESIGN BUILD – UTILITY RELATED WORK

DESCRIPTION. This work shall consist of utility related work in accordance with the contract documents or owner requirements. The "owner" of each utility is identified in the contract documents.

MATERIALS. Materials shall be as specified in the contract documents or owner requirements. If none specified, then the proposed material shall be approved by the Engineer of Record before any purchase is made.

CONSTRUCTION DETAILS. The Design Builder shall perform all utility related work in accordance with the requirements in the contract documents or owner requirements. In case of a conflict with owner requirements, the owner requirements shall take precedence.

METHOD OF MEASUREMENT. *Design Build – Utility Related Work* as defined in the contract documents will be measured for payment on a fixed price lump sum basis for each utility. The individual utilities will be identified in the contract documents.

BASIS OF PAYMENT. The fixed price lump sum for Design Build – Utility Related Work shall include the cost of furnishing all labor, materials, equipment, design, construction inspection, testing, and supervision to satisfactorily complete the work. Progress payments will be made for each utility work in accordance with the contract documents.

FIXED PRICE ITEM

The fixed price shown in the proposal for this pay item is not to be altered in any manner by the Proposer. Should the amount be altered, the new figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

Note: NN in pay item number denotes serialization by each utility.