

SPECIAL SPECIFICATIONS

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ITEM 207.07000017 - COMPOSITE GEOMEMBRANE

DESCRIPTION

This work shall consist of furnishing and installing an approved Composite Geomembrane at the locations shown on the plans or as directed by the Engineer, in writing, prior to performing the work.

MATERIALS

The Composite Geomembrane shall be a geomembrane with a non-woven, needle-punched geotextile permanently bonded to one face. The Composite Geomembrane shall meet or exceed the following criteria:

Geotextile Weight	ASTM D5261	4 oz/sq yd
Geomembrane Thickness	ASTM D5199	20 mils
Grab Tensile Strength at Ultimate	ASTM D4632	180 lbs
Elongation at Ultimate	ASTM D4632	65%
Trapezoidal Tear Resistance	ASTM D4535	60 lbs
Puncture	ASTM D4833	90 lbs
Permeability	ASTM D4491	0
Factory Seam Strength	ASTM D4545	80% of the grab tensile strength at ultimate
Field Seam Strength	ASTM D4437	80% of the grab tensile strength at ultimate

The Composite Geomembrane shall meet the basis of acceptance requirements of either Method A or Method B.

A. Basis of Acceptance (Method A). Composite Geomembranes will be accepted on the basis of brand name and certification from the manufacturer that they meet the criteria noted above, provided that both constituent materials, geomembrane and geotextile (slope protection), are on the Approved List issued by the Department's Materials Bureau.

B. Basis of Acceptance (Method B). At least four months prior to installation, the contractor shall submit a 225 square foot sample of the Composite Geomembrane to the Director, Geotechnical Engineering Bureau, for testing, evaluation, and approval. Acceptance of the Composite Geomembrane will be based on the criteria noted above.

CONSTRUCTION DETAILS

- A.** Where the area to be covered exceeds 70 feet in width, the Composite Geomembrane shall be shop fabricated into panels not less than 35 feet in width and not less than 100 feet in length, except that where multiple panels are used, one panel may be less than 35 feet in width. Where the area to be covered is less than 70 feet, but greater than 35 feet in width, the Composite Geomembrane shall be installed with a maximum of one field seam parallel to the length, in minimum lengths of 100 feet. Where the area to be covered is 35 feet or less in width, the Composite Geomembrane shall be installed with no field seams parallel to the length, in minimum lengths of 100 feet.
- B.** At least two months prior to furnishing and installing the Composite Geomembrane, the Contractor shall submit to the Director, Geotechnical Engineering Bureau, for approval, the following:
 - 1. Shop drawings showing the proposed system layout, location of all proposed field seams, and orientation of all factory fabricated seams.
 - 2. Details of proposed factory and field seaming methods, and two 10 foot-long seamed samples for inspection and testing, one prepared using each of the two methods. All field seams shall be sealed geomembrane to geomembrane only.
 - 3. Details of non-destructive field testing methods for verifying field seam continuity.
- C.** The Composite Geomembrane manufacturer shall certify that the material provided is capable of maintaining a slope of 1 (Vertical) on 3 (Horizontal) with a cover layer of Item 623.12, Crushed Stone (In-Place Measure), the gradation of which shall conform to Size Designation 1, as shown in Table 703-4.
- D.** The Composite Geomembrane shall be protected from exposure to sunlight during transport and storage. After placement, the Composite Geomembrane shall not be left uncovered for more than two weeks. The surface upon which the Composite Geomembrane is to be placed shall be within reasonable conformity to the proposed grade. The Composite Geomembrane shall be placed with the membrane side down. Material placed on top of the Composite Geomembrane shall not be dropped from a height exceeding 2 feet. The Composite Geomembrane shall be placed in direct contact with the ground without causing folds in the membrane. The edges of the Composite Geomembrane shall be secured in the manner shown on the contract plans or as ordered by the Engineer.
- E.** Traffic or construction equipment will not be permitted directly on the Composite Geomembrane. A working pad a minimum of 6 inches thick shall be maintained between any equipment and the surface of the Composite Geomembrane.

- F. All field seams shall be sealed in accordance with manufacturer's recommendations as accepted by the Department. Any deviation from the approved shop drawings shall require prior approval, in writing, by the Deputy Chief Engineer, Technical Services.

Field seams shall be non-destructively tested at a minimum one test per every 500 feet of seam length using a method recommended by the Contractor and approved by the Department. All test locations will be determined during or after seaming at the Engineer's discretion. Any seam failing a non-destructive test shall be reconstructed and retested at the Contractor's expense. Composite Geomembrane that becomes torn or damaged shall be patched with the same Composite Geomembrane and the seams shall be tested for continuity, all at the Contractor's expense. The patch shall extend a minimum of 6 inches beyond the perimeter of the tear or damage.

- G. During installation, a representative of the Composite Geomembrane manufacturer shall be present to provide technical assistance to the Contractor.

METHOD OF MEASUREMENT

This work will be measured as the number of square feet of Composite Geomembrane computed from the payment lines shown on the plans or from payment lines established in writing by the Engineer. Measurement will not be made of Composite Geomembrane used for repairs, seams, or overlaps.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, equipment, and materials necessary to satisfactorily complete the work, including the cost of placing the material, all required seaming, non-destructive testing, and anchoring of the edges.

ITEM 208.01030022 BIORETENTION AND DRY SWALE SOIL
ITEM 208.01040022 LABORATORY TESTING FOR SOIL PHOSPHORUS
CONCENTRATION

DESCRIPTION

This work shall consist of installing Bioretention and Dry Swale Soil in accordance with the contract documents and as directed by the Engineer.

The work shall also consist of having the Bioretention and Dry Swale Soil tested for total soil phosphorus concentration at a qualified laboratory. A qualified laboratory shall be defined as a laboratory that is certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) to test soil for total soil phosphorous.

MATERIALS

The following sections of the standard specifications apply:

§703-07	Concrete Sand
§713-01	Topsoil, Type A (see exceptions below)

The soil for Bioretention areas and Dry Swales shall be a uniform mix, free of stones, stumps, roots or other objects larger than two inches (2”) in diameter. The Bioretention and Dry Swale soil shall be visibly free of noxious weeds.

Bioretention and Dry Swale Soil shall be a well blended mixture of three (3) parts sand and one (1) part topsoil, by volume. The Bioretention and Dry Swale Soil shall have a pH range of 5.2 to 7.6, and an organic content of 3-7%.

Sand shall meet the requirements of §703-07 *Concrete Sand*.

Topsoil shall be in accordance with the requirements of §713-01 *Topsoil* for Topsoil Type A, except as follows:

- All topsoil shall be sampled and tested, regardless of the source.
- Sampling of topsoil, amended topsoil, and the Bioretention and Dry Swale Soil shall be done by the Contractor/Supplier. Sampling protocol shall be in accordance with §713-01 *Topsoil*.

Soil amendments to increase organic content shall be peat moss. Peat moss shall be commercially produced and shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue, and other foreign matter. It shall have a pH range between 3.5 pH - 5.5 pH as determined in accordance with the Association of Official Agricultural Chemists’ testing methods. It’s water-absorbing ability shall be a minimum of 1100% by weight on an oven-dry basis.

Acceptance of Bioretention and Dry Swale soil will be based upon a material certification that the material conforms to the above requirements. The Contractor/Supplier shall provide to the Engineer copies of testing results of the sand gradation, topsoil gradation, organic content percentage of the Bioretention and Dry Swale Soil, and pH of the Bioretention and Dry Swale Soil. These tests are to be paid under the Bioretention and Dry Swale Soil item.

The Contractor shall provide to the Engineer copies of testing results for Soil Phosphorus Concentration. Samples to be submitted to the qualified laboratory shall be obtained in accordance with §713-01 *Topsoil*. Sampling shall be paid under the pay item for Bioretention and Dry Swale Soil. The results of the Soil Phosphorus analysis shall not be used as the basis for material acceptance.

Sampling frequency for total phosphorous shall be one composite sample for the first 100 to 500 cubic yards of soil, and an additional composite sample for each additional 500 cubic yards, or portion thereof. No samples are required for stockpiles of less than 100 cubic yards.

CONSTRUCTION DETAILS

Bioretention and Dry Swale Soil shall be installed at the locations and to the depth(s) as shown in the contract documents. Placement of Bioretention and Dry Swale Soil shall be done in lifts of 12 inches to 18 inches. The soil shall be loosely compacted, such as by tamping lightly with a dozer or backhoe bucket. No other materials or substances shall be mixed or dumped within the Bioretention area and Dry Swale that may be harmful to plant growth, or prove a hindrance to planting or maintenance operations.

METHOD OF MEASUREMENT

Bioretention and Dry Swale Soil

The work will be measured as the number of cubic yards of Bioretention and Dry Swale Soil installed, computed from payment lines shown in the contract documents.

Laboratory Testing for Soil Phosphorus Concentration

The work will be measured by the number of soil samples analyzed for Soil Phosphorus Concentration by a qualified laboratory.

BASIS OF PAYMENT

The unit price bid for a cubic yard of Bioretention and Dry Swale Soil shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including costs for testing.

The unit price bid for Laboratory Testing for Soil Phosphorus Concentration, shall include the receipted costs of testing, including the cost of the laboratory test(s) and all labor, materials and equipment required to obtain and deliver soil sample(s) to the qualified laboratory plus 5% for profit and overhead.

ITEM 603.99220015 - POLYVINYL CHLORIDE GRAVITY SEWER PIPE

DESCRIPTION

The work shall consist of furnishing and installing a polyvinyl chloride sanitary sewer and appurtenances at the locations indicated on the plans and in accordance with these specifications, or as directed by the Engineer.

MATERIALS

Sizes from 4 inch to 15 inch Diameter

Pipe: The pipe and fittings furnished shall meet the requirements of ASTM D3034-SDR35.

Joints: All joints shall be the push-on type constructed with a locked in elastomeric seal to provide a tight flexible seal in accordance with ASTM D-3212.

Sizes from 18 inch to 36 inch.

Pipe and fittings shall meet the requirements of ASTM F-679.

Joints: All joints shall be the push-on type constructed with a locked in elastomeric seal meeting the requirements of ASTM F477 and provide a tight flexible seal in accordance with ASTM D3212.

Sizes from 4 inch to 36 inch.

Lubricant: The lubricant used for assembly shall have no detrimental effect on the gasket or on the pipe.

Basis of Acceptance: Acceptance of all pipe and fittings shall be based on the manufacturer's certification of compliance with these specification requirements. The Department reserves the right to sample and test delivered material.

CONSTRUCTION DETAILS

The pipe is to be installed to the line and grade, and in accordance with the details and notes in the contract documents.

Polyvinyl chloride will deteriorate from exposure to ultraviolet radiation. Deterioration will be evidenced by a color change.

All pipe and joint material shall be thoroughly inspected by the Engineer prior to installation. Any material found to be defective in manufacture or damaged in handling shall be removed immediately from the work site, and new material of acceptable quality shall be furnished by the Contractor.

All joints shall be installed in accordance with the manufacturer's recommendations. The Contractor shall provide the Engineer with a copy of the manufacturer's instructions for installing joint material, at least two weeks prior to installation.

Any pipe fittings damaged during installation shall be replaced at no extra cost to the Department.

METHOD OF MEASUREMENT

The quantity to be paid for under this item will be the number of linear feet (laying length) of polyvinyl chloride sewer pipe furnished and installed in accordance with the plans, specifications and/or as ordered by the Engineer.

BASIS OF PAYMENT

The unit price per linear foot shall include the cost of all labor, materials and equipment necessary to complete the work. Excavation and backfill shall be paid under their respective items in accordance with the details shown on the plans.

Payment will be made under:

ITEM NO. ITEM DESCRIPTION

603.99210015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 4 inch Dia.	Feet
603.99220015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 6 inch Dia.	Feet
603.99230015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 8 inch Dia.	Feet
603.99240015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 10 inch Dia.	Feet
603.99250015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 12 inch Dia.	Feet
603.99260015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 15 inch Dia.	Feet
603.99270015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 18 inch Dia.	Feet
603.99280015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 21 inch Dia.	Feet
603.99290015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 24 inch Dia.	Feet
603.99300015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 27 inch Dia.	Feet
603.99310015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 30 inch Dia.	Feet
603.99320015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 33 inch Dia.	Feet
603.99330015	- Polyvinyl Chloride Pipe, Sanitary Sewer Gravity, 36 inch Dia.	Feet

ITEM 605.09020008 - UNDERDRAIN FILTER TYPE 1 (MODIFIED)

All specification requirements for Item 605.0901 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 1 square foot unless otherwise shown on the plans. No deduction will be made for the cross sectional area of an existing facility.

ITEM 607.41010010 - TEMPORARY PLASTIC BARRIER FENCE

DESCRIPTION

This work shall consist of furnishing, installing, and maintaining Temporary Plastic Barrier Fences of the type and at the locations shown in the plans or where directed by the Engineer.

MATERIALS

Materials for Temporary Plastic Barrier Fences shall meet the following requirements:

- **Fence:** High-density polyethylene mesh, ultraviolet-stabilized min. 2 years; minimum height 4.0 feet. Color: high-visibility orange or green. When used to protect trees or other vegetation, color shall be high-visibility orange.
- **Posts:** Rigid metal or wood posts, minimum length 6.0 feet.
- **Ties:** Steel wire, #14 gauge or nylon cable ties.
- **Warning signs:** Sheet metal, plastic or other rigid, waterproof material, 1.5 feet by 2.0 feet with 4 inch black letters on a white background. Text shall be: "Protected Site - Keep Out" unless otherwise specified.

CONSTRUCTION DETAILS

Fences shall be erected prior to moving construction equipment onto any area designated for protection.

The line of fences as indicated on the plans shall be staked or marked out on the ground by the Contractor and approved by the Engineer before any fence is installed. Where used for protection of individual trees, fence shall be placed at the drip line (extent of canopy). If not possible, placement shall be as close to the drip line as possible and in no case less than 5.0 feet away from the tree trunk.

On approval of the stakeout, posts shall be securely driven on 6.0 foot-maximum centers, normal to the ground, to a depth 1/3 of the total post length. Plastic barrier fence shall be placed along the side of all posts. Ends of fencing segments shall overlap a distance of at least one half the fence height.

Fencing shall be secured to posts with wire or cable ties at top, middle and bottom of post. Fastener shall be tight enough to prevent the fencing from slipping down. Overlaps shall also be securely fastened.

Barrier fence which is not orange in color shall be flagged at 6.0 foot intervals with red or orange florescent tape. Warning signs shall be mounted on the fence at no more than 100 foot intervals.

Maintenance shall commence immediately after erection of the fence and continue until one week prior to acceptance of the contract, and shall consist of: replacing damaged post(s) and fencing; re-fastening and tightening fencing; and restoring fence to its intended height.

Fencing used for tree or other vegetation protection shall not be temporarily removed to allow equipment access over a protected area, except as required for items of work specifically shown on the plans and approved by the Engineer in writing.

METHOD OF MEASUREMENT

The quantity to be measured for payment will be the number of feet of Temporary Plastic Barrier Fence erected, measured along the top, to the nearest whole foot.

BASIS OF PAYMENT

The unit price bid shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the work. Relocation of a fence from one location to another as directed by the Engineer shall be considered as a new location and will be separately paid.

Seventy percent (70%) of the price bid will be paid after satisfactory installation of the fence. The remaining Thirty percent (30%) will be paid after complete removal of the fence.

ITEM 607.92060008-STOCKADE FENCE 6'HIGH

ITEM 607.92080008-STOCKADE FENCE 8'HIGH

DESCRIPTION

This work shall consist of furnishing and installing a stockade fence including posts, concrete footings and component parts, as indicated on the plans and as directed by the Engineer.

MATERIALS

The fence shall be made of wood, either northern white cedar (number 1 grade - untreated), southern yellow pine (pressure treated and stained) or spruce (pressure treated and stained) as shown on the plans.

Wood rails, posts and pickets shall be the size specified on the plans and in accordance with Section 712-13 of the Standard Specifications. Wood rails will be doweled into the posts. Wood pickets will be nailed to the rails.

The southern yellow pine and spruce shall be treated in accordance with Section 708-31, Wood Preservative - waterborne, and stained with an approved oil based stain to the satisfaction of the Engineer.

Nails shall be galvanized in accordance with Section 719-01, Galvanized Coating and Repair Methods.

Concrete shall be in accordance with Section 501, Portland Cement Concrete.

CONSTRUCTION DETAILS

All posts shall be set vertically and to the required grade and alignment.

Fence shall generally follow the contour of the ground. Grading shall be performed where necessary to provide a neat appearance.

Posts shall be spaced as shown on the plans or as directed by the Engineer.

The contractor shall submit five copies of Manufacturer's Shop Drawings to the Engineer for approval. These drawings shall be submitted at least ten working days prior to the date the contractor orders materials for the fence. The fence materials shall not be shipped to the job site until the shop drawings are approved.

METHOD OF MEASUREMENT

This work will be measured as the number of linear feet measured along the top of the fence center to center of posts which is satisfactorily installed as indicated on the plans or as directed by the Engineer.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, grading, equipment, concrete footings, footing excavation and materials necessary to complete the work.

ITEM 607.96010010 – DECORATIVE TIMBER RAIL

DESCRIPTION

The Contractor shall furnish and install decorative timber rail as shown in the Contract Documents at the locations shown and where directed by the Engineer.

MATERIALS

General:

1. *Steel Rails and Hardware.* Steel rails, steel back-up plates, splice plates, and all accessory components and hardware shall be fabricated as shown on the plans. Bolt holes, as necessary, may be enlarged or slotted to permit expansion and contraction and to facilitate erection. The steel rails and steel plates shall be straight and of uniform section.

The steel splice plates shall meet the requirements of ASTM A36 and shall be galvanized. No punching, drilling, cutting or welding will be permitted after galvanizing.

Bolts, nuts, washers, and other miscellaneous fasteners and hardware shall conform to ASTM A325 and shall be galvanized.

Certified copies of the test results conducted by the manufacturer of the base metal for the physical and chemical requirements shall be furnished for all steel in the manner and form requested by the Department.

2. *Timber Rails and Posts.* The timber rail and posts shall conform to AASHTO M168. The timber elements shall be fabricated from dry, well seasoned, and dressed rough sawn Douglas Fir, Southern Pine, or other species having a stress grade of at least 1,500 psi.

The rail and block-out elements shall be treated with any one of the following Waterborne Wood Preservatives meeting the requirements of AASHTO M133: Acid Copper Chromate (ACC), Alkaline Copper Quat (ACQ), or Copper Azole (CA). Treatment shall meet the requirements of the American Wood Protection Association (AWPA) Category UC4A.

The following Waterborne Wood Preservatives meeting AASHTO M133 are also acceptable: Micronized Copper Quaternary, Micronized Copper Azole, and Dispersed Copper Azole Type C. Treatment with these products shall meet the requirements of the International Code Council-Evaluation Service, Inc. - Acceptance Criteria AC326.

Minimum net retention for all Waterborne Wood Preservatives shall be as required for material supplied.

A timber post that has a through check, shake, or end split in the same plane as, or a plane parallel to the bolt hole and extending from the top of the post to within 3 inches of the bolt hole will be rejected

3. *Concrete.* Cast in place concrete shall meet the requirements specified for Class A Concrete in Section 501 "Portland Cement Concrete - General." Precast concrete units shall meet the requirements of Subsection 704-03 "Precast Concrete - General." The requirement for a Department approved, automated concrete batch plant does not apply.
4. *Galvanizing.* Galvanizing shall conform to Subsection 719-01. Galvanizing shall be Type 1, except for hardware which shall be Type 2.

BASIS OF ACCEPTANCE

The Contractor shall supply manufacturer certification that all materials are of the type, quality and treatment level specified.

CONSTRUCTION DETAILS

Decorative timber rail shall be installed as indicated in the Contract Documents.

Wood posts shall be placed by excavating or by using vibratory driving or impact driving equipment approved by the Engineer. Post driving will be permitted only if alignment and grade tolerances are met and providing no damage is done to the posts during installation. Damaged or misaligned posts shall be removed and replaced by the Contractor as directed by the Engineer. To facilitate driving, the base of the wood posts may be tapered.

Post and anchor excavations shall be backfilled, and backfilled material compacted in accordance with Subsection 203-3.15 "Fill and Backfill at Structures, Culverts, Pipes, Conduits and Direct Burial Cables."

All posts shall be aligned to a tolerance of ¼ inch for plumb and grade line.

The timber rails shall be field cut to produce a fit at the joints as indicated on the plans or working drawings. Treat field cuts with two (2) coats of Waterborne Wood Preservative in accordance with AWP Standards.

Upon completion of the installation of the timber rail components, the Contractor shall restore the area to its original state to the satisfaction of the Engineer.

METHOD OF MEASUREMENT

The decorative timber rail will be measured by the number of linear feet, measured along the axis of the rail, installed.

BASIS OF PAYMENT

The unit price bid for the decorative timber rail shall include the cost of all labor, materials, and equipment necessary to complete the work, including paint, concrete, reinforcement, excavation, backfill, and removal and replacement of damaged or misaligned posts.

ITEM 608.01020005 – COLORED AND IMPRINTED PORTLAND CEMENT CONCRETE SIDEWALK

ITEM 608.01030005 – COLORED PORTLAND CEMENT CONCRETE SIDEWALK

ITEM 608.01040005 – IMPRINTED PORTLAND CEMENT CONCRETE SIDEWALK

DESCRIPTION

Construct Portland cement concrete sidewalks as shown on the contract documents according to §608 of the Standard Specifications, using colored and/or imprinted concrete, including color matching joint material, when specified.

MATERIALS

Apply §608-2.01 with the following modifications:

Colored Concrete

All coloring agents shall produce a color conforming to the Federal Standard 595. The color shall be as indicated on plans.

Color admixtures for integrally colored concrete will be certified by the manufacturer as meeting the requirements of ASTM C979 Standard Specifications for Pigments for Integrally Colored Concrete and be packaged such that one dose is the proper dosage for one cubic yard of concrete.

Imprinted Concrete

Use imprinting tools capable of imprinting the surface of the concrete with a uniform and aligned pattern and/or texture. Use a clear release agent as specified by the imprinting tool manufacturer. These materials shall be approved by the Engineer prior to their use.

Color Matching Joint Material

When specified for any location, use a color matched caulking compound designed for joint sealing.

CONSTRUCTION DETAILS

Apply §608-3.01 with the following modifications:

Test Panels

Prior to the start of work, the Contractor shall show evidence of successful completion of similar installations. The Contractor shall construct a job site test panel for each individual color and pattern or combination of color and pattern specified in the contract documents. The test panel(s) shall be 5 feet x 5 feet, minimum, and constructed at a location selected by the Engineer. As many test panels will be constructed as are necessary to produce sample panels that meet the approval of the Engineer. The permanent work shall be consistent with the appearance of the approved test panel(s) as determined by the Engineer. The test panel(s) shall not be incorporated into the work and will be removed when ordered by the Engineer.

ITEM 615.1001NN08 - KIOSK STRUCTURE (NOT MANUFACTURED)

DESCRIPTION

This work shall consist of furnishing materials for, assembling and installing a kiosk structure in accordance with the contract documents and as directed by the Engineer.

Material and construction detail specifications for the kiosk structure are included in the contract documents.

“Not Manufactured” means that the material and construction specifications do not include a listing of, or any reference to, kiosk manufacturers (one or multiple), proprietary products or proprietary construction methods in any contract notes, the kiosk details, or in any other location(s) in the contract documents.

MATERIALS

All materials shall conform to the specifications indicated in the contract documents.

CONSTRUCTION DETAILS

Kiosk Structures shall be constructed according to, and at the locations shown in, the contract documents.

Shop Drawings: Appropriate kiosk shop drawings shall include, but be not limited to, details on the kiosk structure, foundation, hardware, fastening and signage. The shop drawings shall meet the specifications (material and construction) in the contract documents.

Kiosk shop drawings shall be submitted for approval **at least fourteen (14) days BEFORE** the Contractor begins constructing the kiosk, unless otherwise specified

Written approval is required prior commencing work on the kiosk.

METHOD OF MEASUREMENT

This work will be measured as the number of each kiosk structure satisfactorily constructed in accordance with the contract documents.

BASIS OF PAYMENT

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

The message board cabinet (if specified) and all associated connection hardware will be paid for separately. Where NN is the serialization of unique kiosks installed per contract. For example, a contract with three unique types of kiosks would contain the following pay item numbers:

PAY ITEM	ITEM DESCRIPTION	PAY UNIT
615.10010108	Kiosk (Not Manufactured) – Type 1	EACH
615.10010208	Kiosk (Not Manufactured) – Type 2	EACH
615.10010308	Kiosk (Not Manufactured) – Type 3	EACH

Quantities for each pay item (Kiosk) may exceed one (1) in the same contract (i.e. when multiple kiosks of one type are required). The serialization is used to distinguish between different kiosk types, which may impact acquisition and installation costs.

ITEM 655.05020010 – FRAMES AND COVERS FOR SANITARY SEWER MANHOLES

DESCRIPTION

This work shall consist of furnishing and installing frames, covers and appurtenances for sanitary sewer manholes in accordance with these specifications and details shown on the contract plans.

MATERIALS

Materials shall conform to the following:

Cast iron for manhole frames and covers, and all special cast iron fixture entering into the construction of the work shall be made of tough, close-grained, gray iron without the admixture of any cinder iron or metal of inferior quality. Iron shall conform to ASTM Designation A48, Class 30B.

Manhole frames and covers shall be coated with coal tar epoxy of approved quality applied by the hot-dip process.

The acceptance of the frames and covers for sanitary sewer manholes will be based on the manufacturer's certification of compliance.

All manhole frames, covers and appurtenances shall be similar in detail to those existing in the adjacent area, and all elements shall be interchangeable.

The Contractor shall submit to the Engineer, with such promptness as to cause no delay in the work, or in the work of any other contractor, seven (7) copies of all shop drawings and no work shall be fabricated until the Engineer's approval has been given. All shop drawings, cuts, catalogs or other data requiring approval must be submitted to the Engineer by the Contractor and must bear his stamp of approval evidencing that the data have been checked. Drawings, cuts, catalogs or other data submitted without this stamp of approval will not be considered by the Engineer and will be returned to the Contractor. Likewise, all questions concerning the plans and specifications which require clarification or interpretation shall be submitted in writing to the Engineer through the Contractors.

The Contractor shall make any corrections in the drawings required by the Engineer and shall file with the Engineer (7) corrected copies. Approval by the Engineer of such drawings shall not relieve the Contractor from responsibility for errors of any sort in shop drawings or deviations from plans and specifications unless the Contractor, at the time of submission of said drawings, has given notice to the Engineer of any such deviations.

CONSTRUCTION DETAILS

Construction details shall conform with the details shown on the plan and shall conform to the requirements of Subsection 655-3 in addition to the following:

All manholes will be provided with a Type "F" Manhole Frame and Cover (Adjustable Frame). The frame cover, without the use of any filler rings, shall be set to a top frame elevation 1-9/16 inch below finished grade. At the time of final paving, the frame and cover shall be raised to the correct grade by insertion of one 1 inch and one 19/32 inch filler rings. In the event the Engineer, at any time during the Contract Period, directs the removal of either or both filler rings, the Contractor shall remove them and deliver the same to the Engineer.

METHOD OF MEASUREMENT:

The quantity to be measured under this work will be the number of frames, covers and appurtenance materials furnished and placed in accordance with the plans and specifications. The measurement shall be made for the frame containing the cover and appurtenance.

BASIS OF PAYMENT:

The unit prices bid per frame and cover shall include the cost of furnishing all labor, materials and equipment necessary to satisfactorily complete the work, including the cost of any field repair work to render the frame and cover non-rocking.

ITEM 664.40XX0006 - 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 Mo-Tar 4, 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 4000 psi 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.
- 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 ½ inch from the designated invert elevation, the base shall be removed and reset.

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 precast concrete pavers 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 4 inches and the maximum height shall not exceed 16 inches.

Following the placement of the pavers, a ½ inch layer of Masonry 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 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. 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.
- 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 C1244. 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 4 feet 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 0.25 gallons per foot diameter of manhole per foot 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.

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 feet of height, measured to the nearest $\frac{1}{4}$ foot, from the bottom of the manhole base to the top of the masonry collar.

BASIS OF PAYMENT

The unit price bid per linear foot 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
664.40480006	Precast Sanitary Sewer Manhole (48 inch DIA.)	Linear Foot
664.40600006	Precast Sanitary Sewer Manhole (60 inch DIA.)	Linear Foot
664.40720006	Precast Sanitary Sewer Manhole (72 inch DIA.)	Linear Foot
664.40840006	Precast Sanitary Sewer Manhole (84 inch DIA.)	Linear Foot
664.40960006	Precast Sanitary Sewer Manhole (96 inch DIA.)	Linear Foot