

## **ITEM 203.51990006 - ESTABLISHING NEW DITCHES AND SLOPES**

**DESCRIPTION:** The Contractor shall under this item establish new ditches and slopes to provide adequate, unobstructed, free flowing drainage and a safe, traversable road section. The work shall include:

- A. Grade and shape new ditches as directed by the Engineer to provide drainage as follows:
  - 1. At locations where there are no existing ditches.
  - 2. At locations where an existing ditch must be relocated laterally a distance of 12 inches or more.
- B. Shape the backslope in cut sections as directed by the Engineer up to an elevation of 10 feet above the final elevation of the nearest edge of pavement. Shape or flatten side slopes in embankment areas, as directed by the Engineer to an elevation of 10 feet below the final elevation of the nearest edge of pavement to provide a safe, traversable slope.

**MATERIALS:** None Specified

**CONSTRUCTION DETAILS:** This work shall consist of excavating and forming new ditches and slopes as directed by the Engineer. Material excavated from the ditches may, if suitable, be used to re-grade slopes or to flatten slopes as directed by the Engineer. Any material used to regrade or to flatten slopes shall be compacted in accordance with §203-3.12, Compaction, and/or benched in accordance with the requirements of §203-3.09 Embankment Foundation, as directed by the Engineer. Unsuitable and excess material will be disposed of in accordance with the requirements of §203-3.08, Disposal of Surplus Excavated Materials

The Contractor shall exercise due care to protect all trees, fences, markers, culverts, underground structures, utilities and other installations which are to remain within and adjacent to the work area. The Contractor shall, at his own expense, replace in kind any facilities damaged by his operations.

**METHOD OF MEASUREMENT:** The quantity to be paid for under this item will be the number of linear feet measured along each edge of pavement along which such above described work is performed. Slope excavation and shaping in cut sections required above an elevation of 10 feet above the final elevation of the nearest edge of pavement shall not be included for measurement under this item of work. Slope flattening and shaping in fill sections required below an elevation of 10 feet below the final elevation of the nearest edge of pavement shall not be included for measurement under this item of work.

**BASIS OF PAYMENT:** The unit price bid per linear foot for this work shall include the cost of furnishing all labor, materials and equipment necessary to satisfactorily complete the described work; including compaction, benching, and/or disposal of excavated material.

**ITEM 209.20120010 - BIO-FIBER ROLLS, 12 inch**

**ITEM 209.20160010 - BIO-FIBER ROLLS, 16 inch**

**ITEM 209.20200010 - BIO-FIBER ROLLS, 20 inch**

**DESCRIPTION**

This work shall consist of furnishing and installing the Bio-Fiber Rolls for the protection and enhancement of existing shore, stream or river banks. The installation of these Bio-Fiber Rolls shall be done in accordance with these specifications and in a reasonably close conformity with the details shown on the plans or established by the Engineer.

**MATERIALS**

The rolls shall have a density of 9 lb/ft<sup>3</sup>. The exterior 2 inch knotted mesh netting of the Bio-Fiber Roll shall be 100% coir fiber mesh or a woven polyethylene material. The interior material shall be 100% coconut fiber.

The stone material installed shall conform to §620-2.02.

Stakes shall be Oak or Southern Yellow Pine untreated wood.

**CONSTRUCTION DETAILS**

Bio-Fiber Rolls with a diameter as indicated on the contract drawings shall be installed where and as shown on the contract plans, tables, or as directed by the Engineer.

The Contractor shall install wood stakes as detailed in the plans, to support the Bio-Fiber Rolls. After driving, the top of the stakes shall extend above the center line of the Bio-Fiber Roll. The stone shall be placed around the wood stakes and shaped to accommodate the Bio-Fiber Rolls.

The lengths of Bio-Fiber Roll shall be placed in position adjacent to the row of stakes, between the bank and stakes. The upper surface of the roll shall be parallel to the water surface as shown in the plans, protruding above mean water level (to be determined on site; not necessarily the current water level). Adjustments shall be made as needed, using hand tools to seat the roll such that it lies smoothly at the correct elevation. The upstream and downstream ends of the rolls shall be buried 3 to 5 ft into the bank.

The rolls shall be laced together end-to-end with nylon rope to create a continuous length. End-to-end lacing may be completed before or after placement to facilitate handling.

When erosion control blanket material is used in conjunction with the Bio-Fiber Rolls to cover the slopes of disturbed banks, the fabric shall be stapled to the back of the Bio-Fiber Roll as shown in the details.

The Contractor shall be responsible to maintain the Bio-Fiber Rolls installation for the duration of the contract and thru the period of establishment of those plantings put into the roll as specified under §611-3.06, Period of Establishment. Any material that has to be replaced or repaired shall be replaced or repaired by the Contractor at no additional cost to the State.

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**METHOD OF MEASUREMENT**

This work will be measured as the number of linear foot of Bio-Fiber Rolls installed in accordance with the specification and as directed by the Engineer.

**BASIS OF PAYMENT**

The unit price bid per linear foot shall include the cost of furnishing all labor, material, and equipment necessary to complete the work including installing Bio-Fiber Rolls and stone filling as shown in the contract plans. The Contractor will be paid 80% of the bid price upon the installation of the Bio-Fiber Rolls and the remaining 20% upon the completion of the project and or Period of Establishment.

Payment for furnishing and installing erosion control blanket material, where used, will be made under the item for "Furnishing and Placing Jute Mesh or Other Approved Erosion Control Materials."

## **ITEM 553.0401nn09 - TEMPORARY CAUSEWAYS**

### **DESCRIPTION**

This work shall consist of designing, furnishing, placing, maintaining and removing temporary causeways at the locations and to the elevations shown on the Contract plans. All work done shall conform to all Federal, State, County and Local Regulations and permit conditions.

### **MATERIALS**

As indicated on the Contract plans.

### **CONSTRUCTION DETAILS**

Drawings shall be submitted to the Engineer for review a minimum of two weeks prior to construction. The drawings shall show profile, cross-sections, plan, and the location of any equalizer pipes. Changes to the causeway require new drawings and two additional weeks for review. The Engineer may waive the time requirement and/or the drawings if the Engineer deems the changes to be minor.

Temporary causeways shall be constructed as indicated on the plans and in accordance with any regulatory agency permit conditions. Prior to construction, all temporary soil erosion and sediment control measures shall be installed in accordance with §209 of the Specifications. Construction, maintenance and removal of the temporary causeways shall be performed in such a manner as to minimize turbidity and discharge of fine materials into the waterway. Additional temporary erosion control measures, as determined by the Engineer, may need to be employed to facilitate installation and removal.

After removal of the temporary causeway, land areas disturbed by the Contractor's operations shall be regraded and vegetated as indicated on the plans. Temporary erosion control measures shall be maintained by the Contractor until the restored areas are permanently stabilized.

Major damage to the causeway resulting from overtopping floodwaters shall be repaired as directed by the Engineer in accordance with the requirements of §109-05 Extra Work, Force Account Work, Dispute Compensation and Recordkeeping. Major damage is defined as causeway damage evolving loss or displacement of the heavy stone fill.

### **METHOD OF MEASUREMENT**

This work will be measured on a lump sum basis.

### **BASIS OF PAYMENT**

The lump sum price bid shall include the cost of furnishing all labor, material, and equipment necessary to satisfactorily install, maintain and remove the temporary causeway, including land restoration measures and any additional temporary erosion control measures required to facilitate installation and removal of the temporary causeways, except as note below.

Major causeway restoration work resulting from overtopping floodwaters shall paid for in accordance with §109-05. Minor causeway restoration work resulting from overtopping

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floodwaters shall be considered maintenance of the causeway and will not be reason for any additional payment.

Partial payments will be made as follows:

Seventy (70) percent when the temporary causeway is completely installed and operable.  
Twenty-five (25) percent when the temporary causeway is permanently removed. Five (5) percent when the temporary erosion control measures are removed and disturbed areas are permanently stabilized.

Payment will be made under:

<u>Item No.</u>	<u>Item Pay</u>	<u>Unit</u>
553.0401nn09	Temporary Causeways Lump Sum	Lump Sum

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

**ITEM 555.0104--70 – FOOTING CONCRETE, CLASS A (REINFORCEMENT INCLUDED AND NO BAR LIST IN PLANS)**

**ITEM 555.0105--70 – CONCRETE FOR STRUCTURES, CLASS A (REINFORCEMENT INCLUDED AND NO BAR LIST IN PLANS)**

**DESCRIPTION:**

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

**MATERIALS:**

All the material requirements of §555-2 and §556-2 shall apply.

**CONSTRUCTION DETAILS:**

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

1. At least thirty (30) days prior to fabrication of the reinforcement the Contractor shall submit a minimum of two copies of the bar lists and placement drawings showing the bar locations to the Engineer. The details of the bar list drawing and placement shall meet the requirements of the current edition of the Concrete Reinforcing Steel Institute's publication Reinforcing Bar Detailing. Placement drawings shall be size "B". Drawings and bar lists shall be clear and legible.
2. Requests for information or changes along with reasons shall be documented in a separate list.
3. The Engineer will transmit the documents to the designer for review for conformance with the design requirements and in accordance with §105-16. The designer will not check lengths, number of bars, weights or bar marks. Corrections will be returned to the Contractor. A review time of two days per placement drawing submitted with a minimum of 15 days for each submission will be allowed upon receipt of the submission. When the documents are satisfactory they will be returned to the Contractor stamped "Approved In Conformance With Design Requirements". The Contractor shall supply the Engineer with five (5) copies of the approved documents. No reinforcement shall be placed until copies of the approved documents are received by the Engineer.
4. Construction details for reinforcing steel shall meet the requirements of §556-3. The reinforcement shall be of the type indicated in the contract documents.
5. Partial submissions that require coordination with other drawings will not be accepted.
6. All the provisions of §555-3 shall apply.

**METHOD OF MEASUREMENT:**

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

**BASIS OF PAYMENT:**

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

## **ITEM 555.72950010 - ARCHITECTURAL TREATMENT VERTICAL STAINED CONCRETE SURFACES**

### **DESCRIPTION**

This work shall consist of architecturally treating and staining the vertical surfaces of integrally colored concrete retaining walls, structures, pilasters, piers or other similar vertical surfaces with designated patterns and textures. All work shall be in accordance with these specifications and in reasonably close conformity to the lines, grades, patterns and textures shown on the plans.

### **MATERIALS**

Form Liner and Rustication Strips. Commercially produced Form Liner and Rustication Strip shall meet the requirements of Section 555-3. The form liners and Rustication Strips shall:

1. Produce the patterns, textures and joints indicated on the plans.
2. Be composed of a material(s) that will not bond to concrete.
3. Be attachable to standard plywood, steel, or concrete forms, such that no distortions, or stray markings occur within the concrete surfaces.
4. Be fabricated with care so that all strips are equal in cross-section so that the ends of the strips can be matched during installation.

Concrete. Concrete shall meet the requirements of Section 501 and 555 of the Standard Specifications except for the following. The class of concrete will be as specified elsewhere in the Contract Documents.

Color Admixture. All concrete which is visible above the finished grade shall be integrally colored using pigment admixture, Federal color as noted on drawings and as approved by the Regional Landscape Architect. The color admixture for integrally colored concrete shall be certified by the manufacturer as meeting the requirements of ASTM 979, Standard Specifications for Pigments for Integrally Colored Concrete and be packaged such that one dose is the proper dosage for one cubic meter of concrete.

Releasing Agents. If the form liner manufacturer requires the use of an agent to facilitate the release of the form liner panel from the concrete, or when its use is specified on the plans, such agent shall appear on the Departments Approved List – Form Coatings for Structural Concrete, be non-staining and evenly spread over the entire liner surface. Formwork shall also be treated as needed.

Concrete Penetrating Stain. To unify minor variations in color, a concrete penetrating stain shall be applied in the field on all surfaces of the integrally colored concrete. The color of the concrete penetrating stain shall match the integrally colored concrete.

The penetrating stain shall be a single component water-based thermoplastic acrylic emulsion which carries its color and water repellent protection into the concrete. The stain shall be delivered in original, sealed plastic pails clearly labeled with the manufacturer's name and batch number of the material.

The penetrating stain shall conform to the following performance requirements:

### **PHYSICAL PROPERTIES**

#### **CONDITION**

Dry-through time

#### **RESULTS**

25 minutes maximum

#### **TEST METHOD**

ASTM D 1640

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Dry-to-recoat time	1 hour maximum	ASTM D 1640
Oil, Wax & Silicone Content	None	
Adhesion to Concrete (Average of 5 Tests)	200 lb/sq.in	ASTM D 4541- Elcometer Test
Weather-Q-Meter Tests (500 Hours)	No Visible Degradation	ASTM G 23-Atlas Carbon Arc
Solids by Weight	57% $\pm$ 2%	
Viscosity	70-75 KU	ASTM D 562

The unpigmented, clear, non-volatile portion of the stain shall match the infrared spectrograph on file at the central laboratory. The penetrating concrete stain shall comply with New York State Laws regulating the use of volatile organic compounds and solvents.

**Caulking Compounds.** When a caulking compound is required to seal any necessary concrete joints in the surface, such caulking compounds shall be color matched to the adjacent concrete and meet the material requirements of U.S. Federal Specification TT-S-00227E (COM-NBS) as a multi component, Class A, Type II sealant with ASTM C 920, Standard Specification for Elastomeric Joint Sealants as a Type M, Grade NS, Class 25 joint sealant for uses NT, A, M, and O.

### **SUBMITTALS**

The Contractor shall submit the following for approval:

1. A separate 3ft x 3ft x 4 inch thick completely finished sample of integrally colored, stained concrete with form liner/rustication joint treatment shall be cast on-site using the methods, materials and finishes stated in this specification and on the plans for the approval of the Engineer and the Regional Landscape Architect. When approved, this sample shall be used as the standard for all Architecturally Treated Stained Concrete work on the project.
2. Form Liner and Rustication Strip samples with manufacturer's specifications shall be submitted to the Regional Landscape Architect for approval.
3. Shop drawings of layouts for vertical stained concrete surfaces on retaining walls, abutment walls, parapets, piers and pier caps, including all dimensions and radii.

### **CONSTRUCTION DETAILS**

All provisions of Section 555-3 shall apply with the following modifications:

To integrally color the concrete, use a color admixture dosage rate recommended by the manufacturer to achieve the Federal color as noted on drawings. This rate is to remain constant for all batches of concrete produced. Introduce color admixtures into the mixer drum in a manner recommended by the manufacturer. The quantity of concrete being delivered shall be no less than one-third the capacity of the mixer drum. Batch the concrete in full cubic meter increments. Once a portion of the batch has been placed, no additional mixing water shall be added to the remaining batch.



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Special care shall be taken after installation to ensure that all form liner surfaces are thoroughly clean of all stray material of any nature. No concrete shall be placed prior to the Engineer's inspection and approval of form liner surfaces.

Approximately 5/64 in of the form liner panel shall overlap on either side of the formwork panel so that when the formwork sections are forced together, the form liners compress at the edges to form a tight joint. Joints between panels shall be sealed, taped or fused to form a watertight seam, according to the manufacturer's instructions. Unless specified on the plans, texturing is not required on surfaces which will be below finished grade. Plastic snap tie cones are to be of the non-leaking type. Metal form ties are not to be placed closer than 1.5 inch to the interior surface.

Construction joints shall extend to the full depth of the concrete at the locations shown on the plans. When construction joints are needed but are not shown on the plans, the Contractor and the Engineer shall agree on the proper locations of such joints so as not to detract from the appearance of the imprinted pattern and to minimize the possibilities of cracking. Unless otherwise directed by the Engineer, all horizontal and vertical construction joints and contraction joints shall be rusticated with the use of chamfer strips of the size indicated on the plans installed on the formwork.

The rustication strips shall be carefully installed true to line and grade. The rustication strips shall be so installed as to leave a neat regular groove in the concrete at all construction joints, along the vertical and horizontal showing edges of contraction joints and at all exposed corners and edges of the concrete.

When used to form the showing edge of construction joints or at the top edges of pours, the concrete shall be placed even with the top of the strip to provide a formed groove with the same dimensions as that of the strip. To avoid inclusion of dust and debris beneath chamfer strips located at construction joints, the strips at the bottom of the form shall not be positioned until the joint surface has been washed or blown clean of all debris and accepted by the Engineer.

After formwork removal the Engineer will inspect architecturally patterned concrete surfaces. All such surfaces which do not exhibit the required architectural pattern shall be repaired in a manner satisfactory to the Engineer at no cost to the State. The repair shall match the concrete surface. Concrete repair material, if used, shall meet the requirements of Subsection 701-04, Concrete Repair Material of the Standard Specifications.

Under Subsection 555-3.08, clear (fugitive dye) membrane curing compound shall not be used.

Surfaces to receive the penetrating stain shall be structurally sound, fully cured, clean, dry and free from dust, curing agents, oil, grease, efflorescence and any other contaminants that could prevent proper adhesion. After the concrete has cured 28 days, power wash at a minimum of 2,900 lb/sq inch the surface of the area to receive stain. Sandblasting will not be permitted.

Prior to use, the stain shall be thoroughly mixed using the appropriate mechanical means and shall be remixed during spraying operations as required to maintain uniformity. Penetrating stain shall be applied in strict accordance with the manufacturer's written instructions and precautions.

At the time of stain application, both the concrete and air temperatures must be between 45° F and 90° F. Stain shall not be applied unless weather conditions will permit complete drying of material prior to rain, fog, dew or temperatures beyond the prescribed limits.

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The penetrating concrete stain shall be spray applied using conventional or airless spray. The stain shall be applied in two thin coats providing a uniform appearance. The first coat must be applied to become tack free before the second coat is applied. The final coat shall be consistent with the quality and appearance of the approved sample area. The rate of applications shall be in accordance with the manufacturer's recommendations. Area of coverage may vary depending on absorption rates of the various surface materials and textures.

Stain may be brushed or roller applied only at locations where overspray would affect adjacent materials and where not practical for spray application. Adequate protection shall be provided to protect adjacent persons, vehicles and property from overspray during staining operations.

Prior to any staining operations, the Contractor shall be required to complete a test staining program for color acceptance and surface area coverage. This work shall be performed on a portion of the erected structure, location of which to be determined by the Engineer. The Contractor shall apply stain to one complete section of the structure, which, when approved, shall serve as a standard of acceptance for all further work.

The completed stain surfaces shall be consistent with the quality and appearance of the approved sample area. If unevenness in color, lines or the work termination, etc. exist, the Engineer may have all such surfaces resprayed at the Contractor's's expense. Respraying, if required, shall be carried to a natural break-off point.

### **METHOD OF MEASUREMENT**

Architectural Treatment Vertical Stained Concrete Surfaces will be measured by the number of square feet of concrete treated to the satisfaction of the Engineer. The quantity will be as computed from payment lines shown on the plans or as established by the Engineer in writing. Measurement will be taken as the vertical plane projection of the treated location. No measurement will be taken of actual concrete surfaces.

### **BASIS OF PAYMENT**

The unit price bid per square foot shall include the cost of the form liners, rustication strips, color admixture, concrete penetrating stain, releasing agent, caulking compound, concrete repair material and all other materials, equipment and labor necessary to complete the work as specified, as well as the cost associated with all submittals and samples required. Structural concrete will be paid for separately.

**ITEM 559.18960118 - PROTECTIVE SEALING OF STRUCTURAL CONCRETE ON  
NEW BRIDGE DECKS AND BRIDGE DECK OVERLAYS**

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

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

717-03 - Penetrating Type Protective Sealers

**CONSTRUCTION DETAILS.**

- A. **General.** The Contractor shall provide the Engineer with the sealer manufacturer's written instructions for application and use, at least five (5) working days before the start of work. Only one (1) brand and specific type of sealer will be allowed for use on each deck.
- B. **Surface Preparation.** All concrete bridge decks shall air dry for twenty-four (24) hours after the time of completion of saw cut grooving. If the concrete is subjected to rain or moisture from other project operations, the drying period shall be extended twenty-four (24) hours from the time that the concrete has stopped being wetted. All required surface texturing, saw cut grooving, barriers, parapets, sidewalks and safetywalks shall be completed, before the surface is cleaned. After the drying period has ended, the concrete surface shall be cleaned by vacuum methods, to remove loose particles.

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

- C. **Weather Limitations.** Sealer materials shall not be applied during wet weather conditions or when adverse weather conditions are anticipated within twelve (12) hours of the completion of sealer application. Ambient and surface temperatures, during application, and until the sealed concrete is dry to the touch, shall be a minimum of 40°F. Application by spray methods will not be permitted during windy conditions, if in the opinion of the Engineer, unsatisfactory results will be obtained.
- D. **Sealer Application.** The protective sealer shall be used as supplied by the Manufacturer without thinning or alteration. Equipment for sealer application shall be clean of foreign materials and approved by the Engineer before use. The sealer shall be applied by brushing, spraying or rolling, as recommended by the Manufacturer.

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

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

**METHOD OF MEASUREMENT.** The work will be measured as the number of square feet of concrete sealed.

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

**ITEM 607.06400016 - PEDESTRIAN FENCING FOR BRIDGES**

**ITEM 607.06410016 - SNOW FENCING FOR BRIDGES**

**DESCRIPTION**

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

**MATERIALS**

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

<u>PART</u>	<u>REQUIREMENTS</u>
Vinyl Coated Steel Fence Fabric	710-03
Steel Fence Fabric (Aluminum Coated)	710-04
Posts, Rails, Braces, and Fittings	710-10.3
Plastic Coated Posts, Rails, Braces, and Fittings	710-12
Angles and Plates	ASTM A36
Steel "T" and Wide Flange Sections	ASTM A36
U-Bolts	ASTM A307
Nuts and Bolts	ASTM A307 and ASTM A325
Pipe Supports	ASTM A53
Anchor Bolts	ASTM A449

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

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

Unless otherwise noted on the Plans:

1. Posts shall be a nominal 2½" dia. (2⅞" O.D.). Minimum weight per linear foot shall be 5.75 lbs for Schedule 40 Pipe and 4.63 lbs for Class B Steel Tubing.
2. Top and Bottom rails shall be a nominal 1¼" dia. (1⅝" O.D.). Minimum weight per linear foot shall be 2.27 lbs for Schedule 40 Pipe and 1.3 lbs for Class B Steel Tubing.
3. Pipe supports shall be 1½" nominal dia. Schedule 80 Pipe.

**CONSTRUCTION DETAILS**

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

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

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

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

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

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

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

Unless otherwise noted on the plans:

1. The fabric shall be securely fastened to all terminal posts by 1" x 3/4" tension bars with 11 gauge pressed steel bands spaced approximately 12" apart.
2. Fabric shall be attached to top and bottom rails with 6 gauge tie wires at 24" centers.
3. The fabric shall be securely fastened to all vertical posts by 6 gauge aluminum ties at 12" centers.
4. Whenever fencing is cut to fit, the exposed ends, shall be coated as dictated by galvanizing repair procedures in subsection 719-01 of the standard specifications.

**METHOD OF MEASUREMENT**

Measurement will be taken as the number of linear feet of fencing installed.

Measurement will be taken along the bottom of the bottom rail, center-to-center of terminal posts.

**BASIS OF PAYMENT**

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

## **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.

**ITEM 607.41010010 - TEMPORARY PLASTIC BARRIER FENCE**

**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 607.65020010 - SPLIT RAIL FENCE**

### **DESCRIPTION**

The Contractor shall furnish and install split rail fencing, including posts, rails and component parts, in accordance with the plans, specifications, and directions of the Engineer.

### **MATERIALS**

The fence shall be made of cedar, poplar, or locust. Both posts and rails shall be split, not round.

### **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.

### **METHOD OF MEASUREMENT**

Split rail fence will be measured as the number of feet, along the top of the fence, which are satisfactorily installed as shown on the plans or as ordered by the Engineer.

### **BASIS OF PAYMENT**

The unit price bid per foot of split rail fence shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work including excavation, backfilling, and regrading.

## **ITEM 607.96000001 - WOODEN PEDESTRIAN RAILING**

### **DESCRIPTION:**

Under this item the contractor shall furnish and erect wooden pedestrian railing in accordance with the plans and specifications and directions of the Engineer.

### **MATERIALS:**

The posts and rails shall be constructed of either redwood or red cedar. Redwood shall be Construction Heart Grade or better. Red cedar shall be Grade D Clear or better. All lumber shall be kiln dried to acceptable standards. All wood members shall be S4S lumber, with all exposed corners and faces free from damage, and slightly rounded or beveled to remove sharp edges.

Preservative Treatment: the use of wood preservatives of any kind will not be allowed, other than wood stains as noted herein and approved by the Engineer. Stains shall be water-repellent. Volatile organic compound (VOC) content for stains shall be limited to 35 oz./gal..

All fasteners & hardware shall be No. 316 grade stainless steel. All wood screws shall be flat-head wood screws installed in pre-drilled holes with heads countersunk flush to the finished surface. Screw and pre-drill hole size shall be as shown on the plans.

Crushed stone shall conform to Subsection 703-02, Coarse Aggregate, Size 2.

Wood stain materials shall be approved by the Engineer.

### **CONSTRUCTION DETAILS:**

The installation shall conform to applicable provisions of Subsection 606-3 except as otherwise herein specified. The Contractor shall construct the fence in accordance with the details shown in the contract documents and provide all incidental work to ensure that the fence is plumb, straight and true.

The posts may not be driven but shall be installed in excavated holes. The bottom 12-inches of the excavated hole directly under each railing post shall be filled with compacted crushed stone prior to setting the posts. The post holes shall be completely backfilled and well-tamped with soil excavated from the holes with exception of large stones.

The completed fence shall be stained with an opaque wood stain, the color of which shall be as specified by the Regional Landscape Architect, and approved by the Vermont Agency of Transportation Historic Preservation Officer. The Contractor shall provide samples of the proposed fence material with the final stain color and finish to the Regional Landscape Architect and VTrans SHPO for final approval prior to ordering materials.

**METHOD OF MEASUREMENT:**

The work will be measured as the number of linear feet of wooden pedestrian railing actually installed, measured along the top of the railing, center to center of end posts. No additional allowances shall be made for end or corner posts.

**BASIS OF PAYMENT:**

The unit price bid per linear foot shall include the cost of all labor, materials and equipment necessary to complete this work. Excavation, backfill, and crushed stone are included in the cost of this item.

## **ITEM 610.16XXNN24 - TURF ESTABLISHMENT – SEED MIX AS SPECIFIED**

### **DESCRIPTION**

This work shall consist of furnishing, placing and establishing a turf seed mix at the locations shown in and in accordance with the contract documents as directed by the Engineer.

All information indicated in this specification as being "...as specified in the contract documents" will be contained in a special note titled, "*Turf Establishment – Seed Mix As Specified*" in the contract documents.

### **MATERIALS**

The following sections of the standard specifications shall apply:

Turf Establishment 610-2.03

with the following exceptions:

- the seed mix shall be as specified in the contract documents.

### **CONSTRUCTION DETAILS**

The following sections of the standard specifications shall apply:

Turf Establishment 610-3.03

with the following qualifications:

- The application rate of the seed mix shall be as specified in the contract documents.
- Initial watering shall be a minimum 1" depth of water applied over all seeded areas.
- The acceptance criteria shall be indicated in the contract documents as one of the following:
  - §610-3.03 A. **Turf Establishment – Roadside**, or
  - §610-3.03 B. **Turf Establishment – Lawns**, or
  - **Turf Establishment – Mowing not Included.** Areas will be accepted when:
    - free from thin or bare ground greater than one foot in diameter,
    - ground surface is covered with established specified permanent turf species at a uniform density of at least eighty percent (80%),
    - turf growth height of at least eight inches (8"), and
    - turf exhibits healthy green color.
  - **Turf Establishment – Permit Requirements.** Areas will be accepted when:
    - free from thin or bare ground greater than one foot in diameter or compliant with permit requirements,
    - the ground surface is covered with established specified permanent vegetative species at a uniform density of at least eight percent (80%), or compliant with permit requirements,
    - compliant with permit conditions not listed here, and
    - determined healthy (visual inspection) as indicated by color and vigorous growth.

**ITEM 610.16XXNN24 - TURF ESTABLISHMENT – SEED MIX AS SPECIFIED**

**METHOD OF MEASUREMENT**

The work will be measured as the number of square yards on slope to the nearest whole square yard on slope of turf seed mix furnished, placed and established.

**BASIS OF PAYMENT**

The unit price bid for turf establishment - seed mix as specified shall include the cost of all labor, materials and equipment including initial water, mulch and mulch anchorage as necessary to satisfactorily complete the work.

Where:

XX indicates the region using the specification (e.g. 05 for Region 5; 10 for Region 10), and NN is a serialization for each unique turf seed mix established using this specification.

**ITEM 621.51000015 - GRADING CLEANING AND RESHAPING EXISTING DITCHES**

**Description:** This work shall consist of grading, cleaning and reshaping existing ditches so that adequate, unobstructed free flowing drainage is restored.

The Contractor shall:

- A. Grade, clean and reshape the existing ditches including removal of excess material as ordered by the Engineer to restore drainage.
- B. Shape the backslope in cut sections up to the final elevation of the nearest edge of pavement.

**Materials:** (Not Specified)

**Construction Details:** The grading, cleaning and reshaping of existing ditches shall consist of rendering the ditches free of obstructions including the removal of earth, sod, brush and debris.

Material removed from existing ditches shall be disposed of in conformance with the provisions of subsection 203-3.02 B. *Disposal of Surplus Excavated Materials*.

The Contractor shall exercise due care to protect all trees, fences, markers, culverts, underground structures, utilities and installations within and adjacent to the work area. Facilities damaged by the Contractors operation shall be replaced in kind at no expense to the State.

**Method of Measurement:** This work shall be measured as the number of linear feet of ditch along which such above described work is performed.

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

- A. Seeding and mulching of disturbed areas within the ROW.
- B. Cleaning of culverts.
- C. Required shoulder excavation as ordered by the Engineer.
- D. Required shoulder trimming and reshaping as ordered by the Engineer.
- E. Slope excavation and shaping in cut sections required above the final elevation of the nearest edge of pavement.