

Georgia Department of Transportation

Construction Engineering Inspection Training

Incidental Items—Group 3

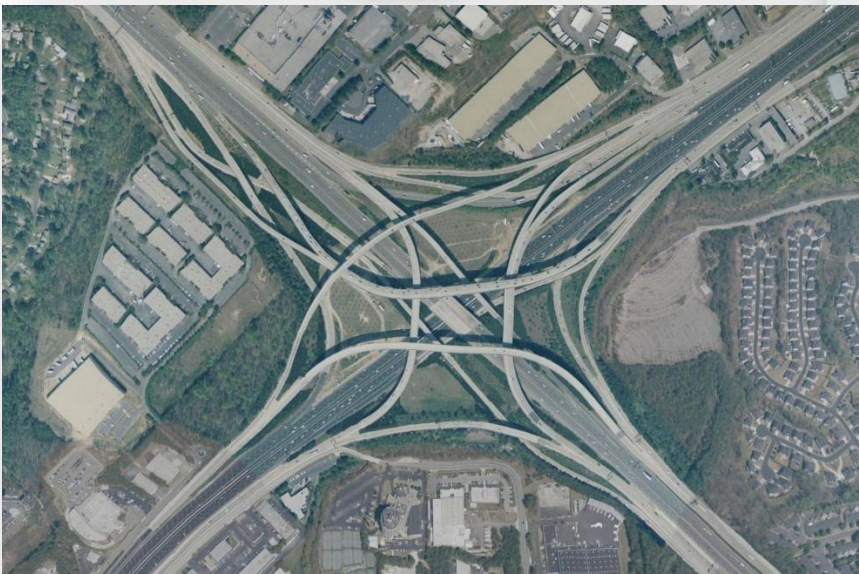


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Section 581: Pot Bearing

Assembly

- Have each pot bearing assembled at the plant, marked for identification, and delivered to the site as a complete unit
- Ensure each bearing is marked with permanent match-marks to indicate the normal position of the bearing
- Includes furnishing and installing pot bearings (see Sections 581.1.03.A and B)



Handling Pot Bearing

- Protect each pot bearing from dust and moisture
- Store the surface in the shade to avoid the damaging effects of ultraviolet rays
- Protect from damage during construction and prevent contamination of the various components of pot bearings

Responsibilities of the Bearing Manufacturer Skilled Representative

- Give aid and instruction during the pot bearing installation
- Be present during the initial bearing installation
- Be present during welding of the pots to the masonry plates
- Remain on the job until the bearing installation proceeds without trouble
- Have each bearing assembled at the manufacturer's plant, marked for identification, and delivered to the construction site as a complete unit
- Ensure the bearings have permanent match-marks to indicate the normal position of the bearing



Construction

- Install pier tops horizontal at the correct elevation
- Cast anchor bolts in concrete or set them in preformed holes
- Insert anchor bolts to the prescribed depth
- Set masonry plates to the proper elevation on the previously finished concrete pads
- Place bearings at predetermined locations when erecting the superstructure
- Adjust bearings as required

Place additional grout as required in the annular space around anchor bolts until the grout is well packed and flush with the top surface of the concrete

Payment

- Pot bearing assemblies are measured and paid for by Lump Sum for each bridge

Related Specifications

Section	Title
501	Steel Structures
506	Expanded Mortar
535	Painting Structures
851	Structural Steel
852	Miscellaneous Steel Materials
885	Elastomeric Bearing Pads
886	Epoxy Resin Adhesives
887	Bearing Plates with Polytetrafluoroethylene Surfaces

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Section 600: Controlled Low Strength Flowable Fill

Construction

When using as backfill for pipe, where flotation or misalignment may occur, assure correct alignment of the pipe by using straps, soil anchors, or other approved means of restraint

Protect flowable fill from freezing for 36 hours after placement



Payment

- Flowable fill will be measured for payment in cubic yards (meters) in place and accepted when shown as a pay item in the Contract. When flowable fill is not shown as a pay item, include the cost of the work in the bid price for the appropriate item or in the overall bid.

Related Specifications

Section	Title
500	Concrete Structures
801	Fine Aggregate
830	Portland Cement
831	Admixtures
880	Water

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Section 603: Rip Rap

Foundation Preparation

- Prepare the ground surface where rip rap will be placed to conform with correct lines and grades before beginning the placement
- Compact new material with hand or mechanical tampers when filling depressions

Ensure toe ditch is 2 ft (600 mm) deep in original ground and the side next to the fill or cut has the same slope

- Begin placing rip rap in a toe ditch constructed in the original ground around the toe of the fill or cut slope
- Compact new material with hand or mechanical tampers when filling depressions
- Backfill the toe ditch and spread excess dirt neatly within the right-of-way as an incidental part of the work after placing rip rap



Stone Rip Rap Placement

Rip Rap Type	Placing Description
Stone Plain	<ul style="list-style-type: none">• Dump and handle stone into place to form a compact layer to design thickness
Stone Dumped	<ul style="list-style-type: none">• Dump stone into place to form a uniform surface as thick as specified in the plans• Use recycled concrete only when materials do not contain steel after processing
Stone Grouted	<ul style="list-style-type: none">• Prevent earth from filling the spaces between the stones• Fill spaces between 1:3 grout composed of portland cement and sand mixed thoroughly with enough water to make a thick, creamy consistency• Place grout beginning at the toe• Finish by sweeping with a stiff-bristle broom



Filter Placement

- Prepare the surface to receive fabric until it is smooth and free from obstructions, depressions, and debris
- Place the fabric with its long dimension running up the slope
- Place strips to provide the width at least 1 ft (300 mm) of overlap for each joint

Do not drop stones more than 3 ft (1 m) during construction

- Anchor filter fabric in place with securing pins of the type recommended by the fabric manufacturer
- Place fabric so that the upstream strip will overlap the downstream strip
- Loosely place fabric to prevent stretching and tearing during stone placement
- Always protect fabric during construction from clogging due to clay, silts, or chemicals
- Remove contaminated fabric or fabric damaged during installation or rip rap placement

Payment

- Rip rap is paid at the Contract Price per square yard (meter) of material complete in place
- Plastic filter fabric will be measured and paid for per square yard as the area of rip rap placed and accepted

Related Specifications

Section	Title
800	Coarse Aggregate
801	Fine Aggregate
805	Rip Rap and Curbing Stone
815	Graded Aggregate
830	Portland Cement
832	Curing Agents
880	Water
881	Fabrics

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Section 607: Rubble Masonry

Shaping the Stone

- Roughly square the stones on joints, beds, and faces
- Use selected stone roughly squared and pitched to line at angles and ends of walls
- If specified, finish corners or angles in exterior surfaces with a chisel draft
- Shape and dress it before laying stone in the wall

No dressing or hammering the stone after it is placed

Laying the Stone

- Decrease stone thickness from the bottom to the top of the wall
- Ensure headers in the wall are the same size as shown in the face
- Ensure that headers in walls 2 ft (600 mm) or less in thickness extend through the wall
- Headers shall occupy at least 20% of the wall's face



- Lay masonry to line and in roughly leveled courses
- Lay courses with leaning beds parallel to the natural bed of the material
- Regularly diminish the thicknesses of the courses

Do not lay masonry in freezing weather or when the stone contains frost, except with permission

Weep Holes

- Provide adequate drainage for retaining walls with weep holes as shown on the plans or required by the Engineer
- Build chimneys and French drains extending through parts to be filled and drained when backfilling weep holes



Copings

- Use copings, bridge seats, and back walls made from materials shown on the plans
- Use Class A concrete

Payment

- Masonry is paid at the Contract Price per cubic yard (meter) for mortar rubble masonry or dry rubble masonry, complete in place

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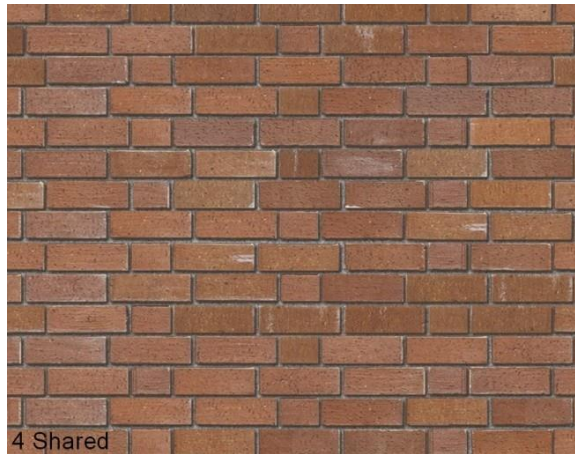
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Section 608: Brick Masonry

Select brick for exposed surfaces, corners, etc. from brick approved as to color and uniformity

Concrete Handling and Placement

- Ensure concrete reaches its final position within 1 hour after adding cement to the aggregates
- Use the following to transport concrete from truck to forms:
 - Buckets
 - Buggies
 - Pumps
 - Other approved means
- Place concrete without delays



Laying Brick

- Saturate brick with water before laying it
- Lay brick using the shove-joint method to bond into the mortar
- Arrange headers and stretchers to bond mass thoroughly
- Ensure at least 1 course in 7 is a header course
- Finish joints properly as the work progresses

Do not lay brick in freezing weather or when bricks contain frost



Payment

- Brick masonry is paid at the Contract Price per cubic yard (meter), or per thousand (M) bricks, for brick masonry complete

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Section 609: Removal of Portland Cement Concrete Roadway Slabs

The Engineer will determine which slabs to remove and replace and whether to use full or partial slab replacement

Partial Slab Replacements

- Remove and replace at least 6 ft (1.8 m) of slab measures longitudinally and 12 ft (3.6m) measured transversally
- Saw the slab full depth longitudinally along the center-line joint and shoulder joint and transversely along the area marked for removal
- Remove saw slurry and other contaminants from the over-cutting beyond the limits of the removal area
- Remove the damaged slabs by lifting



- Drill holes in each slab section to accommodate the expanding type lift anchors
- Repair the damaged shoulder area to the Engineer's satisfaction
- Enlarge the removal area to include damaged sections of adjacent concrete
- Any slab removal beyond the limits determined by the Engineer will be at no additional cost to the Department for removal and replacement
- Remove loose underlying base material to produce a sound, well-compacted base
- Tamp the material loosened in the removal process to the Engineer's satisfaction
- Dispose of slabs and underlying base material removed during this work
- Obtain the disposal site and necessary permits and agreements

Note: Avoid damaging the pavement base, shoulder, or sides that will not be removed



Payment

- Payment is full compensation for sawing, cleaning, repairing over-cutting, and removing and disposing of the concrete and any underlying base material per square yard

Related Specifications

Section	Title
886	Epoxy Resin Adhesives

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Section 610: Removal of Miscellaneous Roadway Items

This work includes removing, salvaging, or disposing of items listed in the Proposal as Pay Items to be removed, and backfilling the excavations made during removal.

Remove structures not separately listed as Pay Items in the Contract as specified in Sections 201, 202, or 205

Protection of Remaining Structures

- Do not use explosives, equipment, or devices that may endanger structures, facilities, or other property to remain in place
- If parts of structures are to remain in place, protect those parts from damage during construction
- Protect and preserve the salvage value of materials to be salvaged

Separate and remove existing structures with their attached parts and connections

Inlets, Catch Basins, Manholes, and Culverts

- Remove gratings, traps, and other metal casting of inlets, catch basins, and manholes without damaging them
- Remove old culverts down to the ground level or to the adjacent water level
- Remove the bottom slabs of inlets, catch basins, manholes, and culverts



Removing Pipe

- Uncover the pipe to remove it without damage
- Exercise care in removing the pipe
- Replace pipe sections damaged by negligence

- Clean removed pipe and neatly stack it at points directed by the Engineer along the line of work

Backfilling

- Use approved materials in the backfill
- Compact backfill in layers no more than 6 in. (150 mm) thick with proper moisture content
- Use pneumatic tampers or other approved equipment



Raised Edge Curb

- Remove the raised edge curb to a reasonably true line at elevation of normal finished pavement
- Do not shatter pavement that will be retained

Removal of Existing Building Structures

- Demolish, remove, and dispose of all building structures within the right-of-way and easement areas, including concrete slabs, footings, and foundations
- Grade all disturbed ground to a reasonably smooth and pleasing appearance
- Provide a copy of all inspection reports of structures to demolish to the Georgia Environmental Protection Division (EPD)

Inspect all building structures for the presence of asbestos

Payment

- Miscellaneous roadway items are paid at the Contract Unit Price

Related Specifications

Section	Title
201	Clearing and Grubbing Right-of-Way
202	Random Clearing and Grubbing
205	Roadway Excavation
208	Embankments
540	Removal of Existing Bridge

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Section 611: Relaying, Reconstructing, or Adjusting to Grade of Misc. Roadway Structures

Miscellaneous Roadway Items Construction

- Remove existing structures to be rebuilt
- Clean material salvaged for use in the rebuilt structure and stockpile it in convenient places
- Dispose of portions of structures not suitable for reuse
- Relay or rebuild structures
- Adjust to the required grade miscellaneous structures specified in the proposal or on the plans by raising or lowering the upper portion of the fixture
- Furnish materials such as mortar, sand–cement grout, sand cushion, bituminous filler, brick, castings, and other materials to excavate, trench, prepare earth foundation, and backfill



Capping an Existing Structure

- Remove the improvements to expose only the portion of the structure to be modified
- Replace the removed improvements to the Engineer's satisfaction
- Remove enough existing masonry to lower the top elevation to a point not less than the thickness of the cap plus 3 ft
- Cap the remaining portion of the structure with a fitted reinforced concrete cover

Resetting Guardrail

- Reset guardrail that was removed
- Furnish materials, including additional hardware, offset blocks, and posts
- Replace posts that do not conform to the plans

Raising Manholes

- Adjustments may be made by using adjustable extension rings that do not require removal of the existing manhole frame



- Ensure that the extension device locks to the existing frame and permits height and diameter adjustment
- Choose an extension ring compatible with the existing casting and cover

Ensure that the extension ring and cover are machine ground
to reduce contact irregularity

Payment

- Reconstructing or adjusting miscellaneous roadway structures is paid at the Contract Unit Price

Related Specifications

Section	Title
854	Castings and Forgings

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Section 612: Construct, Maintain, and Remove Median Crossover



Construction

- Place materials to construct each crossover according to the applicable specifications and as directed by the Engineer
- Use temporary drainage structures, if required, as shown on the Plans or as directed by the Engineer. Use structures satisfactory for the required use. They do not have to be new
- Place and remove barricades and warning signs as directed by the Engineer
- Remove and dispose of materials when the Engineer determines that the crossover has served its purpose
- Reshape the area where the crossover was removed to comply with the appropriate typical section



Substitute loose sod if the Engineer approves

Payment

- Crossovers measured as shown above are paid at the Unit Price for each crossover constructed, maintained, and removed

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Section 613: Docks

When the Proposal include constructing docks, submit to the Engineer for approval three prints or a reproducible drawing showing the proposed construction details for each dock

Construction

- Ensure the dock is suitable for its intended purpose
- Select construction methods as approved by the Engineer
- Drive the pile deep enough to provide a safe dock under weather and construction conditions
- Payment will be made on a Lump Sum basis

Related Specifications

Section	Title
863	Preservative Treatment of Timber Products

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Section 615: Jacking or Boring Pipe

Pipe Jacking

- Excavate suitable pits or trenches for the jacking operation and for placing the end joints of the pipe
- Avoid interfering with facility operation and weakening of roadbed or structure during construction
- Use a jack with a head constructed to apply uniform pressure around the ring of the pipe
- Set the pipe to be jacked on guides, braced together properly to support the pipe section and to direct it to the proper line and grade



- Excavate the roadbed material just ahead of the pipe
- Force the pipe through the roadbed into the excavated space
- Use an approved mix to pressure grout any voids that develop during installation
- Ensure that the excavation does not extend beyond the pipe more than 2 ft (600 mm)
- Jack the pipe from the low or downstream end
- Use a cutting edge around the head end
- Remove and replace pipe damaged in the jacking operations
- After completing the jacking, immediately backfill the excavated pits or trenches



Pipe Boring

- Excavate for pits and shoring installation as outlined above
- Locate the pit at the Engineer's approval
- Bore holes mechanically using a pilot hole approximately 2 in. (50 mm) in diameter that is bored the entire length of the installation
- Place excavated material near the top of the working pit and dispose of it as required
- Ensure the diameter of the excavation conforms to the outside diameter of the pipe as closely as possible



Payment

- Jacking and boring pipe is paid at the Contract Price per linear ft (m) of the pipe type, size, and class specified

Related Specifications

Section	Title
205	Roadway Excavation
208	Embankments
550	Storm Drain Pipe, Pipe-Arch Culverts, and Side Drain Pipe
841	Iron Pipe
847	Miscellaneous Pipe

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Section 617: Permanent Anchored Walls

Definition

Anchor: Synonymous with the terms tie-back, tie-down, soldier piles, lagging, facing, and drainage

Design Engineer Requirements

- Be registered as a Professional Engineer in the state of Georgia
- Have considerable knowledge and experience in anchored walls
- Be available anytime during the Contract

Equipment

- Anchorage and hardware
- Anchor nut and plate for bars



Preparation

- Survey the condition of the adjoining properties
- Keep records and photograph any settlement or cracking of adjacent structures
- Deliver the report to the Department before beginning work at the site



Tendons Fabrication

- Keep the tendons free of dirt, rust, or other harmful substances
- Use a plastic sheath that is a single piece without splices
- Install the sheath at the fabrication drilled location
- Handle and store tendons so as to avoid corrosion and physical damage before installation
- Repair damaged coatings in the field at the Engineer's approval

Payment

- Anchored walls are paid per Lump Sum

Related Specifications

Section	Title
500	Concrete Structures
511	Reinforcement Steel
853	Reinforcement and Tensioning Steel

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Section 620: Temporary Barrier

Definitions

Method 1:

- Method of furnishing, placing, maintaining, moving, and reusing where required and removing temporary barrier of the proper length and at proper locations
- Not suitable on bridges where the distance from the centerline of the barrier to the free edge of the bridge deck is less than 6 ft (1.8 m)

Method 2:

- Used on bridge and bridge approaches where the distance from the centerline of the barrier to the free edge of the bridge deck is less than 6 ft (1.8 m)



Construction

Method 1

- Ensure that units are complete and in acceptable condition
- Interconnect all barrier sections within each single run of barrier

Handle and transport units to prevent damage

Method 2

- Rigidly attach the barrier to the bridge deck and extend it off the bridge a transition distance
- Use nonshrink grout to fill any holes remaining in the permanent bridge decks after the barrier is removed



Payment

- Temporary barrier is paid at the Contract Price per linear ft (m) of barrier Method 1 or barrier Method 2

Related Specifications

Section	Title
500	Concrete Structures
501	Steel Structures
511	Reinforcement Steel

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Section 621: Concrete Barrier

Preparation

- Finish the subgrade to the required lines, grade, and cross section
- Compact the subgrade to 100% of the maximum laboratory density
- Determine the maximum laboratory dry density from representative samples of the material compacted



Formed or Slipformed Barriers

- Place the concrete using conventional forms or an approved self-propelled extrusion machine
- Construct joints of the type and at the locations specified on the plans
- The Engineer will decide whether to allow a construction joint and will direct where and how to construct the joint
- The outside vertical face of the side barrier or parapet may be battered



Slipformed Barriers

- Use extrusion machines designed to place concrete barrier or parapet without using forms
- Conform the barrier or parapet to the established shape, line, grade, and dimensions
- Obtain the proper density and cross section by forcing an approved concrete mix through a mold of the proper cross section
- Ensure the extrusion machine consolidates the freshly placed concrete in one complete pass



Use a steel trowel to repair and correct the concrete surface

Payment

- Concrete barrier is paid at the Contract Unit Price per linear ft (m) for each barrier type

Related Specifications

Section	Title
433	Reinforced Concrete Approach Slabs
500	Concrete Structures
833	Joint Fillers and Sealers
853	Reinforcement and Tensioning Steel

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Section 623: Pneumatically Applied Concrete

Personnel

- Have qualified machine, nozzle, and re-bond operators prepare and apply pneumatically applied concrete under the supervision of qualified superintendents

Equipment

- Use equipment in good operating condition on the Project

Earth Foundation Preparation

- Compact and finish the area upon which the pneumatically applied concrete will be placed to the lines and grades shown on the plans
- Ensure the foundation contains enough moisture to provide maximum density and to avoid absorbing water from the concrete



Bonding Foundation Preparation

- Remove unsound or deteriorated concrete, loose particles, dust, and dirt
- Clean steel members by sandblasting loose rust, scale, or other deleterious material
- Keep the bonding surface wet for at least 1 hour before applying the concrete
- Remove any free water immediately before placing

Construction

Earth Foundation Construction

- Use gauging wires to establish finish grade lines, surface planes, and plan thickness
- Place joints, side forms, shooting strips, weep holes, and reinforcement



Bonding Foundation Construction

- Reinforce and form concrete according to plan details
- When sloping, vertical, or overhanging work surfaces require successive layers or thickness, allow enough time between application of layers to permit an initial set

Placing Reinforcement

- When dowels or anchor bolts are specified, securely fasten the reinforcing steel to them
- Lap the welded wire fabric at least 4 in. (100 mm) and firmly tie the full area of mesh or fabric in position with wire ties
- Place welded wire fabric around the top of slab-carrying beams and girders before pouring the slab
- Place the reinforcement at least ½ in. (15 mm) from the surface on which the concrete is to be placed



Finishing

- Screenshot the surface and check it with a 10-ft (3 m) straightedge
- Remove and replace loose areas of pneumatically applied concrete at the Contractor's expense
- Protect the adjacent areas that are not to be covered and clean them after application if necessary

The Contractor is responsible for all concrete mix designs

Payment

- Pneumatically applied concrete is paid at the Contract Price per square yard (meter) of paving or per ton (megagram) of cement, as specified

Related Specifications

Section	Title
441	Miscellaneous Concrete
500	Concrete Structures
800	Coarse Aggregate
801	Fine Aggregate
830	Portland Cement
832	Curing Agents
833	Joint Fillers and Sealers
853	Reinforcement and Tensioning Steel
880	Water

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Section 624: Sound Barriers

Wall Types

Type B Wall

- Install steel noise barrier walls
- Repair cut, scratched, or marred surfaces

Type C Wall

- Concrete precast concrete panels
- Cast them in a precasting facility approved by the Engineer
- Cast the panels on a steel surface with steel side forms



Type D Wall

- Construct the wall of tongue-and-groove panels placed in a horizontal configuration

Type F Wall

- Do not install walls with burns, discolorations, or cracks

Type G Wall

- Cast PAAC panels in a precasting facility approved by the Engineer

Construction Steps for Type C Wall

- Ensure the curing period is at least 72 hours under normal temperature conditions
- Protect panels from freezing from the time the concrete is placed until curing is complete
- Mark each panel with the date cast and the Inspector's approval stamp



Wall Construction

- Protect the final ground elevations established in the field for the duration of the Project
- Install sound barriers according to the plans and shop drawings approved by the Engineer
- Secure joints and connections to be structurally sound with no visible openings
- Repair marred, chipped, scratched, or spalled barrier areas
- Place trench backfill for sound barrier construction
- Dispose of excess excavation to the Engineer's satisfaction
- Leave the disturbed area in a finished condition at the Engineer's direction, and plant grass or sod

Apply the graffiti-proof coating in weather recommended by the manufacturer

Payment for Sound Barrier will be per square foot

Related Specifications

Section	Title
106	Control of Materials
201	Clearing and Grubbing Right-of-Way
205	Roadway Excavation
206	Borrow Excavation
208	Embankments
210	Grading Complete
500	Concrete Structures
520	Piling
865	Manufacturing of Prestressed Concrete Bridge Members
885	Elastomeric Bearing Pads

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Section 626: Mechanically Stabilized Embankment Retaining Walls

Wall Crew Supervisor

- Ensure that the wall crew supervisor has previous satisfactory experience in erecting mechanically stabilized walls



Wall Erection

- Adjust the batter to allow for the effect of backfill type, equipment, and construction method on panel movement
- Place panels in successive horizontal lifts as backfill is placed
- Maintain a panel in a vertical position when backfilling
- Use external bracing for the initial lift
- Place cast-in-place concrete on top of the wall panel to bring the precast coping elements on top of the wall to the proper grade

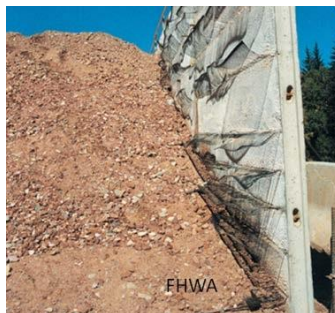


Joint Fillers

- Cover joints that are located in a flood plain or other intermittently inundated areas
- At other locations, cover joints between panels with a woven or nonwoven plastic filter fabric sheet
- Caulk the openings on either side and between the pads
- Ensure that the minimum width based on the manufacturers recommendations of the plastic filter fabric sheets is used.
- Overlap the filter fabric with the joint at least 4 in. (100 mm)
- Glue the filter fabric to the panels

MSE Wall Backfill

- Place backfill lift to a uniform thickness and place it from the back face of the wall to 1 ft (300 mm) beyond the end of the soil-reinforcing device level
- Compact the backfill to the full length of the reinforcing devices at each soil-reinforcing device level and slope it to drain away from the wall
- Level the compacted backfill with the connecting device before connecting the reinforcing device
- Repair damaged soil-reinforcing devices or panels before attaching and backfilling the reinforcing devices
- Place soil-reinforcing devices at 90° to the face of the wall
- Ensure maximum lift thickness is 8 in. (200 mm) loose and closely follows panel erection
- Compact embankment backfill material to at least 100% of maximum laboratory dry density
- Compact the embankment backfill material without disturbing or displacing the reinforcing devices and panels



Storm Drains

- Provide precast panels that have the appropriate storm drain openings into panels at elevation and locations indicated on drainage profiles
- Place catch basins so that pipes will enter perpendicular (plan view) to the panels or below the leveling pads as shown on the plans
- Coordinate the catch basin construction and the storm drain placement with the wall construction

Payment will be made under:

Concrete fascia panels Per square foot (meter)
Backfill stabilizing devices Per linear foot (meter)
MSE wall backfill material Per cubic yard (meter)
Concrete leveling pad Per linear foot (meter)
Cast-in-place coping A Per linear foot (meter)
Cast-in-place coping B Per linear foot (meter)
Traffic barrier V Per linear foot (meter)
Traffic barrier H Per linear foot (meter)
Precast coping Per linear foot (meter)

Related Specifications

Section	Title
106	Control of Materials
208	Embankments
500	Concrete Structures
511	Reinforcement Steel
514	Epoxy Coated Steel Reinforcement
535	Painting Structures
645	Repair of Galvanized Coatings
809	Geogrid Materials
812	Backfill Materials
848	Pipe Appurtenances
865	Manufacture of Prestressed Concrete Bridge Members
867	Epoxy Coated Reinforcement Strips
870	Paint

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Section 627: Mechanically Stabilized Embankment Retaining Wall—Contractor Design

Contractor Requirements

The Contractor must meet the following requirements:

- Be experienced in the construction of mechanically stabilized embankment (MSE) walls
- Have a supervising engineer for the Project with at least 5 years of experience in MSE walls
- Have evidence of the successful completion of at least 5 Projects similar in concept and scope to the proposed wall



Wall Envelope

The Department's plans will include a wall envelope that will show:

- Existing and proposed ground line
- Maximum elevation of the top of the leveling pad
- Proposed top of coping or proposed gutter line elevations
- Soil parameters for the wall design
- Location of any internal walls required
- Location of other appurtenances
- Backfill design conditions
- Depth of wall embedment
- Location of drainage structures and other obstructions in the wall backfill



The Engineer must approve any changes to the wall envelope

Payment will be made under:

MSE wall face, wall No. __0 -10 ft (0 -3 m) Per square foot (meter)

MSE wall face, wall No. __>10 -20 ft (3 -6 m) Per square foot (meter)

MSE wall face, wall No. __>20- 30 ft (6 -9 m) Per square foot (meter)

MSE wall face, wall No. __>30 ft (6 -9 m) Per square foot (meter)

Coping, A, wall No. __ Per linear foot (meter)

Coping, B, wall No. __ Per linear foot (meter)

Related Specifications

Section	Title
106	Control of Materials
208	Embankments
500	Concrete Structures
511	Reinforcement Steel
514	Epoxy Coated Steel Reinforcement
535	Painting Structures
812	Backfill Materials
848	Pipe Appurtenances
865	Manufacture of Prestressed Concrete Bridge Members
870	Paint

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 632: Portable Changeable Message Signs

Portable Changeable Message Sign (PCMS) Equipment

PCMS equipment must:

- Have a control system with a keyboard to allow programming of user-defined messages
- Have primary and backup power sources
- Be capable of adjusting its brightness from daylight to nighttime conditions
- Be capable of displaying 3 lines of legend
- Have a minimum reliability for its primary power supply for a minimum of 14 days for solar units



Gasoline-powered units are not allowed

- Have a message displayed on the sign that is visible for 3000 ft (915 m) and legible for not less than 650 ft (198 m) during both daytime and nighttime operation
- Have a self-contained unit that includes a control system with keyboard, primary and backup power source, and mounting and transporting equipment
- Be capable of raising the bottom of the message sign panel a minimum of 7 ft above the roadway



Utilization Requirements

- Utilize PCMS whenever any condition(s) exists that requires extra emphasis in warning motorists of a situation
- The Engineer should determine the location of the PCMS

- Use PCMS on Interstate, limited-access, and multi-lane divided highways if requirements are met
- Use on all other types of roadways according to the traffic control plan or as directed by the Engineer



PCMS Phase Messages

Messages are displayed in preferably one phase but no more than two phases.

The first phase directs the motorist to take a specific action, such as MERGE/RIGHT, KEEP/RIGHT, OR REDUCE / SPEED.

The second phase, if necessary, is used to inform the motorist of road conditions such as LEFT/LANE/CLOSED; LANE/NARROWS/AHEAD; WATER/IN/ROAD; SHOULDER/DROP OFF; TRUCKS/IN AND/OUT.

Do not use messages such as USE/CAUTION; HAZARD/AHEAD; or DANGER which are confusing and give no guidance to the motorist. Also, do not use messages such as BUCKLE/UP or DRIVE/SAFELY which diminish the impact of important and relevant messages

Payment

- Changeable message signs, complete with appurtenances, are paid at the Contract Unit Price per each

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 634: Monuments and Road Markers

Construction

- Set the monuments and road markers in the ground to the depth shown on the plans
- Use backfilling material of the selected earth or gravel
- Carefully tamp it in place so that the monument is stable and secure
- Use a level to set it plumb in all directions

Payment

- Monuments and road markers are paid at the price bid for each, complete in place

Related Specifications

Section	Title
500	Concrete Structures



Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 635: Barricades

Construction

- Use timber barricades to warn and alert drivers of the terminus of a road, street, or highway in a nonconstruction or nonmaintenance area
- Install timber barricades where called for on the plans or directed by the Engineer
- Ensure barricade rails are marked with alternate red and white stripes
- Have stripes slope downward in both directions from the center of the barricade if traffic may turn right or left



- Make the entire red-and-white striped area of retroreflectorized sheeting materials
- Make other barricade components white
- Ensure that the barricade has 3 rails as long as specified on the plans
- Promptly clean, repair, or replace barricades that are damaged or defaced

Payment

- Barricades are paid at the Contract Unit Price per linear ft (m) of barricade

Related Specifications

Section	Title
860	Lumber and Timber
862	Wood Posts and Bracing
863	Preservative Treatment of Timber Products
870	Paint
913	Reflectorizing Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 636: Highway Signs

Sign Erection

- Drive posts in place or place in prepared holes
- Backfill holes with damp, clean, friable soil and 8% by volume of portland cement
- Thoroughly tamp the mixture in place around the posts
- Erect steel posts for mast arm assemblies in a concrete foundation
- Securely fasten the specified signs into place on the mast arm after curing the concrete foundation for at least 24 hours



- Erect supporting members of ground-mounted panel-type signs where shown on the plans
- Securely fasten the panels into place
- Erect milepost signs including posts
- Use delineator posts made of galvanized steel, aluminum, or an alloy
- Mount reflectors for galvanized steel or aluminum posts on the flange side of the post

Ensure that the finished signs are clear cut and that the lines of letters and details are true, regular, and free of waviness, unevenness, furry edges or lines, scaling, cracking, blistering, pitting, dents, or blemishes



Steps to Erect Special Roadside Signs

- Excavate for the footing to the lines and elevations shown on the plans or established by the Engineer
- Do not disturb or loosen the foundation below these elevations
- Use forms of the necessary shape and dimensions to construct the footings to the lines and elevations shown on the plans
- Cure the concrete foundations at least 7 days before erecting the sign
- Ensure that the minimum lengths of steel H piling used in the foundations of ground-mounted signs are accepted
- Furnish a list of proposed pile lengths to the Engineer before driving the piles
- Place required backfilling in layers no greater than 6 in. (150 mm) thick and thoroughly compact to the approximate density of the undisturbed soil in the area



Payment

- Highway signs are paid at the Contract Unit Price for the various items



Related Specifications

Section	Title
500	Concrete Structures
830	Portland Cement
855	Steel Pile
870	Paint
910	Sign Fabrication
911	Sign Posts
912	Sign Blanks and Panels
913	Reflectorizing Materials
914	Sign Paint
915	Mast Arm Assemblies
916	Delineators
917	Reflectors and Nonreflective Characters

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 637: Illuminated Sign System

Power Control

- The photoelectric control operates the lighting conductor that supplies power to the lighting circuit
- Furnish and install a weatherproof transformer to provide a 120 V control voltage
- Enclose the wiring to and from the photoelectric control in rigid galvanized conduit



Grounding Rods

- Install grounding rods adjacent to each structural support foundation where the supply voltage enters, and adjacent to the service pole
- Solidly connect the grounding conductor sign framework and metallic, noncurrent-carrying material in the lighting system
- Ensure the neutral/grounding conductor is continuous and connected to the luminaire housing
- Drive the single ground rods vertically until the top of each rod is at least 12 in. (300 mm) below the finished ground

Externally Illuminated Signs

- Ensure the lighting system provides on the face of the signs at least 30 foot-candles
- Mount luminaires so that the top of the luminaire is at least 18 in. (450 mm) below the bottom edge of the sign and at a horizontal distance to provide uniform luminaires
- Support the luminaires and conduit runs with a framework of aluminum or hot-dipped galvanized steel channel solidly fastened to the structural support with galvanized steel or aluminum clamps



Do not drive holes in the structures

- Ensure luminaires are accessible from the maintenance walkway for lamp replacement
- Use ballasts when using multiple circuits when operating at voltages shown on the plans
- Provide a light shield plate made of a specified material is at least 0.10 in. (2.54 mm) thick
- Erect the shield below the signs at an elevation that will eliminate glare from the luminaires to motorists traveling in the opposite direction from the face of the sign



Payment

- Illuminated signs are paid at the Lump Sum Price bid for each system

Related Specifications

Section	Title
150	Traffic Control
500	Concrete Structures
863	Preservative Treatment of Timber Products
911	Sign Posts
923	Electrical Conduit

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 638: Structural Supports for Overhead Signs

Protection of Metal

- Protect all metal components to prevent damage of galvanized coatings
- Handle galvanized steel components with rope slings
- Do not use metal slings, chains, or hooks on galvanized surfaces

Metal components will be rejected if they have extensive damage to the galvanizing

Foundations

- Chamfer the edges of the stems $\frac{3}{4}$ in. (19 mm)
- Ensure stems have a Type III finish to at least 6 in. (150 mm) below the finished ground surface
- The Engineer must inspect the anchor bolt assembly installation before placing concrete
- Do not remove the temporary template until the footing and stem concrete have been in place at least 24 hours



Erection

- Place and level a leveling nut on each anchor bolt
- Use a washer with each leveling nut
- Set the column on the washers without the horizontal structure and tighten a washer and secure a nut on each anchor bolt
- Inspect the connections to ensure full bearing of the top and bottom of the washers on the base plate
- No structure will be accepted if this dimension is greater than 4 in. (100 mm)



Grounding

- Vertically drive a single, 8-ft (2.4 m) long ground rod until the top of the rod is at least 12 in. (300 mm) below the finished ground
- Attach a length of #6 bare copper, 7-strand wire to the ground with suitable ground rod clamps
- Connect the wires to the grounding nut of the column

Payment

- Structural supports for overhead signs are paid at the Lump Sum Contract Unit Price bid

Related Specifications

Section	Title
207	Excavation and Backfill for Minor Structures
500	Concrete Structures
501	Steel Structures
511	Reinforcement Steel
833	Joint Fillers and Sealers
852	Miscellaneous Steel Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 639: Strain Poles for Overhead Sign and Signal Assemblies

Timber Poles Construction

- Excavate the hole to the proper diameter and depth
- Erect the pole to an out-of-plumb position with its base resting on the bottom of the hole
- Hold the pole in its out-of-plumb position until the cavity around the pole is filled and compacted



Prestressed Concrete Poles Construction

- Do not disturb the natural ground adjacent to the foundation more than necessary to construct the foundation
- Excavate to the lines and elevations shown on the plans
- Dispose of the excavated materials as directed
- Regrade and grass the disturbed areas to match the contiguous area
- Backfill according to the plans
- Furnish and place Class A concrete
- Burn off and patch lifting eyes or loops on the pole that facilitate handling

Ground Rod

- Use exothermic weld or ground rod clamps to attach the length of copper wire to the ground rod
- Place 3 parallel ground rods at least 6 ft (1.8 m) center-to-center in a horizontal pattern and at least 12 in. (300 mm) below the finished ground



Cable Erection

- Install the top cable 6 in. (150 mm) from the top of the pole
- Install the bottom cable no more than 5 ft (1.5 m) from the pole's top
- Secure the cable to each pole
- Use preformed cable grips instead of cable clamps
- Apply enough tension to pull the timber poles toward each other past the plumb position by one degree

Minimum sag of a cable attached to a timber pole is 2.5%

Related Specifications

Section	Title
500	Concrete Structures
852	Miscellaneous Steel Materials
861	Piling and Round Timber
863	Preservative Treatment of Timber Products
865	Manufacture of Prestressed Concrete Bridge Members
915	Mast Arm Assemblies

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 640: Retroreflectorized Railroad Cross Buck Sign

Setting a Steel Post

- Set each steel post for a sign assembly in a concrete foundation
- Securely hold each post vertically until the concrete is strong enough to hold the post and sign without support
- Replace cracked bases
- Carefully tamp the backfill in place



Setting a Wood Post

- Place each post in the prepared dry hole of at least 6-in. (150 mm) diameter
- Backfill the hole with a mixture of Portland cement and damp and clean soil using 8% cement by volume
- Thoroughly tamp the resultant mixture into place around the post
- Erect the post vertically to a depth and angle provided in the project specifications to the roadway
- Ensure the post penetrates the ground at least 4 ft (1.2 m)



Backfill around the bases with satisfactory material

Payment

- Retroreflectorized railroad cross buck signs are paid per each

Related Specifications

Section	Title
500	Concrete Structures

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 641: Guardrail

Guardrail Post Erection

- Do **not** allow use of wood posts at any location except as required for guardrail anchorage
- Set posts in post holes or drive them vertically at the positions, depth, spacing, and alignment shown on the plans
- Install posts for guardrail on bridges or other structures as detailed on the plans
- Backfill post holes to the ground line with approved material tamped in place
- Protect the tops of posts with a suitable driving mat or cap

Do not cut posts that are too high—drive them to the proper elevation.

- Backfill post holes that are drilled in rock
- Remove and reset posts that are out of alignment or too low in grade
- Fit posts with an offset block
- Set additional posts and appurtenances according to requirements of the GDOT Standard Specifications and project plan details



Guardrail Construction

- Erect rails to attain a smooth, continuous rail line that conforms to the line and grade of the highway
- Use bolts long enough to extend at least ¼ in. (6 mm) beyond the nuts after they are firmly tightened

- Install reflectorized washers on guardrail and anchorages
- Install reflectorized washers only on the side that is nearest traffic



Payment

- Guardrail, of the type specified, complete in place including posts, offset blocks, and hardware, are paid at the Contract Price per linear ft (m)
- Guardrail anchorage assembly is paid at the Contract Price per each

Related Specifications

Section	Title
205	Roadway Excavation
208	Embankments
859	Guardrail
870	Paint

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 643: Fence



General Fencing Requirements

- Construct fence (except field fence) within the right-of-way line
- Do not allow permanent installation to encroach on adjacent property
- Construct fence to follow the contour of the ground
- Place the bottom of the fence fabric at least 1 in. (25 mm) from the ground surface

Connect existing cross fences to new fencing

- Clean the fence line a maximum of 8 ft (2.4 m) wide and grade where necessary
- Use longer posts to maintain ground clearance when the ground profile changes
- Place corner or end posts at the junction with existing fences and fasten wires in the new and existing fences to the posts
- Install corner or pull posts for new fencing without placing tension on existing posts



Post and Appurtenance Construction

- Place and install posts as shown on the plans
- Encase concrete line posts installed in marshy or swampy areas
- Encase the corner, end, and pull posts in concrete
- Replace posts damaged by driving
- Fill the entire hole around a post with Class A or B concrete
- Add additional approach posts for greater stability
- Fill space around the post with molten lead or a cement filler
- Repair posts after cutting or drilling
- Treat timber posts and braces with a preservative coating



Gates

- Ensure gate assemblies are the length, height, and type designated on the plans (must provide a 180-degree swing)

Temporary Barrier Fence

- Use suitable metal, wood, or composite posts
- Ensure the posts are long enough to be embedded to a depth that will provide stability to a fence
- Allow a maximum post spacing of 10 ft (3 m)
- Attach the fence to the posts with nails, staples, or wire ties spaced every 6 in. (150 mm) along the posts
- Do not allow the method of attachment to create a safety hazard

Payment

- Fence is paid at the Contract Unit Price per linear ft (m) of the specified type and height of fence
- Gates will be paid for at the Contract Unit Price per each type and size of gate specified

Related Specifications

Section	Title
500	Concrete Structures
862	Wood Posts and Bracing
863	Preservative Treatment of Timber Products
894	Fencing

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 645: Repair of Galvanized Coatings



Construction

- Apply repair compound smoothly and evenly with a moderately filled paint brush
- Apply when the temperature of the steel compound and surrounding air is above 45°F
- Ensure a minimum dry film thickness is 2 mils (0.05 mm) on smooth surfaces
- The Engineer may require one coat on rough and pitted surfaces

Do not brush over partly dried applications

Payment

- Repair of galvanized coatings is performed at the Contractor's expense

Related Specifications

Section	Title
870	Paint

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 647: Traffic Signal Installation

Do not modify the signal equipment, design, and operation without the District Traffic Operations Engineer's written approval

General

- Return to the District Traffic Signal Shops all traffic signal equipment removed or replaced
- Provide an inventory list and arrange a mutually agreeable delivery time with the District Signal Engineer a minimum of 24 hours in advance



Traffic Signal Equipment Modification and Removal

- Remove existing signal equipment that is not used in the final installation when the new signal equipment is operational
- Carefully remove equipment to minimize damage and retain it in its original form
- Replace traffic signal equipment that the District Signal Engineer determines has been damaged or destroyed during installation, modification, or removal of the traffic signal
- If the Engineer finds that the existing material shown in the plans to be relocated is unsatisfactory, replace it with new material
- Remove old signal heads by the end of the day
- Remove other signal equipment within 7 days after operation of the installed equipment

Signal Controller Installation

- Identify the controller and other auxiliary equipment by model and revision numbers
- Assemble the controller, cabinet, and auxiliary equipment to provide the operational sequence shown in the plans and future operations specified
- Ensure controller and auxiliary equipment are provided AC power from receptacles marked for controller power
- The Department will provide controller firmware
- The Contractor shall deliver signal controllers 30 days prior to installation



Cabinet Assembly

- Locate the cabinet in accordance with the plan location
- Install and level traffic signal controller cabinets at locations shown in the plans
- Do not allow the cabinet base to extend more than 9 in. above final grade

Signal Monitors

- Mount signal monitors in a rack with appropriate connectors to attach to the wiring harness
- Program the monitor according to the signal operation indicated in the signal plans
- Configure and equip the signal monitor to monitor all red signal indications



Power Disconnect

- Install a box at each intersection
- Ensure the power disconnect is installed at the top of the cabinet or as indicated on the plans
- Program the monitor according to the signal operation indicated in the signal plans
- Install service cables from the disconnect box and terminate

Payment

The lump price bid for Traffic Signal and/or Ramp Meter Installation covers all Items of work in this Specification including furnishing labor, materials, tools, equipment, and incidentals required to complete the work. Pull boxes and loop detectors will be paid for per each

Related Specifications

Section	Title
106	Control of Materials
107	Legal Regulation and Responsibility to the Public
108	Prosecution and Progress
150	Traffic Control
500	Concrete Structures
501	Steel Structures
535	Painting Structures
755	Electrical Work
800	Coarse Aggregate
801	Fine Aggregate
832	Curing Agents
833	Joint Fillers and Sealers
850	Aluminum Alloy Metals
852	Miscellaneous Steel Materials
853	Reinforcement and Tensioning Steel
854	Castings and Forgings
861	Piling and Round Timber
870	Paint
886	Epoxy Resin Adhesives
910	Sign Fabrication
911	Sign Posts
912	Sign Blanks and Panels
913	Reflectorizing Materials
915	Mast Arm Assemblies
922	Electrical Wire and Cable
923	Electrical Conduit
924	Miscellaneous Electrical Materials
925	Traffic Signal Equipment
926	Wireless Communication Equipment
927	Wireless Communication Installation
935	Fiber Optic System
936	Closed Circuit Television (CCTV)
937	Detection Systems
939	Communication and Electronic Equipment
940	NaviGator Advanced Transportation Management System Integration

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 648: Traffic Impact Attenuator

Definitions

Gating: A gating end treatment allows a vehicle impacting the nose or the side of the unit at an angle near the nose to pass through the device

Non-Gating: A non-gating end treatment is capable of redirecting a vehicle impacting the nose or the side of the unit along the unit's entire length



Construction

- Field locate the position of the attenuator nose as shown on the plans
- Increase the length of the concrete transition section or length of the longitudinal barrier as needed to provide a proper beginning point for the attenuator nose
- Consider the length of the system to be the combined length of the attenuator unit/array, the back-up system, and any required transition
- Ensure the length of the system is not excessive to the extent that it intrudes appreciably within the clear offset distance as shown on the plans
- Ensure temporary portable units/arrays are installed, moved, reinstalled, and maintained as required



Payment: Impact attenuator units/arrays will be paid per each type specified

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 649: Concrete Glare Screen

Glare Screen Alternatives

Construct the glare screen using one of the following:

- *Alternative One:*
 - Cast the median barrier and insert “D” bars into the fresh, plastic concrete
 - Wait until the median barrier concrete has reached a compressive strength of 2000 psi on an age of 7 days

- *Alternative Two:*
 - Wait until the median barrier concrete has reached a compressive strength of 2000 psi, then drill and place “D” bars
 - Construct the second course of barrier on top of the first course
 -

Payment

- Concrete glare screen is paid at the Contract Unit Price per linear ft (m) for each specified height

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 651: Raised Traffic Bars

Construction

- Use concrete materials, and mix and place Class A, air-entrained concrete
- Make forms accessible for tamping and vibrating concrete
- Do not use curing compound on the bottom surfaces

Cement Bar Installation to the Pavement

- Sandblast the highway surface of dirt, curing compound, grease, oil, moisture, loose or unsound layers, and other material that would prevent the bar adhesive from bonding
- Use epoxy resin type IR or IS
- Place enough adhesive on the cleaned pavement, or on the bottom of the bar, to completely cover the area of contact with no voids
- Position the bar and press firmly into the pavement

Do not use thinners or solvents to remove the adhesive

Payment

- Raised traffic bars are paid at the Contract Unit Price per linear ft (m)

Related Specifications

Section	Title
500	Concrete Structures
886	Epoxy Resin Adhesives

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 652: Painting Traffic Stripe

Definitions

Painted Stripes: Solid or broken (skip) lines

Skip Traffic Stripes: Painted segments with unpainted gaps



Construction

- Ensure accurate stripe location by establishing control points at spaced intervals
- Apply the traffic stripe paint by machine
- Change the minimum rate proportionately for varying stripe widths
- Do not paint areas of pavement when the air temperature in the shade is below 50°F
- Apply a layer of glass spheres and reflective composite optics immediately after laying the paint



Protective Measures

- Control and protect traffic with warning and directional signs during painting
- Set up warning signs before beginning each operation, and place signs well ahead of the painting equipment

Protect freshly painted stripe using cones or drums

Payment

- Painting stripes is paid at the Lump Sum Contract Unit Price bid

Related Specifications

Section	Title
870	Paint

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 653: Thermoplastic Traffic Stripe

Definitions

Thermoplastic Marking Compound: A heated compound extruded or mechanically sprayed on the pavement that cools to pavement temperature

Short Lines: Crosswalks, stop bars, arrows, symbols, and crosshatching



General Application

- Clean the pavement areas to be striped
- Use hand brooms, rotary brooms, air blasts, or scrapers to clean
- Remove all vegetation and road film from the striping area
- Apply the material only when the pavement temperature in the shade is above 40°F

Lay the stripe with continuous uniform dimensions

- Ensure the new striping paint material bonds on top of the old line (if applicable) without splitting or cracking
- Remove 100% of the existing traffic stripe
- Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry determined by visual inspection.

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 654: Raised Pavement Markers

Adhesive Types

Type I-R Epoxy: Use when the pavement temperature is above 50°F or when traffic conditions require a rapid-setting system

Type I-S Epoxy: Use when the pavement temperature is above 60°F and traffic conditions permit a slower setting system

Bituminous Adhesive: Use when the pavement temperature is above 40°F or when traffic conditions require a rapid-setting material



Placement of Markers

- Clean the pavement of dirt, curing compound, grease, oil, paint, moisture, or unsound layers
- Use either sandblasting or grinding equipment to clean



- Do not place markers when the pavement temperature is below 40°F
- When possible, wait 60 to 90 days before placing markers using epoxy adhesive on newly constructed asphaltic concrete pavements

Do not use thinners to clean epoxy from the marker

Placing Marker Using Epoxy Adhesives

- Place enough adhesive on the cleaned pavement or the bottom of the marker to completely cover the contact area of the marker
- Press the marker firmly to the pavement
- Allow a slight bead of epoxy adhesive to extrude from under the marker edges
- Remove adhesive on the face of the marker

Payment

- Raised pavement markers are paid at the Unit Price for each Unit of each type

Related Specifications

Section	Title
868	Bituminous Adhesive for Raised Pavement Markers
886	Epoxy Resin Adhesives
919	Raised Pavement Markers

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 655: Pavement Arrow with Raised Reflectors

Thermoplastic Arrow Application

- Apply thermoplastic 125 mils (3.18 mm) thick
- Screed or level the thermoplastic
- Immediately embed the raised reflector in the molten thermoplastic



Payment

- Each arrow is paid per Unit placed

Related Specifications

Section	Title
868	Bituminous Adhesive for Raised Pavement Markers
870	Paint
886	Epoxy Resin Adhesives
913	Reflectorizing Materials
919	Raised Pavement Markers

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 656: Removal of Pavement Markings

Remove pavement markings before changing the traffic pattern

Construction

- Utilize blasting, such as sandblasting or water blasting, or grinding to remove pavement markings without damaging the pavement surface
- Do not allow sand and other debris to accumulate and interfere with drainage
- Immediately remove residue and dust from the blast cleaning
- Use a vacuum attachment operating simultaneously with the blast cleaning



Payment

- When shown as a pay item, markings removal is paid at the Contract Unit Price per Unit

Related Specifications

Section	Title
107	Legal Regulations and Responsibility to the Public
150	Traffic Control
804	Abrasives for Blast Cleaning

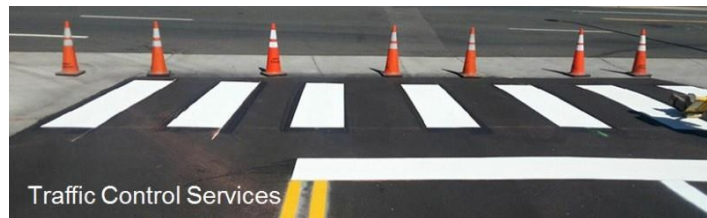
Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 657: Preformed Plastic Pavement Markings

Pre-Conditions for Marking Application

- Ambient temperature is 40°F and rising
- New asphaltic pavement temperature is at least 120°F
- The plastic can be applied to new asphaltic pavement immediately before the new surface is rolled for the final time
- No significant rainfall occurred 24 hours prior to the plastic's application



Marking Application

- Thoroughly clean the pavement with compressed air, hand brooms, or rotary brooms
- Remove all vegetation and road film
- Mechanically wire brush or abrasive blast clean all new portland cement concrete
- Apply an adhesive activator according to the manufacturer's recommendations
- Position markings according to the plans
- Press positioned markings firmly onto the pavement
- Offset longitudinal lines at least 2 in. (50 mm) from construction joints of portland cement concrete pavements

Related Specifications

Section	Title
107	Legal Regulations and Responsibility to the Public
150	Traffic Control
804	Abrasives for Blast Cleaning

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 658: Polyurea Traffic Stripe

Definitions

Painted Stripes: Solid or broken (skip) lines

Skip Traffic Stripes: Painted segments between unpainted gaps on a designated sequence with a ratio of 1:3

General Construction

- Apply pavement markings only during conditions of dry weather and subsequently dry pavement surfaces
- Ensure that the pavement surface temperature and the ambient temperature at the time of installation are both greater than 40°F and that the relative humidity is less than 85%
- Ensure that the traffic stripe is the specified length, width, and placement



Pavement Marking Application

- Apply the liquid marking material by spray method and according to the manufacturer's installation instructions
- Ensure marking configurations are in accordance with the *Manual on Uniform Traffic Control Devices*
- Place the reflectorized pavement markings only on properly prepared surfaces and at the widths and patterns designated on the plans

Air-blast the surface first, to remove any dirt and residues from the pavement

- Apply the pavement markings as a continuous operation
- Heat Component A and Component B to the manufacturer's recommended temperatures
- Ensure that mixing of the two components occurs in a static tube or impingement chamber prior to reaching the application spray nozzle
- Immediately following application, drop the glass spheres and/or reflective composite optics onto the liquid marking



Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 659: Hot Applied Preformed Plastic Pavement Markings

Pre-Conditions for Applying Markings with Heat

- Apply markings when the ambient temperature is 35°F or above
- Apply markings when the pavement is clean, dry, and free of debris
- Apply drop-on glass beads to the entire surface of preformed markings that do not have factory pre-applied surface beads
- Apply the drop-on glass beads to the preformed marking material while it is in a liquid state

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 666: Vertical Drainage Wicks

Install to the depth shown on the Plans, or where reasonable efforts to further penetrate fail

Drain Installation

- Ensure the mandrel of the sleeve completely encloses and protects the drainage wick
- Force the mandrel containing the wick vertically into the ground at the required depth
- Cut the mandrel neatly at its upper end after installation
- Ensure that a 4–8 in. (100–200 mm) length of wick protrudes from the ground
- If necessary, drill through the dense upper soils before installing the prefabricated drains
- Do not drill more than 2 ft (600 mm) into the underlying compressible soils, as determined by the Engineer



Payment

- Vertical drainage wicks are paid at the Contract Price for the accepted quantity of drilled holes and vertical drainage wicks

Related Specifications

Section	Title
106	Control of Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 668: Miscellaneous Drainage Structures

Poured-in-Place Concrete Units

- Allow use of Class B concrete for the throat or other nonreinforced portions of catch basins
- Use Class A concrete for the top slab

Pre-Cast Reinforced Concrete Units

- Cast each unit with the number and dimensions of pipe holes necessary to incorporate the unit into the drainage system
- Use mortar or Class A concrete to connect pipe to units
- Set units to within ½ in. (15 mm) of grade on a bed of compacted sand between 2 in. to 3 in. thick

Castings: Hold the frame securely in place to the proper line and grade, which makes it an integral part of the complete structure



Catch Basins, drop inlets, manholes, junction boxes, drain inlets, special inlets, and safety grates are included in Specification 668

Sanitary Sewer Manholes

- Shape invert channels to lines and grades as shown on plans
- Ensure the channel surfaces are smooth
- Directly place the invert channel in the concrete base of the manhole
- Construct the invert channel of brick and mortar
- Lay half-round tile in the concrete base of the manhole
- Lay round sewer pipe through the manhole and cut out the top half of the pipe after the concrete base has set

Related Specifications

Section	Title
207	Excavation and Backfill for Minor Structures
500	Concrete Structures
607	Rubble Masonry
608	Brick Masonry
801	Fine Aggregate
830	Portland Cement
834	Masonry Materials
843	Concrete Pipe
853	Reinforcement and Tensioning Steel
854	Castings and Forgings
866	Precast Concrete Catch Basin, Drop Inlet, and Manhole Units

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 680: Highway Lighting

Conduit Installation

- Cut metallic conduit threads and then ream the ends
- Ream other conduit as necessary
- Cut conduit ends square
- Ensure that conduit ends butt solidly in the joints to form a smooth raceway for cables

Conduit on Structures

- Run conduit parallel to beams, trusses, supports, pier caps, etc., as directly as possible
- Install horizontal runs in a slight grade without forming low spots that may prevent proper drainage
- Run conduits with smooth, easy bends
- Hold conduit in boxes with locknuts
- Do not clamp or attach conduit to the beam flanges
- Use bushings to protect the conductors



Pull and Junction Box Construction

- Construct concrete boxes from Class A concrete
- Ensure that precast concrete boxes follow the same requirements
- Provide cast iron, steel, or reinforced concrete covers with each pull or junction box according to the plans
- Ground the cast iron or steel covers to the electrical junction or pull boxes

Light Standard and Tower Installation

- Install the specified design, kind, and size of light standards or towers at plan-specified locations

- Install these structures, complete with specified supporting assembly and luminaires, to the mounting heights shown on the plans
- Consider transformer bases to be an integral part of the lighting standard

Never attempt to realign the anchor bolts after placing the foundation

Luminaires

- Mount or install the specified design and size of luminaire shown on the plans
- Level according to the manufacturer's recommendations and plan details, and as approved by the Engineer
- Provide glare shields on luminaires if required by the plans
- Where a lighting unit illuminates a roadway portion on a grade, rotate the luminaire on its major axis to bring the minor axis parallel to the roadway
- Clamp cables into the proper terminals on the luminaire's terminal board
- Leave enough slack in the cables to check or replace the fuse outside of the handhole
- Leave slack in the cables for future maintenance
- Attach a suitable identification tag to each phase cable, using white for the neutral grounding wire



Power Source

- Make prior arrangements for furnishing power to operate the lighting system
- Notify the power company at least 30 days before needing to connect to the power source
- Connect the lighting system to the secondaries of the local power supplier's overhead or underground distribution system
- Install the service pole, metallic conduit riser, weatherproof circuit breaker, and weatherhead with enough wire to connect to the power source

Payment

- Payment for highway lighting will be made on a lump sum basis or as separate items for various highway lighting elements, see Contract and Plans for items.

Related Specifications

Section	Title
205	Roadway Excavation
500	Concrete Structures
800	Coarse Aggregate
801	Fine Aggregate
832	Curing Agents
853	Reinforcement and Tensioning Steel
854	Castings and Forgings
870	Paint
920	Lighting Standards and Towers
921	Luminaires
922	Electrical Wire and Cable
923	Electrical Conduit
924	Miscellaneous Electrical Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 682: Electrical Wire, Cable, and Conduit

Construction

- Furnish and install electrical cables, conduit, and power service necessary to make the system fully operational
- Identify all conductors of all cables by color and number

Do not splice any cable, shield, or conductor used for power

- Identify the conductor function in the as-built documentation
- Install telephone service cable directly to or into the equipment cabinet in accordance with telephone company procedures
- Install electrical conduit to provide enclosures for electrical cables at the terminating junction
- Make all aboveground electrical conduit and conduit bodies of rigid metal
- Terminate all aboveground conduit in either a weather head or in a cabinet



- Require that all conduits entering a pole-mounted equipment cabinet enter through the bottom with at least one conduit body with a sealable, removable cover for pulling access
- Require that all conduits entering in a base-mounted cabinet enter through the foundation and the base-mount adapter

Related Specifications

Section	Title
205	Roadway Excavation
208	Embankments
922	Electrical Wire and Cable
923	Electrical Conduit

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 685: Blast Cleaning Portland Cement Concrete Structures

Blast Cleaning Methods

Use any of the following methods:

- Dry abrasive blasting with compressed air, blast nozzles, and abrasive
- Recirculating dry abrasive blasting with compressed air, blast nozzles, abrasive, and a recovery system
- Wet abrasive blasting with compressed air, blast nozzles, abrasive, and a water injection system



Blast Cleaning Operation

- Provide and maintain traps to prevent contaminating the blasted substrate with oil or grease
- Immediately remove residue to prevent a traffic hazard when blasting within 10 ft (3 m) of a lane occupied by traffic
- Control dust to protect motorists from reduced visibility or damage to passing vehicles

Payment

- Blast cleaning is paid at the Contract Unit Price bid per square yard

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 690: Static Scale System

Reinforced Concrete Scale Pit Construction

- Install the scale pit concrete including sleeves, piping, conduits, anchors, and frames
- Use deformed billet steel bars for bar reinforcement steel
- Make the top of the pit and aprons flush and level with the adjoining pavement
- Furnish and install a pit drain connected to a 4-in. (100 mm) drain line

Enclose each scale platform and pit with steel coping

- Provide a float-controlled high-water alarm system in the scale pits that automatically activates a red warning light to the operator
- Install an alarm buzzer with the high-water alarm system in the operator's tower
- Provide scale pits with an access cover and manhole



Payment

- Scale pits are paid at the Lump Sum Contract Unit Price bid

Related Specifications

Section	Title
105	Control of Work
108	Prosecution and Progress
109	Measurement and Payment
500	Concrete Structures
511	Reinforcement Steel
853	Reinforcement and Tensioning Steel

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 691: Weigh-in-Motion Scale System

Scalepit and Weighing Platform

- Install a drain line to an outlet beyond the shoulder pavement
- Make the entire weigh-in-motion scales flush with the pavement
- Ensure that the completed scales do not rock or hammer
- Hermetically seal and treat the load cells to prevent moisture penetration and corrosion under normal pit conditions



Inductive Loops

- Saw cut the pavement, install the loop wires, and seal the saw cuts
- Provide a loop detector in the bypass lane that detects a vehicle that was directed by the automatic sorting system to proceed to the static axle scales but has incorrectly proceeded to the bypass lane

Equip the loop detector to activate a buzzer at the operator's console

Control Signs and Indicators

- Provide a high-intensity light on the back of each overhead signal head that will illuminate at the same time the green arrow is illuminated
- Install two repeater pin lights at the weigh-in-motion console that indicate the vehicle has been directed to the static scales or the bypass lane
- Provide a manual switch in the operations office to override the automatic mode of the overhead signs

Payment

- Weigh-in-motion scale systems are paid at the Contract Lump Sum Price

Related Specifications

Section	Title
105	Control of Work
108	Prosecution and Progress
109	Measurement and Payment
500	Concrete Structures
511	Reinforcement Steel
680	Highway Lighting
923	Electrical Conduit

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 700: Grassing

The Engineer has the authority to alter the planting dates as set forth by a period of 2 weeks

General Inspection Notes

- Obtain the Engineer's approval before changing the ground cover type
- Do not use annual rye grass seeds with permanent grassing
- Follow the planting zones indicated on the Georgia State Planting Zone Map
- Sod may be installed throughout the year (weather permitting)



Ground Preparation

- On slopes 3:1 or flatter, plow shoulders and slopes to between 4 in. and 6 in. deep
- Plow front and back slopes in cuts to no less than 6 in. deep
- Serrate slopes steeper than 3:1 according to plan details when required
- Remove boulders, stumps, large roots, large clods, and other objects
- Spread topsoil stockpiled during grading evenly over cut and fill slopes
- Push topsoil from the top over the serrated slopes
- Do not operate equipment on the face of the completed serrated cuts

Seed Preparation and Sowing

- Inoculate each kind of leguminous seed separately with the appropriate commercial culture according to the manufacturer's instructions for the culture
- Sow seed within 24 hours after preparing the seed bed and applying fertilizer and lime
- Sow seed uniformly at the rates specified in the seeding tables

- Allow temporary grass areas that were prepared to be overseeded using the no-till method
- Use Riparian seed mix when specified in the plans



Sod Requirements and Preparation

- Use only common bermudagrass or a specified bermudagrass variety
- Ensure that sod is nursery-grown and accompanied with a Georgia Department of Agriculture Live Plant License Certificate or Stamp
- Furnish either a big roll or block sod
- Apply lime and fertilizer within 24 hours prior to installing sod

Payment

- Permanent Grassing is paid for by the acre, Agricultural Lime and Fertilizer Mixed Grade by the ton, Fertilizer Nitrogen Content by the pound, and Sod by the square yard.

No dwarf Bermuda types shall be used

Related Specifications

Section	Title
160	Reclamation of Material Pits and Waste Areas
163	Miscellaneous Erosion Control Items
718	Wood Fiber
822	Emulsified Asphalt
882	Lime
890	Seed and Sod
891	Fertilizers
893	Miscellaneous Planting Materials
895	Polyacrylamide (PAM)

References

www.thedailygreen.com
www.fiskars.com

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 701: Wildflower Seeding

Ground Preparation

- Plow 4–6 in. (100–150 mm) deep
- After plowing, thoroughly disk the area until it is pulverized and then smooth the surface
- Remove large clods, boulders, stumps, rocks, and other foreign particles that will interfere with the work and seedling growth
- Wait 2 weeks after preparation and then spray new growth with 1 gal per acre of herbicide



Seeding

- Sow seed within 24 hours of applying the fertilizer and lime to the seed bed
- Sow seed uniformly according to the specified rate
- Use approved mechanical seed drills or mix the seed with dry sand and spread it with either a drop spreader or rotary spreader
- Cover the seed to no more than $\frac{1}{8}$ in. deep
- Roll the area with a cultipacker or similar equipment to ensure good soil contact for seedling germination
- Apply 1 ton per acre of wood fiber mulch after rolling the seed bed



Related Specifications

Section	Title
882	Lime
890	Seed and Sod
891	Fertilizers

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 702: Vine, Shrub, and Tree Planting

Planting Operations

- Install plants as straight/upright as possible
- Continuously water, mulch, guy, provide tree guards, and stake as indicated on the plans and details until completing the last operation
- After completing planting, provide a method for retaining water adjacent to the plant according to the details shown on the plans or as directed by the Engineer
- Protect marsh restoration areas from vehicles and machinery
- Do not use typical protective barriers in tidal areas
 - Stakes that remain secure and are taller than the highest tide, flagged with highly visible flagging tape, are required to mark the area to be protected and off-limits for vehicles and machinery



Landscape Mulching for Pit Plantings

- Where the distance between plants is 8 ft (2.4 m) or less, spread mulch throughout and 3 ft (900 mm) beyond the outermost plants
- Where plants are more than 8 ft (2.4 m) apart, apply mulch in a circular fashion around each plant, forming a ring 5 ft (1.5 m) in the outside diameter
- If plant pits are greater than 5 ft (1.5 m) in diameter, ensure that the mulch extends out to cover the berm as shown in the planting details on the plans
- Within 3 days of planting, apply mulch at least 4 in. (100 mm) to obtain a compacted depth of at least 3 in. (75 mm)
- Check compaction at least two months after spreading and exposing the mulch to the elements

Do not wrap the trunks of a tree unless otherwise specified

Watering

- Apply water in a manner to prevent erosion
- Water plants deeply and thoroughly at the time of planting
- Water after applying fertilizer and as necessary to maintain enough moisture to promote plant growth
- Apply enough water to wet the soil to a depth slightly below the roots

Related Specifications

Section	Title
108	Prosecution and Progress
214	Mitigation Site Construction
882	Lime
891	Fertilizers
893	Miscellaneous Planting Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 703: Tree Wells, Tree Walls, and Root Protection

Foundation Excavation and Filling

- Avoid unnecessarily injuring root systems when excavating for tree wells and tree walls
- Excavate and fill foundations to the elevations shown on the plans or as directed
- Backfill the foundation area with broken stone or coarse gravel where the soil under the tree wells or tree walls is unstable
- Ensure that foundations firmly and uniformly support masonry

Provide adequate well drainage using weep holes, pipe drains, drain tile, or porous material

Tree Root Protection

- Spread porous material loosely to the extent and depths indicated on the plans
- Before spreading porous material, clean the tree root protection area of vegetation
- Before backfilling over a tree or plant that will be preserved, place porous material above its roots



Payment

- Rubble masonry for tree wells and walls and porous material for tree root protection are paid at the Contract Unit Price per cubic yard (meter)
- Clay drain pipe or drain tile is paid per linear ft (m)

Related Specifications

Section	Title
834	Masonry Materials
842	Clay Pipe
893	Miscellaneous Planting Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 705: Transplanting Trees

Trunk and Branch Protection

- Protect trunks and branches from breaks or bruises
- Spray trees in leaf with an approved antidesiccant before digging

Pruning

- Prune trees before transplanting as directed by the Engineer
- Remove broken or badly bruised branches with a clean cut



Securing Roots

- Dig trees to secure as many roots as possible
- Maintain a tight, firm ball during the moving operations

Excavating

- Excavate trees and tree pits
- Use the excavated material to backfill the pits from which the existing trees were removed

Placing Trees in Pits

- Place transplanted trees into the new pits
- Backfill voids between the ball and the pit with clean, washed sand and then tamp
- Thoroughly water the sand with a root feeder or water needle



Applying Topsoil and Mulch

- Apply plant topsoil to the transplanted tree according to plan details
- Mulch a minimum 6-ft diameter tree pit with 3 in. (75 mm) of mulching material

Stake or anchor trees according to planting details

Payment

- Transplanting trees is paid at the Contract Unit Price

Related Specifications

Section	Title
891	Fertilizers
893	Miscellaneous Planting Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 708: Plant Topsoil

General Requirements

- Only plant topsoil on slopes where the gradient is 3:1 or flatter
- Scarify the designated areas 6–8 in. deep
- Place the soil shortly before the grassing operations
- Mix the plant topsoil, lime, and first application of fertilizer with the underlying soil
- Spread and smooth the topsoil uniformly

Place topsoil and complete the grassing within specified seasonal limits

Plant Topsoil Obtained from the Work

- Strip and stockpile the topsoil in suitable locations in advance of grading operations
- Just before grassing, remove the plant topsoil from the stockpile and spread it over the designated areas



- Use the surplus material as additional plant topsoil material if directed by the Engineer
- Use the surplus material left in the stockpiles to maintain the Item or to fill washes that occur within a reasonable haul distance
- Remove or dress down the remaining material as directed by the Engineer

Payment

- Plant topsoil, eligible for payment, is paid at the Contract Unit Price per cubic yard (meter)

Related Specifications

Section	Title
106	Control of Materials
107	Legal Regulations and Responsibility to the Public
893	Miscellaneous Planting Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 711: Turf Reinforcement Matting

Turf Reinforcement Matting (TRM) Installation

- Do not use in areas where rock crops out
- Install mainly in ditches
- Cut a transverse trench 6-in. wide \times 9-in. deep at the ends of the TRM
- Cut longitudinal, 4-in. deep anchor slots along each side of the TRM along the full length of the ditch



- Bury the edges
- Roll out the center strip of TRM starting at the lower end of the ditch
- Overlap the ends of each TRM roll 3 ft (1 m) with the upslope mat on top
- Backfill, compact, and dress the longitudinal anchor slots



Payment

- TRM is paid at the Contract Price per square yard (meter)

Related Specifications

Section	Title
700	Grassing

Georgia Department of Transportation Construction Engineering Inspection Training

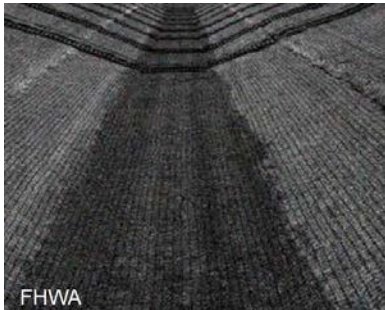
Incidental Items Inspection

Section 712: Fiberglass Blanket

Mat Placement

- Dig a 9-in. deep anchor slot across the upgrade end of the site
- Place the initial 12 in. of blanket in the anchor slot
- Backfill and solidly tamp the slot
- Unroll the blanket in the direction of water flow, keeping the blanket in contact with the soil over the entire area
- Overlap adjacent strips at least 2 in.
- Overlap adjoining ends at least 6 in., with the upstream section on top

Place the mat or blanket within 24 hours after the area has been planted but before any rain or watering



Mat Stapling

- Drive staples vertically into the ground approximately 1 yd (1 m) apart on each side of the blanket
- Drive one row in the center alternately spaced between each side staple
- Place the edge staples in the 2-in. (50 mm) overlap
- At the end of each mat, place staples in a row spaced approximately 12 in. apart

The Engineer may specify additional staples or check slots in waterways

Note: The Contractor may apply an asphalt emulsion instead of staples to anchor the blanket

Payment

- Fiberglass blanket is paid at the Contract Price per square yard (meter)

Related Specifications

Section	Title
700	Grassing
822	Emulsified Asphalt

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 713: Organic and Synthetic Material Fiber Blanket

Definitions

Straw Blanket:	A machine-produced blanket of clean, weed-free, consistently thick straw from agricultural crops
Excelsior Blanket:	A machine-produced mat of curled wood excelsior
Coconut Fiber Blanket:	A machine-produced blanket of 100% coconut fiber evenly distributed over the entire blanket
Wood Fiber Blanket–Type 1:	A machine-produced blanket manufactured with reprocessed wood fibers to a consistent thickness
Wood Fiber Blanket–Type 2:	A hydraulically applied bonded fiber matrix that, upon drying, adheres to the soil in a form of a continuous 100% coverage, biodegradable erosion control blanket
Synthetic Fiber Blanket:	A machine-produced uniform blanket of ultraviolet degradable polypropylene staple fibers reinforced with ultraviolet degradable polypropylene netting



Blanket Placement

- Place vertically on slopes beginning at the top of the slope and extending to the bottom
- Place the blanket within 24 hours after planting and before rain or watering
- Unroll the blanket with the netting on top and the fibers contacting the soil over the slope
- Overlay the joint 4 in. and staple through the joint

- Overlap the ends of the blanket at least 6 in. with the upgrade section on top, and staple through the overlap

Horizontal installation of the blankets is not permitted



Stapling

- Drive staples vertically into the ground to anchor the plastic mesh
- Place the staples approximately 2 yd (2 m) apart on each side of the blanket and add one row in the center alternately spaced between each side staple
- Where the blankets lay side to side, place each staple so that half of the staple anchors mesh from each blanket

Payment

- Material fiber blankets will be paid for at the Contract Unit Price per square yard

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 714: Jute Mesh Erosion Control

Mesh Placement

- Roll the mesh out in the direction of flow unless the downstream end section connects to a drainage structure or paved ditch
- Anchor the mesh in a 6-in. deep trench adjacent to the structure
- Overlap adjacent strips by at least 6 in.
- Overlap adjoining ends by at least 6 in.



- For all overlaps, place the upstream section on top
- Use a Type 2 check slot at the downstream end of the jute mesh that does not connect
- Apply the jute mesh without stretching
- Do not allow workers to walk directly on the seedbed before or after applying the mesh
- Bury the up-channel end of each installation in a narrow, 6-in. deep trench
- After burying the mesh, backfill, tamp, and staple the trench

Lay the mesh evenly but loosely on the soil surface

Mat Stapling

- Staple along each edge
- Staple each row along the middle
- Space staples no more than 3 ft (1 m) apart in each row
- Space the staples in the middle row alternately with those at the edges
- Ensure that staples remain flush with the ground



Rolling

- Firmly embed the mesh in the soil by tamping or rolling
- Secure mesh that bridges over soil surface irregularities with extra staples to provide overall contact with the soil

Payment

Payment for Jute Mesh Erosion Control will be paid for at the Contract Unit Price per square yard

Related Specifications

Section	Title
106	Control of Materials

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 716: Erosion Control Mats (Slopes)

Construction

- The Contractor may use either Fiberglass Blanket (Section 712), Organic and Synthetic Material Fiber Blanket (Section 713), or Jute Mesh Erosion Control (Section 714) on slopes
- Place blankets or mats vertically on the slopes beginning at the top of the slope and extending to the bottom



- Do not permit horizontal installation of the blankets or mats
- Do not require mulch when mats or blankets are placed on grassed slopes within 24 hours of planting

Payment

Payment for Erosion Control Mats (Slopes) will be paid for at the Contract Unit Price per square yard

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 718: Wood Fiber



Construction

- Apply enough materials to cover the ground evenly and thoroughly as directed by the Engineer
- Use hydraulic equipment to apply a homogeneous water slurry that includes the proper amounts and kind of seed and fertilizer
- Mix the slurry during application

Payment

This Work will not be paid for separately, but will be included in the payment for Permanent Grassing

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 719: Silt Filter Bag



Construction

- Place a silt filter bag on a #57 stone gravel bed sloped to ensure that the filtered water will exit at the desired location
- Extend the pump hose past the inlet opening to ensure that the silt-laden water will discharge in the center of the bag
- Ensure that the seal between the inlet and hose is watertight
- When the filter bag is full of silt and cannot readily pass more water, use a new filter bag
- If approved by the Engineer, bury the full filter bag on site or remove the top section of fabric and then seed the exposed filtrate



Choose an exit location to prevent erosion

Payment

- Silt filter bags are paid at the Contractor Unit Price per each

Georgia Department of Transportation Construction Engineering Inspection Training

Incidental Items Inspection

Section 720: Triangular Silt Barrier

Construction

- Excavate a trench 4–6 in. deep using equipment such as a trenching machine or motor grader; or, if equipment cannot be operated on site, excavate by hand
- Secure the edge of the fabric into the trench with wire staples
- Install the fabric in the trench so that 4–6 in. of fabric is against the side of the trench with 2–4 in. of fabric across the bottom in the upstream direction



- Backfill the trench and compact it so that no flow can pass under the barrier
- Where the individual sections of triangular silt barrier meet, fix the fabric to the ground with wire staples at each joint location and at each end of the barrier
- The Engineer may increase, decrease, or eliminate the quantity of triangular silt barrier

Triangular silt barrier may be substituted for baled straw

Payment

Payment for Triangular Silt Barrier will be paid for at the Contract Unit Price per linear foot

Related Specifications

Section	Title
106	Control of Materials

References

www.pgwa.org
www.paturnpike.com
www.engr.wisc.edu
www.gic-edu.com
www.mragta.com
www.wsdot.wa.gov
www.rtnroofing.com
www.wisdotresearch.wi.gov
en.vsl.cz
www.seattle.gov
www.tncrebar.com
www.americanconcrete.org
www.kingcounty.gov
www.cogginsfence.com
www.gallery.ptcsb.com
www.sunlive.co.nz
www.123rf.com
alphaconstruction.biz
www.mrwallpaper.com
www.apoc.com
www.sealtec.ca
www.libn.com
www.redrundrain.wordpress.com
www.acrow.com
www.edawilson.com
www.gimrock.com
www.ccppa.org
www.sunnysteel.com
www.metalculverts.com
www.pabreschjr.com
www.fusecon.com
www.hiwtc.com
www.tnepsc.org
www.picstopin.com
www.directindustry.com
www.flintmarine.com
www.kaneva.com
www.aggregatetechnologies.com
www.cenews.com
www.4eastcounty.com
www.garverusa.com
www.nickolboring.com
www.foundationsupportworks.com
www.hanesgeo.com
www.arcadiasbest.com
www.fhwa.dot.gov
www.engr.psu.edu
www.michiganhighways.org
www.rtnroofing.com
theconstructor.org
www.constructionprojectinspection.com
http://mutcd.fhwa.dot.gov
www.architecturejt.wordpress.com
www.steelconstruction.info
www.harrissupplysolutions.com
www.gratesolutions.net
www.fhwa.dot.gov
www.smallwater.wordpress.com
co.ross.oh.us
www.modot.org
www.johnweeks.com
www.hendersonconstructionfabrics.com
www.acpapplied.com
www.hendersonconstructionfabrics.com
www.irjci.blogspot.com
epg.modot.org
www.wildish.com
www.minnesota.publicradio.org
www.saint-gobain-pam-cast-iron.com
www.kanapipeline.com
www.pomonapipelineproducts.com
www.metal-culvert.com
www.permo-liner.com
www.newburymarket.com
www.geosyntheticmagazine.com
www.cecilscd.com
www.algacn.com
www.fhwa.dot.gov
www.troweltradessupply.com
www.4shared.com
www.huckbody.com
www.turnermanholerisers.com
www.ace-fla.com
www.tekyontunel.com
www.fandbts.co.uk
www.wsdot.wa.gov