

# **SPECIAL PROVISIONS SUPPLEMENTAL SPECIFICATIONS**

## **Effective GDOT Shelf and Special Provisions NOT included in 2013 Edition of Standard Specifications for Construction of Transportation Systems, as Modified June 16, 2016**

The following sections are applicable to this contract as GDOT Shelf and Special Provisions not included in the 2013 revision of GDOT's Standard Specifications (as modified) and are specified as an attached:

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Section 107.23.A- Environmental Considerations *(dated 12/1/2016)*

Section 108.08- Prosecution and Progress *(dated 1/31/2019)*

Section 150- Traffic Control *(dated 2/1/2017)*

Section 150.3- Construction Requirements *(dated 1/31/2019)*

Section 153- Field Engineer's Office

Section 161- Control of Erosion and Sedimentation *(dated 3/9/2016)*

Section 163- Miscellaneous Erosion Control *(dated 8/10/2017)*

Section 165- Maintenance of Temporary Erosion and Sedimentation Control Devices *(dated 10/27/2017)*

Section 167- Water Quality Monitoring *(dated 1/22/2016)*

Section 171- Silt Fence *(dated 11/22/2013)*

Section 201- Clearing and Grubbing Right of Way *(dated 12/13/2013)*

Section 232- Railroad Construction *(dated 1/31/2019)*  
CSXT Construction Agreement

Section 550 – Storm Drain Pipe, Pipe Arch Culverts, and Side Drain Pipe *(dated 7/27/2016)*



**DEPARTMENT OF TRANSPORTATION**

**STATE OF GEORGIA**

**SPECIAL PROVISION**

**Section 107 – Legal Regulations and Responsibility to the Public**

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*Retain Section 107.23 A and add the following:*

**107.23 Environmental Considerations**

**A. Construction**

For plan sets that include an Environmental Resources Impacts Table in the General Notes section, the Contractor shall abide by all restrictions noted in the Environmental Resources Impact Table.





**DEPARTMENT OF TRANSPORTATION  
COBB COUNTY GEORGIA**

**SPECIAL PROVISION**

**OLD 41 HIGHWAY OVER CSX RAILROAD BRIDGE REPLACEMENT /  
PROJECT NO. X2116**

**Section 108 – Prosecution and Progress**

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**108.08 Failure or Delay in Completing Work on Time**

*Delete the Schedule of Deductions for Each Day of Overrun in Contract Time table shown in Section 108.08 and replace with the following:*

Overall Completion of **Five Hundred and Forty (540)** calendar days has been established for this Project.

Failure to complete the overall construction in accordance with the above will result in the assessment of Liquidated Damages at the rate of \$1,000.00 per calendar day or portion thereof.

CSXT will provide flagman for a maximum of 320 days to allow contractor to work within the railroad right-of-way. Contractor to notify CSXT 30 days prior to need of flagman. Contractor responsible for cost of any additional flagman time beyond the 320 days allowed, at a rate of \$1,600.00 per day. Cost of additional days to be credited as provided in flagman bid item



**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**SPECIAL PROVISION**

**Section 150—Traffic Control**

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**150.1 General Description**

This section, as supplemented by the Plans, Specifications, and Manual on Uniform Traffic Control Devices (MUTCD) shall be considered the Temporary Traffic Control (TTC) Plan in accordance with Work Zone Safety and Mobility Policy. Activities shall consist of furnishing, installing, maintaining, and removing necessary traffic signs, pedestrian signs, barricades, lights, signals, cones, pavement markings and other traffic control devices and shall include flagging and other means for guidance and protection of vehicular and pedestrian traffic through the Work Zone. This Work shall include both maintaining existing devices and installing additional devices as necessary in construction work zones.

The contractor shall be responsible for the maintenance of traffic signals and Advanced Traffic Management system (ATMs) devices from the time that the system is modified until final acceptance. The maintenance of traffic signals and ATMs devices that are not a part of the work and that are not in conflict with any portion of the work shall not be the responsibility of the contractor. However, the contractor is still responsible for damages to all devices that he or his subcontractors cause, in accordance with Section 107 and other specifications.

When any provisions of this Specification or the Plans do not meet the minimum requirements of the MUTCD, the MUTCD shall control. The 2009 Edition of the MUTCD shall be in effect for the duration of the project.

All traffic control devices used during the construction of the project shall meet the standards utilized in the MUTCD, and shall comply with the requirements of these Specifications, Georgia Construction Standards and Details, Project Plans, Design Manuals, and Special Provisions.

The needs and control of all road users (motorists, bicyclists and pedestrians within the highway right-of-way and easements, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) through a Temporary Traffic Control (TTC) zone shall be an essential part of highway construction, utility work, maintenance operations and management of traffic incidents.

Utilities included in the contract are bounded by Special Provision 150 and shall follow its requirements. For utilities not included in the contract but working within the project limits, they shall, at a minimum follow the MUTCD. Moreover, in accordance with Utility Accommodation Policy and Standards Manual dated 2016, the Engineer reserves the right to require additional certified flaggers, signs, warning lights, channelization devices, and other safety devices as may be necessary to properly protect, warn, and safeguard the traveling public. In addition, the Department reserves the right to place time restrictions or moratoriums on all utility work covered under a permit when, in the opinion of the Department, the continuance of the Work would seriously hinder traffic flow, be needlessly disruptive, or would unnecessarily inconvenience the traveling public. In case of emergencies, Utilities shall be provided access in accordance with Utility Accommodation Policy and Standard Manual.

### **150.1.01 Definitions**

For Special Provision 150, the definitions for “shall”, “ should”, and “may” will be in accordance with MUTCD (1A.13).

Shall (Standard) - a statement of required, mandatory, or specifically prohibitive practice regarding a traffic control device.

Should (Guidance) - a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate.

May (Option) — a statement of practice that is a permissive condition and carries no requirement or recommendation.

### **150.1.02 Content**

#### **150.1 General Description**

##### 150.1.01 Definitions

##### 150.1.02 Content

##### 150.1.03 Related References

###### A. Standard Specification

###### B. Reference Documents

##### 150.1.04 Submittals/Preconstruction

###### A. Worksite Traffic Control Supervisor

###### B. Sequence of Operations

###### C. Pedestrian Considerations

###### 1. Pedestrian Signage

###### 2. Temporary Pedestrian Facilities

### **150.2 Materials and Traffic Control Devices**

#### 150.2.01 Traffic Control Devices

##### A. NCHRP 350 and MASH

##### B. Approval

##### C. Quality Guidelines for All Temporary Traffic Devices

#### 150.2.02 Reflectorization Requirements

##### A. Signs

###### 1. For All Projects Let Prior to and Including April/May 2018

###### 1. For All Projects Let Prior to and Including April/May 2018

B. Channelization Devices

1. For All Projects Let Prior to and Including April/May 2018
2. For All Projects Let Prior to and Including April/May 2018

150.2.03 Arrow Panels

150.2.04 Channelization Devices

A. General

B. Drums

1. Design
2. Application
3. Longitudinal Channelization
4. Removal

C. Vertical Panels

1. Design
2. Application

D. Cones

1. Design
2. Applications

E. Barricades

1. Design
2. Application

F. Warning Lights

1. Design
2. Application

150.2.05 Flashing Beacon

150.2.06 Guardrail

150.2.07 Interim Signs

A. Posts

B. Sign Blanks and Panels

150.2.08 Pavement Markings

- A. All Traffic Striping for Forty-Five (45) Days or Less ( $\leq 45$  Days)
- B. All Temporary Striping Beyond Forty-Five (45) days ( $> 45$  Days)
- C. All Temporary Traffic Striping on Final Surface

150.2.09 Portable Changeable Message Signs

150.2.10 Portable Impact Attenuators

150.2.11 Portable Temporary Traffic Control Signals

150.2.12 Raised Pavement Markers

150.2.13 Rumble Strips

150.2.14 Temporary Barriers

A. Design

B. Application

150.2.15 Temporary Guardrail Anchorage- Type 12

150.2.16 Temporary Traffic Signal

### **150.3 Construction Requirements**

150.3.01 General

A. Implementation Requirements

B. Maintenance of Traffic Control Devices

C. Traffic Interruption Restrictions

D. Work Zone Restrictions

1. Interstate

2. Non-Interstate Divided Highways

3. Non-Divided Highways

E. Work Zone Geometric Restrictions

F. Clear Zone

G. Milled Surface Restrictions

H. Construction Vehicle

I. Environmental Impacts

J. Existing Street Lights

K. Nighttime Work Lighting

L. Removal/Reinstallation of Miscellaneous Items

150.3.02 Personnel – Worker Safety Apparel

150.3.03 Signage – General

A. Signing Requirements of the Temporary Traffic Control (TTC) Plan

B. Conflicting or Non-Applicable Signs

C. Removal of Existing Signs and Supports

D. Interim Guide, Warning and Regulatory Signs

E. Existing Special Guide Signs

1. Special Guide Signs

2. Interim Special Guide Signs

3. Interim Overhead Guide Sign Structures

4. Permanent Special Guide Signs

F. Stop Sign Regulated Intersections

G. Low Shoulder Signage

1. Low Shoulder for Construction/Reconstruction/Resurfacing Projects
2. Shoulder Drop-Off for Construction/Reconstruction/Resurfacing Project

H. Bump Signage

I. Sign Visibility

150.3.04 Advance Warning Signs

A. Project Signs - All Type of Highways

1. State Routes
2. Interstate, Limited Access and Multilane Divided Highways
3. Ramp Work on Limited Access Highways

B. Highway Work Zone

1. No Reduction in the Existing Posted Speed Limit in Highway Work Zone
2. Reducing the Speed Limit in a Highway Work Zone
3. Variable Speed Limit Zones

C. Installation/Removal of Work Area Signage

150.3.05 Shoulder/Lane Closure

A. Approval/Restrictions

1. Closure Length
2. Duration

B. Shoulder Closure

C. Lane Closure

1. Advance Warning Signs
2. Transition Area – Taper
3. Activity Area
4. Termination Area

D. Removal of Lane Closures

E. Exit and Entrance Ramps

150.3.06 Traffic Pacing Method

A. Pacing Of Traffic

B. Methods of Signing For Traffic Pacing

150.3.07 Flagging Operation

A. Flaggers

B. Flagger Certification

C. Flagger Appearance and Equipment

D. Flagger Warning Signs

E. Pilot Vehicle Requirements

F. Automated Flagger Assistance Devices

G. Portable Temporary Traffic Control Signals

#### 150.3.08 Traffic Signals

- A. Responsibility/Cost
- B. Law Enforcement Officer Requirement

#### 150.3.09 Mobile Operations

#### 150.3.10 Pavement Markings

##### A. General

- 1. Resurfacing Projects
- 2. Widening and Reconstruction Projects
- 3. New Location Construction Projects

##### B. Installation and Removal of Pavement Markings

- 1. Installation
- 2. Removal
- 3. Intermediate Surface
- 4. Final Surface
- 5. Pay Factor Reduction for Asphaltic Concrete Final Surfaces
- 6. Preparation and Planning for Traffic Shifts

##### C. Raised Pavement Markers

- 1. Supplementing Lane Lines
- 2. Supplementing Ramp Gore Lines
- 3. Other Lines

##### D. Exceptions for Interim Markings

- 1. Two-Lane, Two-Way Roadway
- 2. Multi-Lane Highway – with No Paved Shoulder(s) or Paved Shoulder(s) Four Feet or Less ( $\leq 4'$ )
- 3. Limited Access Roadways and Roadways with Paved Shoulder Greater than Four Feet ( $>4'$ )
- 4. Ramps for Multi-lane Divided Highways
- 5. Miscellaneous Pavement Markings

#### 150.3.11 Differences in Elevation between Travel Lanes and Shoulders

##### A. Differences in Elevations

- 1. Difference of Two Inches ( $\leq 2''$ ) or Less Between Adjacent Travel Lanes
- 2. Difference of Two Inches ( $\leq 2''$ ) or Less Between Adjacent Travel Lane and Paved Shoulder Should
- 3. Difference of Greater Than Two Inches ( $>2''$ ) is Permitted for Continuous Operations
- 4. Difference of Greater Than Two Inches ( $>2''$ ) Between Travel Lanes and/or Shoulders for Non-Continuous Operations

##### B. Healed Section

##### C. Emergency Situations

##### D. Plating

##### E. Asphaltic Concrete Resurfacing Projects



1. Shoulder Construction Included as a Part of the Contract
2. Shoulder Construction Not Included as a Part of the Contract

#### 150.3.12 Work Zone Law Enforcement

### **150.4 Measurement**

#### 150.4.01 Traffic Control Items

- A. Traffic Control
- B. Changeable Message Sign, Portable
- C. Flashing Beacon Assembly
- D. Pavement Markings
- E. Portable Impact Attenuators
- F. Signs
  1. Interim Ground Mounted or Interim Overhead Special Guide Signs
  2. Remove And Reset Existing Special Guide Signs, Ground Mount or Overhead
  3. Modify Special Guide Signs, Ground Mount or Overhead
- G. Temporary Audible Information Device
- H. Temporary Barrier
- I. Temporary Curb Cut Wheelchair Ramps
- J. Temporary Guardrail Anchorage, Type 12
- K. Temporary Walkways with Detectable Edging
- L. Traffic Signal Installation - Temporary
- M. Work Zone Law Enforcement

### **150.5 Payment**

#### 150.5.01 Enforcement and Adjustments

### **150.1.03 Related References**

#### **A. Standard Specifications**

Section 104-Scope of Work

Section 105-Legal Regulations and Responsibility to the Public

Section 107-Legal Regulations and Responsibility to the Public

Section 108-Prosecution and Progress

Section 209-Subgrade Construction

Section 400-Hot Mix Asphaltic Concrete Construction

Section 441-Miscellaneous Concrete

Section 429-Rumble Strips

Section 620-Temporary Barrier

Section 632-Portable Changeable Message Signs

Section 641-Guardrail

Section 647-Traffic Signal Installation

Section 648-Traffic Impact Attenuator

Section 652-Painting Traffic Stripe

Section 653 – Thermoplastic Traffic Stripe

Section 654-Raised Pavement Markers

Section 656-Removal of Pavement Markings

Section 657 – Preformed Plastic Pavement Markings

Section 658 – Standard and Wet Weather Polyurea Traffic Stripe

Section 659 Hot Applied Preformed Plastic Pavement Markings

Section 911-Sign Posts

Section 912-Sign Blanks and Panels

Section 913 - ReflectORIZING Materials

## **B. Referenced Documents**

ASTM D4956-13 (Retro-reflectivity)

American Traffic Safety Services Association (ATSSA)

Construction Detail A-3 Curb Cut (Wheelchair) Ramps Concrete Sidewalk Details

Construction Detail A-4 Detectable Warning Surface Truncated Dome Size, Spacing and Alignment Requirements

Construction Detail T-3A (Type 7, 8, and 9 Square Tube Post Installation Detail)

GDOT Signing and Marking Design Guidelines

Georgia Standard 4000W “Lengths of Advancement, Clear Zone Distances, Fill Height Embankment”

Georgia Standard 4960 “Temporary Barrier (End Treatment Options)”

Georgia Standard 9102 “Traffic Control Detail for Lane Closure on Two-Lane Highway”

Georgia Standard 9106 “Traffic Control Detail for Lane Closure on Multi-Lane Divided Highway”

Georgia Standard 9107 “Traffic Control Detail for Lane Closure on Multi-Lane Undivided Highway”

Georgia Standard 9121 “Tapers, Signs, and Markings for Passing Lanes”

Manual for Assessing Safety Hardware (MASH)

Manual on Uniform Traffic Control Devices (MUTCD)

National Cooperative Highway Research Program (NCHRP) 350

National Safety Council

Quality Product List #29 (QPL-29) Reflective Sheeting

Quality Product List #34 (QPL-34) Work Zone Traffic Control Devices (Drums, Type III Barricades, Vertical Panels, and Portable Sign Systems)

Quality Product List #35 (QPL-35) Drive Type Galvanized Steel Sign Posts

Quality Product List #46 (QPL-46) Traffic Pavement Markings

Quality Product List #64 (QPL-64) Attenuator Units (Compression Crash Cushion) and Guardrail End Treatments

Quality Product List #76 (QPL-76) Raised Pavement Markers and Channel Markers

Quality Product List #79 (QPL -79) Portable Arrow Boards

Quality Product List #82 (QPL -82) “Portable Changeable Message Signs”

Utility Accommodation Policy and Standards Manual

Work Zone Safety and Mobility Policy

#### **150.1.04 Submittals/Preconstruction**

##### **A. Worksite Traffic Control Supervisor**

The Contractor shall designate a qualified individual as the Worksite Traffic Control Supervisor (WTCS). The WTCS shall be responsible for selecting, installing and maintaining all traffic control devices in accordance with the Plans, Specifications, Special Provisions and the MUTCD. The WTCS shall be currently certified by the American Traffic Safety Services Association (ATSSA) Work Site Traffic Supervisor Certification program or the National Safety Council Certification program. On-line classes will not be accepted.

The WTCS shall be available on a twenty-four (24) hour basis to perform his duties. If the work requires traffic control activities to be performed during the daylight and nighttime hours, it may be necessary for the Contractor to designate an alternate WTCS. An alternate WTCS must meet the same requirements and qualifications as the primary WTCS and be accepted by the Engineer prior to beginning any traffic control duties. The Worksite Traffic Control Supervisor's traffic control responsibilities shall have priority over all other assigned duties.

As the representative of the Contractor, the WTCS shall have full authority to act on behalf of the Contractor in administering the TTC Plan. The WTCS shall have appropriate training in safe traffic control practices in accordance with Part 6 of the MUTCD. In addition to the WTCS, all other individuals making decisions regarding traffic control shall meet the training requirements of the Part 6 of the MUTCD.

The Worksite Traffic Control Supervisor (WTCS) shall have a copy of Part 6 of the MUTCD and the Contract on the job site. Copies of the current MUTCD may be obtained from the FHWA web page at <http://mutcd.fhwa.dot.gov>.

The WTCS shall supervise the initial installation of traffic control devices. The Engineer, prior to the beginning of construction, will review the initial installation. Modifications to traffic control devices as required by sequence of operations or staged construction shall be reviewed by the WTCS.

Any work performed on the interstate or limited access highway right-of-way that requires traffic control shall be supervised by a submitted/approved certified Worksite Traffic Control Supervisor. No work requiring traffic control shall be performed unless the certified WTCS is on the worksite. Failure to maintain a Certified Worksite Traffic Control Supervisor on the work will be considered as non-performance under Subsection 150.5.01.

The WTCS or alternate WTCS shall be available on a full-time basis to maintain traffic control devices with access to all personnel, materials, and equipment necessary to respond effectively to an emergency situation within forty-five (45) minutes of notification of the emergency.

The WTCS shall perform inspections, at a minimum once a month, to ensure that traffic control is maintained. For all interstate and limited access highways, the WTCS shall perform, as a minimum, weekly traffic control inspections. The inspections will start with the installation of the advance warning signs and will stop when a maintenance acceptance is issued or when the punch list is completed.

An inspection shall include both daytime and nighttime reviews. The inspection shall be reported to the Engineer on a Traffic Control Inspection Report, (TC-1). Unless modified by the special conditions or by the Engineer, routine deficiencies shall be corrected within a twenty-four (24) hour period. Failure to comply with these provisions shall be grounds for dismissal from the duties of WTCS and/or removal of the WTCS from the project. Failure of the WTCS to execute his duties shall be considered as non-performance under Subsection 150.5.01.

**TRAFFIC CONTROL INSPECTION REPORT (TC-1)**

Project No.: \_\_\_\_\_ County: \_\_\_\_\_

Contractor: \_\_\_\_\_ Date: \_\_\_\_\_ Daytime: \_\_\_\_\_

Nighttime: \_\_\_\_\_

**PURPOSE:** To provide adequate warning, delineation, and channelization to assist in guiding road users in advance of and through the work zone by utilizing proper pavement markings, signs, and other MUTCD compliant devices.

**RESPONSIBILITY:** The Worksite Traffic Control Supervisor (WTCS) has the duty of ensuring that all traffic control devices are installed and maintained according to the requirements of the Traffic Control Plan.

**DEFICIENCIES:** Items noted below required corrective measures be performed with the next \_\_\_\_\_ hours/days.

LOCATION	DESCRIPTION	ACTION REQUIRED
(use additional sheets if needed)		

Signature: \_\_\_\_\_ WTCS or DOT performing inspection

DOT inspection presented to WTCS Date: \_\_\_\_\_ Time: \_\_\_\_\_

**TO BE COMPLETED BY THE WTCS**

The attached deficiencies were corrected by Date: \_\_\_\_\_ Time: \_\_\_\_\_

Signature \_\_\_\_\_ Return TC-1 to DOT inspector.

The WTCS certifies that all traffic control devices in use on the project are MASH/NCHRP 350 crashworthy compliant.

## Traffic Control Checklist

Satisfactory    Unsatisfactory    Non-applicable

### Signs

S

U

N

- Are the signs correctly installed?
- Signs are in place according to TTC plans. Signs are plumb and level. Signs are at the proper height.
- Are the signs visible and readable to the public both daytime and nighttime?
- Is retroreflectivity good?
- Are signs not in use including PCMS properly stored?

### TTC Devices

S

U

N

- Are they MASH/NHCRP 350 approved? Do they meet MUTCD and Special Provision 150 requirements?
- Are they installed according to manufacture recommendation?
- Are they in acceptable/marginal condition? Are they stable? Is the retroreflectivity good?

### Clear Zone

S

U

N

- Are all material and equipment stored beyond the clear zone?
- If stored in clear zone, are they protected by positive barrier?
- Are drop-off marked and healed according to Special Provision 150?

### Positive Barriers

S

U

N

- Are the barriers in acceptable/marginal condition and FHWA approved?
- Are the barrier reflectors proper and in good condition?
- Do the barriers extend to the proper advancement length? Are the tapers according to GA Standards?

### Attenuators and Guardrails

S

U

N

- Are the proper attenuators assemblies in use?
- Gating Is the recovery area free of debris and provide the necessary recovery area?
- Is the assembly in accordance with manufacture recommendation?
- Are the guardrails properly anchor and/or attached to the barrier?
- Are shoes and transition sections in accordance with Standards?

### Pavement Markings

S

U

N

- Are the pavement making visible and legible?
- Can they be seen during the daytime and nighttime?
- Are there no conflicting pavement markings?
- Are the pavement markings including RPM installed and maintained according to section 150?

The Engineer will periodically review the work for compliance with the requirements of the TTC plan.

On projects where traffic control duties will not require full time WCTS supervision, the Engineer may allow the Contractor's Project superintendent, foreman, subcontractor, or other designated personnel to serve as the WTCS as long as satisfactory results are obtained. Nevertheless, the individual shall meet the requirements and perform the duties of a WTCS.

## **B. Sequence of Operations**

Any Sequence of Operations provided in this Contract in conjunction with any staging details which may be shown in the plans, is a suggested sequence for performing the Work. It is intended as a general staging plan for the orderly execution of the work while minimizing the impact on pedestrian facilities, mainline, cross-streets and side streets. The Contractor shall develop detailed staging and temporary traffic control plans for performing specific areas of the Work including but not limited to all traffic shifts, detours, bridge widenings, paces, or other activities that disrupt traffic or pedestrian flow. The Engineer may require detailed staging and TTC plans for lane closures or disruption to pedestrian facilities. These plans shall be submitted for approval at least two (2) weeks prior to the scheduled date of the activity. Activities that have not been approved at least seven (7) days prior to the scheduled date shall be rescheduled.

Where traffic is permitted through the work area under stage construction, the Contractor may choose to construct, at no additional expense to the Department, temporary on-site bypasses or detours in order to expedite the work. Plans for such temporary bypasses or detours shall be submitted to the Engineer for review and approval thirty (30) calendar days prior to the proposed construction. Such bypasses or detours shall be removed promptly when in the opinion of the Engineer; they are no longer necessary for the satisfactory progress of the Work. Bypasses and detours shall meet the minimum requirements of Subsection 150.3.01.D.

As an option to the Sequence of Operations in the Contract, the Contractor may submit an alternative Sequence of Operations for review and approval. Alternate Sequence of Operations for pedestrian facilities shall be in compliance with the MUTCD and ADA. Pedestrian needs identified in the preconstruction phase shall be included in the proposed alternate plan.

The Department will not pay, or in any way, reimburse the Contractor for claims arising from the Contractor's inability to perform the Work in accordance with the Sequence of Operations provided in the Contract or from an approved Contractor alternate.

The Contractor shall secure the Engineer's approval of the Contractor's proposed plan of operation, sequence of work and methods of providing for the safe passage of vehicular and pedestrian traffic before it is placed in operation. The proposed plan of operation shall supplement the approved traffic control plan. Any major changes to the approved TTC plan, proposed by the Contractor, shall be submitted to the Department for approval.

Some additional traffic control details will be required prior to any major shifts or changes in traffic. The traffic control details shall include, but not be limited to, the following:

1. A detailed drawing showing traffic locations and lanes for each step of the change.
2. The location, size, and message of all signs required by the MUTCD, Plan, Special Provisions, and other signs as required to fit conditions. Any portable changeable message signs used shall be included in the details.
3. The method to be used in, and the limits of, the obliteration of conflicting lines and markings.
4. Type, location, and extent of new lines and markings.

5. Horizontal and vertical alignment and superelevation rates for detours, including cross-section and profile grades along each edge of existing pavement.
6. Drainage details for temporary and permanent alignments.
7. Location, length, and/or spacing of channelization and protective devices (temporary barrier, guardrail, barricades, etc.)
8. Starting time, duration and date of planned change.
9. For each traffic shift, a paving plan, erection plan, or work site plan, as appropriate, detailing workforce, materials, and equipment necessary to accomplish the proposed work. This will be the minimum resource allocation required in order to start the work.

A minimum of three (3) copies of the above details shall be submitted to the Engineer for approval at least fourteen (14) days prior to the anticipated traffic shift. The Contractor shall have traffic control details for a traffic shift which has been approved by the Engineer prior to commencement of the physical shift. All preparatory work relative to the traffic shift, which does not interfere with traffic, shall be accomplished prior to the designated starting time. The Engineer and the Contractor's representative will verify that all conditions have been met prior to the Contractor obtaining materials for the actual traffic shift.

### **C. Pedestrian Considerations**

All existing pedestrian facilities, including access to transit stops, shall be maintained. Where pedestrian routes are closed, alternate routes shall be provided. Closures of existing, interim and final pedestrian facilities shall have the prior written approval of the Engineer. When existing pedestrian facilities are disrupted, closed or relocated in a TTC zone, the temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility. Pedestrian facilities are considered improvements and provisions made to accommodate or encourage walking. Whenever a sidewalk is to be closed, the Engineer shall notify the maintaining agency two (2) weeks prior to the closure. Prior to closure, detectable barriers (that are detectable by a person with a visual disability traveling with the aid of a long cane), as described by the MUTCD, shall be placed across the full width of the closed sidewalk. Barriers and channelizing devices used along a temporary pedestrian route shall be in compliance with the MUTCD.

Temporary Traffic Control devices used to delineate a Temporary Traffic Control Zone Pedestrian Walkway shall be in compliance with Subsection 150.3.01.A. Appropriate signs as described in the MUTCD shall be maintained to allow safe passage of pedestrian traffic or to advise pedestrians of walkway closures (Refer to MUTCD Figures TA-28 and TA-29 for guidance). Advance closure signing should be placed at intersections rather than midblock locations so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing. Temporary Traffic Control devices and construction material shall not intrude into the usable width of the pedestrian walkway. Signs and other devices shall be placed such that they do not narrow or restrict any pedestrian passage to less than forty-eight inches ( $\geq 48''$ ).

#### **1. Pedestrian Signage**

A pedestrian walkway shall not be severed or relocated for non-construction activities, such as parking for construction vehicles and equipment. Movement by construction vehicles and equipment across designated pedestrian walkways should be minimized. When necessary, construction activities shall be controlled by flaggers. Pedestrian walkways shall be kept free of mud, loose gravel or other debris.

When temporary covered walkways are used, they shall be lighted during nighttime hours. When temporary traffic barrier is used to separate pedestrian and vehicular traffic, the temporary barrier shall meet NCHRP-350 Test Level Three. The barrier ends shall be protected in accordance with Georgia



Standard 4960. Curbing shall not be used as a substitute for temporary traffic barriers when temporary traffic barriers are required. Tape, rope or plastic chain strung between temporary traffic control devices are not considered as detectable and shall not be used as a control for pedestrian movements.

The WTCS shall inspect the activity area daily to ensure that effective pedestrian TTC is being maintained. The inspection of TTC for pedestrian traffic shall be included as part of the TC-1 report.

## 2. Temporary Pedestrian Facilities

Temporary pedestrian facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. The geometry, alignment and construction of the facility should meet the applicable requirements of the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)”.

### a. Temporary Walkways with Detectable Edging

A smooth, continuous hard surface (firm, stable and slip resistant) shall be provided throughout the entire length of the temporary pedestrian facility. Compacted soils, sand, crushed stone or asphaltic pavement millings shall not be used as a surface course for walkways.

Temporary walkways shall include detectable edging as defined in the MUTCD. When temporary traffic barrier is included as a pay item in the contract and where locations identified on the plans for positive protection will also allow them to serve as pedestrian detectable edging, payment will be made for the temporary traffic barrier in accordance with Section 620. No payment will be made for temporary walkways with Detectable Edging where existing pavements or existing edging (that meets the requirements of MUTCD) are utilized as temporary walkways. Payment for temporary detectable edging, including approved barriers and channelizing devices, installed on existing pavements shall be included in Traffic Control-Lump Sum.

Regardless of the materials used, temporary walkways shall be constructed with sufficient thickness and durability to withstand the intended use for the duration of the construction project. If concrete or asphalt is used as the surface course for the walkway, it shall be a minimum of one and one-half inches ( $\geq 1\frac{1}{2}$ ”) thick. Temporary walkways constructed across unimproved streets and drives shall be a minimum thickness of four inches ( $\geq 4$ ”) for concrete and three inches ( $\geq 3$ ”) for asphalt. Joints formed in concrete sidewalks shall be in accordance with Section 441. Concrete surfaces shall have a broom finish.

If plywood is used as a walkway, it must be a minimum of three quarters of an inch ( $\geq 3/4$ ”) thick, pressure treated and supported with pressure treated longitudinal joists spaced a maximum of sixteen inches ( $\leq 16$ ”) on center. The plywood shall be secured to the joist with galvanized nails or galvanized deck screws. Nails and screws shall be countersunk to prevent snagging or tripping the pedestrians. A slip resistant friction course shall be applied to any plywood surface that is used as a walkway. Any slip resistant material used shall have the prior written approval of the engineer.

The contractor may propose alternate types of Temporary Walkways provided that the contractor can document that the proposed walkway meets the requirements of the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)”. Alternate types of Temporary Walkways shall have the prior written approval of the engineer.

Temporary walkways shall be constructed and maintained so there are no abrupt changes in grade or terrain that could cause a tripping hazard or could be a barrier to wheelchair use. The contractor shall construct and maintain the walkway to ensure that joints in the walkway have a vertical difference in elevation of no more than one quarter ( $\leq 1/4$ ”) of an inch and that the horizontal joints have gaps no greater than one half ( $\leq 1/2$ ”) of an inch. The grade of the temporary walkway should parallel the grade of the existing walkway or roadway and the cross slope should be no greater than two percent ( $\leq 2\%$ ).

A width of sixty inches (60”), if practical, should be provided throughout the entire length of any temporary walkway. The temporary walkway shall be a minimum width of forty eight inches (48”). When it is not possible to maintain a minimum width of sixty inches (60”) throughout the entire length of temporary walkway, a sixty inch (60”) by sixty inch (60”) passing space should be provided at least every two hundred feet (200 ft.), to allow individuals in wheelchairs to pass.

Temporary walkways shall be constructed on firm subgrade. Compact the subgrade according to Section 209. Furnish and install any needed temporary pipes prior to constructing any walkway to ensure positive drainage away from or beneath the temporary walkway. Once the walkway is no longer required, remove any temporary materials and restore the area to the original conditions or as shown in the plans.

b. Temporary Curb Cut Wheelchair Ramps

Temporary curb cut wheelchair ramps shall be constructed in accordance with Section 441 and Construction Detail A-3 Curb Cut (Wheelchair) Ramps Concrete Sidewalk Details. Ramps shall also include a detectable warning surface in accordance with Construction Detail A-4 Detectable Warning Surface Truncated Dome Size, Spacing and Alignment Requirements. Other types of material for the construction of the temporary curb cut wheelchair ramps, including the detectable warning surface, may be used provided the contractor can provide documentation that the material to be used meets the requirements of the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)”. When a wheelchair ramp is no longer required, remove the temporary materials and restore the area to existing conditions or as shown in the plans. For the items required to restore the area to original conditions or as shown in the plans, measures for payment shall be covered by contract pay items. If pay items are not included in the contract, then payment for these items shall be included in Traffic Control-Lump Sum.

c. Temporary Audible Information Device

Temporary audible information devices, when shown in the plans, shall be installed in compliance with the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)”. The devices shall be installed in accordance with the manufacturer’s recommendations. Prior to installation, the contractor shall provide the engineer with a set of manufacturer’s drawings detailing the proper installation procedures for each device. When no longer required, the devices shall remain the property of the contractor.

## **150.2 Materials and Traffic Control Devices**

### **150.2.01 Traffic Control Devices**

#### **A. NCHRP 350 and MASH**

All devices shall be certified in accordance with the Manual for Assessing Safety Hardware (MASH) Test Level 3 and/or the National Cooperative Highway Research Program (NCHRP) 350 Test Level 3 as applicable unless modified by this Special Provision. In addition, temporary work zone devices, including portable barriers, manufactured after December 31, 2019, must have been successfully tested under 2016 edition of MASH requirements. Such devices manufactured on or before this date, and successfully tested under either NCHRP Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives.

## **B. Approval**

All traffic control devices with applicable Qualified Products List (QPL) categories shall come from the appropriate QPL list. Products not on the QPL may be used with an approval letter from the Georgia Department of Transportation Office of Materials and Testing. If there are no applicable QPL, the Contractor shall provide proof of MASH/NCHRP 350 certification. The proof may be a letter or written statement from the manufacturer that the product is MASH/NCHRP 350 approved. Decal certifications are not proof of certification and are not required.

## **C. Quality Guidelines for All Temporary Traffic Devices**

All traffic control devices found to be unacceptable in accordance with the current ATSSA, "Quality Guidelines for Temporary Traffic Devices and Features" regardless of total numbers shall be replaced within twenty-four (24) hours unless stated otherwise in the specifications, in the contract, or as directed by the Engineer.

### **150.2.02 Retroreflectivity Requirements**

#### **A. Signs**

Reflective sheeting should meet the requirements of Section 913 and QPL-29

1. For all projects let prior to and including April/May 2018, signs can be:
  - a. All rigid fluorescent orange construction warning signs (black on fluorescent orange) shall meet the minimum retroreflectivity and color requirements of ASTM Type VII, VIII, IX or X regardless of the mounting height.
  - b. Warning signs (W3-1) for stop conditions that have rumble strips located in the travel lane shall be reflectorized with ASTM Type IX fluorescent yellow sheeting.
  - c. All other signs shall meet the requirements of ASTM Type III or IV except for "Pass With Care" and "Do Not Pass" signs which may be ASTM Type I unless otherwise specified
2. For all projects let May/June 2018 and afterward, all construction warning signs (black on fluorescent orange) shall meet the minimum reflectivity and color requirements of ASTM D4956 Type XI regardless of the mounting height. All other signs reflectorization shall be in accordance with the plans, contract, and "GDOT Signing and Marking Design Guidelines".

#### **B. Channelization Devices**

Reflective sheeting should meet the requirements of Section 913 and QPL-29

1. For all projects let prior to and including April/May 2018, channelization devices shall meet the minimum requirements of ASTM Type III or IV high intensity sheeting.
2. For all projects let May/June 2018 and afterward, all channelization devices (white/ fluorescent orange and white/red) shall meet the minimum retroreflectivity requirements of ASTM D4956 Type VI.

### **150.2.03 Arrow Panels**

Arrow panel should meet the requirements for MUTCD (6F.61) and QPL-79.

Portable sequential arrow, sequential chevron, or flashing arrow panels shall be a minimum size of forty-eight inches (48”) high by ninety-six inches (96”) wide with not less than fifteen (15) lamps used for the arrow. The arrow shall occupy virtually the entire size of the arrow panel and shall have a minimum legibility distance of one (1) mile. The minimum legibility distance is the distance at which the arrow panel can be comprehended by an observer on a sunny day, or clear night. Arrow panels shall be equipped with automatic dimming features for use during hours of darkness. The arrow panels shall also meet the requirements for a Type C panel as shown in the MUTCD (6F.61). The sequential or flashing arrow panels shall not be used for lane closure on two-lane, two-way highways when traffic is restricted to one-lane operations in which case, appropriate signing, flaggers and when required, pilot vehicles will be deemed sufficient.

The arrow panels shall be placed on the shoulder at or near the point where the lane closing transition begins. The panels shall be mounted on a vehicle, trailer, or other suitable support. Vehicle mounted panels shall be provided with remote controls. Minimum mounting height shall be seven feet (7’) above the roadway to the bottom of the panel, except on vehicle mounted panels which should be as high as practical.

For emergency situations, arrow display panels that meet the MUTCD requirements for Type A or Type B panels may be used until Type C panels can be located and placed at the site. The use of Type A and Type B panels shall be held to the minimum length of time possible before having the Type C panel(s) in operation. The Engineer shall determine when conditions and circumstances are considered to be emergencies. The Contractor shall notify the Engineer, in writing, when any non-specification arrow display panel(s) is being used in the work.

### **150.2.04 Channelization Devices**

#### **A. General**

Channelization shall clearly delineate the travel way through the work zone and alert drivers and pedestrians to conditions created by work activities in or near the travel way. Channelization shall be accordance with the plans, specifications, MUTCD, QPL-34, and the following requirements.

#### **B. Drums**

##### **1. Design**

Drums shall meet the minimum requirement of the MUTCD ( 6F.67). For all projects let May/June 2018 and afterward, drums shall have six inch (6”) wide stripes – white/fluorescent orange.

##### **2. Application**

Drums shall be used as the required channelizing device to delineate the full length of a lane closure, shift, or encroachment, except as modified by this Subsection.

##### **3. Longitudinal Channelization**

Drums shall be spaced as listed below for various roadside work conditions except as modified by Subsection 150.3.11. Spacing shall be used for situations meeting any of the conditions listed as follows:

a. FORTY FOOT (40') SPACING MAXIMUM

- For difference in elevation exceeding two inches ( $> 2''$ ).
- For healed sections no steeper than 4:1 as shown in Subsection 150.3.11, Detail 150-H..

b. EIGHTY FOOT (80') SPACING MAXIMUM

- For difference in elevation of two inches ( $\leq 2''$ ) or less.
- Flush areas where equipment or workers are within ten feet ( $\leq 10'$ ) of the travel lane.

c. 200 FOOT SPACING MAXIMUM: Where equipment or workers are more than ten feet ( $> 10'$ ) from travel lane. Lateral offset clearance to be four feet (4') from the travel lane.

- For paved areas, eight feet ( $> 8'$ ) or greater in width that are paved flush with a standard width travel lane.
- For disturbed shoulder areas not completed to typical section that are flush to the travel lane and considered a usable shoulder.

4. Removal of Drums

Drums may be removed after shoulders are completed to typical section and grassed. Guardrail and other safety devices shall be installed and appropriate signs advising of conditions such as soft or low shoulder shall be posted before the drums are removed.

**C. Vertical Panels**

1. Design

All vertical panels shall meet the minimum requirements of the MUTCD (6F.66). All vertical panels shall have a minimum of 270 square inches of retroreflective area facing the traffic and be a minimum thirty-six inches ( $\geq 36''$ ) high. For all projects let May/June 2018 and afterward, the vertical panel shall be in addition a minimum eight inches ( $\geq 8''$ ) wide with a stripe width of six inches (6'') – white/fluorescent orange.

2. Application

Vertical panels with retroreflectivity less than type VI can only be used when traffic drums reduce the travel lane to less than ten feet ( $\leq 10'$ ); vertical panels shall be used to restore the travel lane to ten feet ( $\geq 10'$ ) or greater. No other application of vertical panels with retroreflectivity less than type VI will be permitted.

Vertical panels with a minimum type VI retroreflectivity and six inch (6'') stripe may be used for longitudinal channelization in the activity zone where work takes place for short-term stationary lane closures and intermediate-term stationary lane closures. They can be used for lane closures lasting three (3) days and with Engineer approval up to seven (7) days. They shall not be used in the transition zone including the tapers and the tangent lengths between tapers.

## **D. Cones**

### **1. Design:**

All cones shall be a minimum of twenty-eight inches ( $\geq 28''$ ) in height regardless of application and shall meet the requirements of the MUTCD (6F.64).

Retroreflectivity may be deleted from all cones.

### **2. Application**

On interstate cones shall be prohibited. On all other routes cones may only be used for longitudinal channelization in the activity zone where work takes place for short-term stationary lane closures. They shall not be used in the transition zone including the tapers and the tangent lengths between tapers. The use of cones for nighttime work will not be permitted. Cones shall not be stored or allowed to be visible on the worksite during nighttime.

Cones may be used for daytime flagging operations including tapers at flagging stations.

## **E. Barricades**

### **1. Design**

Type 3 barricades shall meet the minimum requirements of the MUTCD (6F.68). The Contractor has the option of choosing Type 3 barricades from the QPL-34 or the Contractor may utilize generic barricades that are approved by the Federal Highway Administration (FHWA). When barricades have been specifically crash tested with signs attached, the contractor has the responsibility to attach the signs as per the manufacturer's recommendations to ensure crashworthiness. If the barricades were not tested with the signs, crashworthy compliance may require that rigid signs be mounted separate from the Type 3 barricade.

The use of Type 1 and Type 2 barricades will not be permitted.

### **2. Application**

Type 3 barricades shall be placed as required by the plans, the Standards, and as directed by the Engineer.

When a barricade is placed so that it is subject to side impact from a vehicle, a drum shall be placed at the side of the barricade to add target value to the barricade.

## **F. Warning Lights**

### **1. Design**

All warning lights shall meet the requirements of the MUTCD (6F.83).

### **2. Application:**

- a. Type A low-intensity flashing lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer.
- b. Type C Steady-Burn lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer.

### **150.2.05 Flashing Beacon**

The flashing beacon assembly, when specified, shall be used in conjunction with construction warning signs, regulatory, or guide signs to inform traffic of special road conditions which require additional driver attention. The flashing beacon assembly shall be installed in accordance with the requirements of Section 647.

### **150.2.06 Guardrail**

Guardrail shall comply with Section 641 Guardrail and the guardrail standards.

When the removal and installation of guardrail is required, as a part of the work, the following time restrictions shall apply unless modified by the special conditions:

From the time that the existing guardrail or temporary positive barrier protection is removed, the Contractor has fourteen (14) days to install the new guardrail and anchors. During the interim, the location without guardrail shall be protected with drums spaced at a maximum spacing of twenty feet (20'). The guardrail blunt end is to be treated as a fix object and shall be projected. The maximum length of rail that can be removed at any time without being replaced with positive barrier protection is a total of 2000 linear feet of existing rail or the total length of one run of existing rail, whichever is less. Based on existing field conditions, the Engineer may review the work and require that the guardrail be installed earlier than the maximum time allowed.

The contractor shall install new guardrail, such that traffic exposure to fixed objects is minimized. Within the same workday, temporary attenuators, as defined in Subsection 150.2.10, should be installed on the approach to fixed objects that can't be protected with guardrail. Truck mounted attenuators may be used to shield exposed fixed objects for periods not to exceed fourteen (14) days. No separate payment will be made for truck mounted attenuators, attenuators, or other methods unless provided for in the contract.

When the roadway is open to traffic, guardrail panels shall be lapped to comply with the directional flow of traffic. Should the staging of the work require that the lap of the guardrail be changed, this work shall be completed before the roadway is opened to traffic. The work to change the lap of any guardrail shall be included in Traffic Control-Lump Sum.

The laps on anchors shall be in accordance with the manufacture's recommendations and installation instructions. As a result, a trailing anchor may be lapped opposing the flow of traffic.

Failure to comply with the above time and quantity restrictions shall be considered as non-compliance under Subsection 150.5.01.

### **150.2.07 Interim Signs**

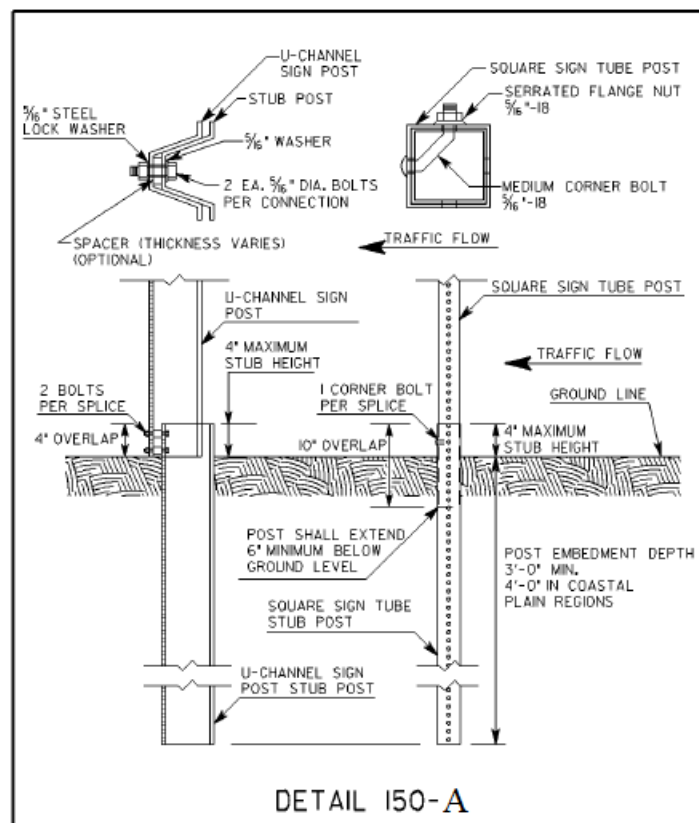
#### **A. Posts**

Permanent mounting height to the bottom of sign shall be seven (7) feet – eight (8) feet measured vertically from the bottom of the sign to the elevation of the near edge of the pavement or from the walkway. Posts for all interim signs should be square tubular post meeting the requirements of Section 911, QPL-35, and Construction Detail T-3A (Type 7, 8, and 9 Square Tube Post Installation Detail). Ground mounted sign(s) greater than 48" wide shall be mounted on two posts. For barrier mounted sign, single post mount is allowed.

The post(s) shall not extend beyond the top of the sign(s). The sign(s) shall be substantially plumbed and leveled.

Galvanized U-Channel post can be used in lieu of square tubular posts until December 31, 2019. The U-Channel post shall meet the requirements of Section 911. Ground mounted sign(s) greater than nine (9) square feet shall be mounted on two posts. All posts replaced or installed on or after January 01, 2020 shall be square tubular posts.

Unprotected interim posts shall be spliced as shown in Detail 150-A, unless full length unspliced posts are used. Unprotected post splices will not be permitted any higher than four inches above the ground line to lessen the possibility of affecting the undercarriage of a vehicle. Installation of posts may require establishment of openings in existing pavements, islands, shoulders etc.



## B. Sign Blanks and Panels

All TTC sign blanks and panels should conform to Section 912 of the Specifications. Alternative sign blank materials (composites, polycarbonates, fiberglass reinforced plastics, recycled plastics, etc.) shall have a letter of approval from the Office of Materials and Testing for use as interim construction signs before these materials are allowed to be incorporated into the work, unless these rigid sign blanks are currently approved as a crashworthy sign blank material under QPL 34.



Unless specified elsewhere in the contract, specifications, plans, and/or directed by the Engineer, sign sizes are according to the following:

1. All construction signs sizes should follow the dimensions provide in MUTCD Table 6F-1 “Temporary traffic Control Zone Sign and Plaque Sizes” under the column for “Freeway or Expressway”.
2. For all other signs used just for staging, the sign sizes should follow the dimensions provide in MUTCD Table 2B-1 “Regulatory Sign and Plaque Sizes” for the largest size.
3. Permanent signs used for staging shall be according to plans.

Plywood blanks or panels will not be permitted.

The use of flexible signs will not be permitted.

For utility work not included in the contract, the utility contractor may use flexible signs within the project limits.

### **150.2.08 Pavement Markings**

All temporary traffic striping shall conform to the requirements of Section 652, Section 653, Section 657, Section 658, Section 659, and QPL-46.

#### **A. All Traffic Striping for 45 Days or Less ( $\leq 45$ Days)**

All traffic striping that will be in place for 45 days or less shall be 4 inches or greater in width.

#### **B. All Temporary Striping Beyond 45 days ( $>45$ Days)**

All traffic striping applied on intermediate surfaces shall be a minimum 5 inches in width or as shown on plans. On final surfaces when temporary striping will be overlaid or eradicated, the temporary striping shall be a minimum 5 inches in width.

#### **C. All Temporary Traffic Striping on Final Surface**

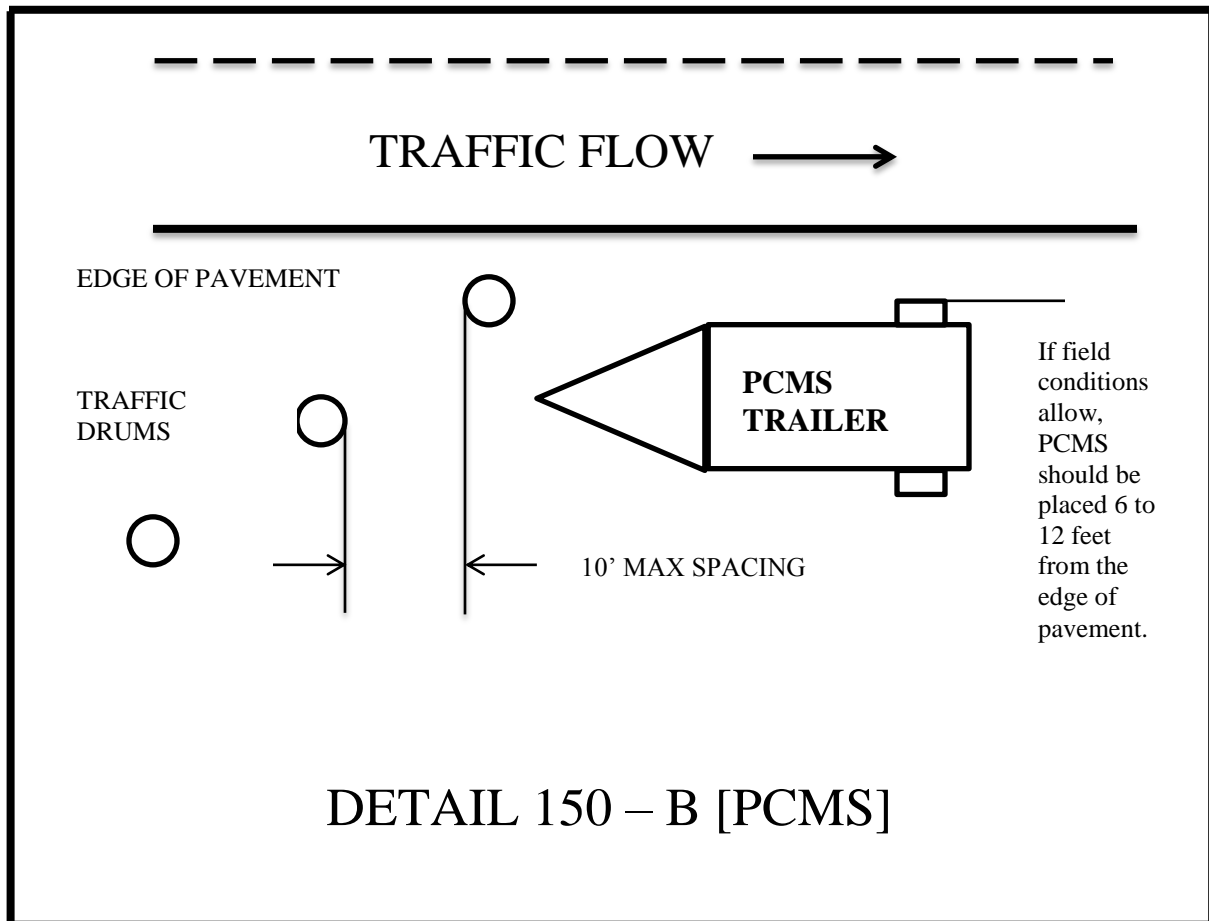
All temporary traffic striping applied to final surfaces which will not be overlay or grinded may be 4 inches in width or as shown on the plans.

### **150.2.09 Portable Changeable Message Signs**

Unless specified as a paid item in the contract, the use of a portable changeable message sign will not be required. When specified, a portable changeable message sign (PCMS) shall meet the minimum requirements of Section 632, MUTCD (6F.60) and be on QPL-82. The maximum amount of messages allowed to be flashed on one PCMS is two phases (flashes). The language and the timing of the messages shall comply with the MUTCD and Section 632. When used as an advanced device, the PCMS should typically be placed ahead of the construction activities. If the PCMS is used as a substitute for another device, then the requirements for the other device apply.

Any PCMS in use, which is not protected by positive barrier protection, shall be delineated by a minimum of three drums that meet the requirement of Subsection 150.2.04.B. The drum spacing shall not exceed a maximum of ten

(10') feet as shown in Detail 150-B. When the PCMS is within twenty (20') feet of the opposing traffic flow, the trailing end of the PCMS shall be delineated with a minimum of three drums spaced in the same manner as the approach side of the PCMS.



When not in use, the PCMS shall be removed from the roadway, unless protected by positive barrier protection. If the PCMS is protected by positive barrier protection, the sign panel shall be turned away from traffic when not in use.

#### 150.2.10 Portable Impact Attenuators

This work consists of the furnishing (including spare parts), installation, maintenance, relocation, reuse as required, and removal of Portable Impact Attenuator Units/Arrays.

Portable Impact Attenuator Unit/Arrays installation shall conform to the requirements of Section 648, Manufacturer's recommendations and Georgia Standard 4960 "Temporary Barrier (End Treatment Options)" and shall be installed at locations designated by the Engineer, and/or as shown on the plans. When gating

attenuators are used, the contractor shall maintain the appropriate recovery area in accordance with the manufacturers' recommendations.

Generic sand/water loaded modules are prohibited. Manufacturers' sand/water loaded modules with specific arrays that have been NCHRP 350/MASH approved can be used in appropriate locations.

The test level of protection provided shall equal or exceed the speed limit. Test level 3 shall be used for forty-five (45) mph or above.

### **150.2.11 Portable Temporary Traffic Control Signals**

The use of Portable Temporary Traffic Control Signals shall meet the following minimum requirements:

Only two-lane, two-way roadways will be allowed to utilize Portable Temporary Traffic Control Signals.

All portable traffic control signals shall meet the physical display and operational requirements of conventional traffic signals described in the MUTCD.

Each signal face shall have at least three lenses. The lenses shall be red, yellow, or green in color and shall give a circular type of indication. All lenses shall be twelve (12") inches nominal in diameter.

A minimum of two signal faces shall face each direction of traffic. A minimum of one signal head shall be suspended over the roadway travel lane in a manner that will allow the bottom of the signal head housing to be not less than seventeen (17') feet above and not more than nineteen (19') feet above the pavement grade at the center of the travel lane. The second signal head may be located over the travel lane with the same height requirements or the second signal head may be located on the shoulder. When the signal head is located on the shoulder, the bottom of the signal head housing shall be at least eight (8') feet but not more than (15') feet above the pavement grade at the center of highway.

Advance warning signage and appropriate pavement markings shall be installed as part of the temporary signal operation.

The signals shall be operated in a manner consistent with traffic requirements. The signals may be operated in timed-mode or in a vehicle-actuated mode. The signals shall be interconnected in a manner to ensure that conflicting movements cannot occur. To ensure that the appropriate operating pattern, including timing is displayed to the traveling public, regular inspections, including the use of accurate timing devices shall be made by the Worksite Traffic Control Supervisor. If, at any time, any part of the system fails to operate within these requirements then the use of the signal shall be suspended and the appropriate flagging operation shall begin immediately.

The Worksite Traffic Control Supervisor (WTCS) shall continuously monitor the portable traffic control signal to insure compliance with the requirements for maintenance under the MUTCD. The signal shall be maintained in a manner consistent with the intention of the MUTCD, with emphasis on cleaning of the optical system. Timing changes shall be made only by the WTCS. The WTCS shall keep a written record of all timing changes.

The portable temporary signal shall have two power sources and shall be capable of running for seven calendar days continuously.

The Contractor shall have an alternate temporary traffic control plan in the event of failure of the signal.

### **150.2.12 Raised Pavement Markers**

Raised pavement markers (RPMs) shall meet the requirements of Section 654 and QPL-76.

### **150.2.13 Rumble Strips**

Rumble strips incorporated into the work shall meet the requirements of Section 429 and the MUTCD. Existing rumble strips that are positioned in the traveled way to warn traffic of a stop condition shall be reinstalled prior to opening to traffic. Based on the following requirements:

Intermediate surfaces that will be in use for more than forty-five (45) calendar days shall have rumble strips reinstalled on the traveled way in the area of a stop condition. Non-refundable deductions in accordance with Subsection 150.5.01 will be assessed for any intermediate surface in place for greater than 45 days without rumble strips.

Rumble strips shall be installed on the final surface within fourteen (14) calendar days of the placement of the final surface in the area of the stop condition. Failure to install within fourteen (14) calendar days will result in assessment of non-refundable deductions in accordance with Subsection 150.5.01.

Prior to the removal of any rumble strips located in the travel lane, stop ahead (W3-1) warning signs shall be double indicated ahead of the stop condition. These warning signs shall be a minimum of 48 inches by 48 inches. These warning signs shall remain in place until the rumble strips have been reinstalled on the traveled way. Any existing warning signs for the stop ahead condition shall be removed or covered while the 48" X 48" (W3-1) signs are in place. When the rumble strips have been reinstalled, these warning signs should be promptly removed and any existing signage placed back in service.

### **150.2.14 Temporary Barriers**

#### **A. Design:**

Temporary barriers shall meet the requirements of Sections 620. The lengths of advancement should be in accordance with Georgia Standard 4000W "Lengths of Advancement, Clear Zone Distances, and Fill Height Embankment". The approach end of the taper should have 10:1 or flatter ground slope. Temporary barriers shall not be used as a channelization device. Their use is in accordance with MUTCD (6F.85).

#### **B. Application:**

Temporary barriers shall be placed as required by the plans, standards, and as directed by the Engineer. When Temporary barrier is located twenty feet ( $\leq 20'$ ) or less from a travel lane, yellow reflectors shall be fixed to the top of the barrier at intervals not greater than forty feet ( $\leq 40'$ ) in the longitudinal section and twenty feet ( $20'$ ) in the taper section and shall be mounted approximately two inches ( $2''$ ) above the barrier. If both lanes of a two-lane two-way roadway are within twenty feet ( $\leq 20'$ ) or less of the barrier then the reflectors shall be installed for both directions of traffic.

The reflectors shall be hundred (100) square inches (ASTM Type VII or VIII/ Type XI) reflective sheeting mounted on flat-sheet blanks. The reflectors shall be mounted approximately two inches above the top of the barrier. The reflectors shall be attached to the barrier with adhesive or by a drilled-in anchor type device. The reflectors shall not be attached to a post or board that is placed between the gaps in the barrier sections.

Approach end of Temporary barrier shall be protected according to Georgia Standard 4960 “Temporary Barrier (End Treatment Options)” or by a portable impact attenuator.

On interstates or other controlled access highways where lane shifts or crossovers cause opposing traffic to be separated by less than forty feet (<40’), portable barrier should be used as a separator.

#### **150.2.15 Temporary Guardrail Anchorage- Type 12**

This work consists of the furnishing, installation, maintenance and removal of Temporary Guardrail Anchorage- Type 12 used for Portable Barrier or temporary guardrail end treatment. Materials used in the Temporary Guardrail Anchorage- Type 12 shall meet the requirements of Section 641 of the Specifications and current Georgia Standards and may be new or used. Materials salvaged from the Project, which meet the requirements of Standards, may be utilized if available. The use of any salvaged materials will require prior approval of the Engineer.

Installation of the Temporary Guardrail Anchorage- Type 12 shall conform to the requirements of the Plans, current Georgia Standards and Section 641 of the Specifications. Installation shall also include sufficient additional guardrail and appurtenances to effect the transition and connection to Temporary Concrete Barrier as required by the details in Georgia Standard 4960 “Temporary Barrier (End Treatment Options)”.

#### **150.2.16 Temporary Traffic Signals**

Temporary traffic signals shall meet the requirements of Section 647 and the MUTCD.

### **150.3 Construction Requirements**

#### **150.3.01 General**

##### **A. Implementation Requirements**

No work shall be started on any project phase until the appropriate traffic control devices have been placed in accordance with the Project requirements. Changes to traffic flow shall not commence unless all labor, materials, and equipment necessary to make the changes are available on the Project.

When any shift or change is made to the location of traffic or to the flow patterns of traffic, including pedestrian traffic, the permanent safety features shall be installed and fully operational before making the change. If staging or site conditions prevent the installation of permanent features then the equivalent interim devices shall be utilized. This work shall also include any necessary removal and reinstallation of guardrail panels to achieve the required panel lap to accommodate the appropriate shift and traffic flow including the final traffic flow configuration. The cost of performing this work shall be included in Traffic Control-Lump Sum.

Any section of the work that is on a new location shall have all permanent safety features installed and fully operational before the work is opened to traffic. Safety features shall include, but are not limited to the following items:

- 1) Guardrails including anchors and delineation with properly lapped panels
- 2) Impact attenuators
- 3) Traffic signals
- 4) Warning devices
- 5) Pavement markings including words, symbols, stop bars, and crosswalks
- 6) Roadway signs including regulatory, warning, and guide

Outdoor lighting shall be considered as a safety feature for welcome centers, rest areas, and weigh station projects. For typical roadway type projects, new street lighting is not considered a safety feature, unless specifically noted in the plans or in the special conditions.

## **B. Maintenance of Traffic Control Devices**

Traffic control devices shall be in acceptable condition when first erected on the project and shall be maintained in accordance with Section 104, throughout the construction period. All unacceptable traffic control devices shall be replaced within twenty-four (24) hours. When not in use, all traffic control devices shall be removed, placed or covered so as not to be visible to traffic. All construction warning signs shall be removed within seven (7) calendar days after time charges are stopped or pay items are complete. If traffic control devices are left in place for more than ten (10) calendar days after completion of the Work, the Department shall have the right to remove such devices, claim possession thereof, and deduct the cost of such removal from any monies due, or which may become due, the Contractor.

## **C. Traffic Interruption Restrictions**

The Department reserves the right to restrict construction operations when, in the opinion of the Engineer, the continuance of the Work would seriously hinder traffic flow, be needlessly disruptive or unnecessarily inconvenience the traveling public. The Contractor shall suspend and/or reschedule any work when the Engineer deems that conditions are unfavorable for continuing the Work.

Advanced notification requirements to the Contractor to suspend work will be according to the events and the time restrictions outlined below:

Incident management - No advanced notice required

Threatening/Inclement weather – twenty-four (24) hours

Holiday, sporting events, unfavorable conditions - Three (3) calendar days

If the work is suspended, the Contractor may submit a request for additional contract time as allowed under Section 108. The Department will review the request and may grant additional contract time as justified by the impact to the Contractor's schedule. Compensation for loss of productivity, rescheduling of crews, rental of equipment or delays to the Contractor's schedule will not be considered for payment. Additional contract time will be the only consideration granted to the Contractor.

## **D. Work Zone Restrictions**

### **1. Interstate**

The Contractor should not simultaneously perform work on both the inside shoulder and outside shoulder on either direction of traffic flow when the Work is within 12 feet of the travel-way. Shoulders can be alternated if areas are separated by at least one-half mile of distance.

## 2. Non-Interstate Divided Highways

The Contractor should not simultaneously perform work on both the inside shoulder and outside shoulder on either direction of traffic flow when the Work is within 12 feet of the travel-way. Shoulders can be alternated if areas are separated by at least one-half mile distance in rural areas or at least 500 feet of distance in urban areas.

## 3. Non-Divided Highways

- a. The Contractor should not simultaneously perform work on opposite sides of the roadway when the work is within 12 feet of the travel-way. Shoulders can be alternated if areas are separated by at least one-half mile of distance in rural areas or at least 500 feet of distance in urban areas.
- b. On two-lane projects where full width sections of the existing subgrade, base or surfacing are to be removed, and new base, subgrade, or surfacing are to be constructed, the Contractor should maintain one-lane traffic through the construction area by removing and replacing the undesirable material for half the width of the existing roadway at a time. Replacement should be made such that paving is completed to the level of the existing pavement in the adjacent lane by the end of the workday or before opening all the roadway to traffic.

## E. Work Zone Geometric Restrictions

There should be no reduction in the total number of available traffic lanes including turning lanes that existed prior to construction, except as specifically allowed by the Contract and as approved by the Engineer.

Travel lane Clearances: All portions of the work should maintain the following minimum requirements:

Horizontal: The combined dimensions of the paved shoulder and the roadway surface remaining outside the Work Zone should be no less than sixteen feet ( $\geq 16'$ ) in width at any location.

Vertical: The overhead clearance should not be reduced to less than fifteen feet ( $\geq 15'$ ) at any location.

The restrictions above apply to all shifts, lane closures, on-site detours and off-site detours whether shown in the contract or proposed by the Contractor. It shall be the responsibility of the Contractor to verify that these minimum requirements have been met before proceeding with any phase of the Work. Two-lane, two-way roadways may have temporary horizontal restrictions of less than sixteen feet ( $\geq 16'$ ) during flagging operations. The minimum horizontal clearance should be restored before the flagging operation is removed.

## F. Clear Zone

At the end of the workday, all equipment, materials, and TTC devices not in use should be moved out of the clear zone or behind positive protection. The clear zone is defined by Georgia Standard 4000W "Lengths of Advancement, Clear Zone Distances, Fill Height Embankment". For urban roadway with curb, the minimum set back is six (6') feet from the curb face. If stored behind positive protection, proper lengths of advancement should be maintained. If stored behind guardrail the items shall be a minimum five feet ( $\geq 5'$ ) from the face of the guardrail and not in the recovery zone of the anchor.

The Worksite Traffic Control Supervisor (WTCS) shall monitor the work to ensure that all the rocks, boulders, construction debris, stockpiled materials, equipment, tools and other potential hazards are kept clear of the travel lane.

#### **G. Milled Surface Restrictions**

Unless modified by the special conditions, a milled surface on any asphaltic concrete surface shall not be allowed to remain open to traffic for a period of time that exceeds thirty (> 30) calendar days.

#### **H. Construction Vehicles**

The Contractor's vehicles shall travel in the direction of normal roadway traffic and shall not reverse direction except at intersections, interchanges, or approved temporary crossings. The Contractor may submit a plan requesting that construction traffic be allowed to travel in the opposite direction of normal traffic when it would be desirable to modify traffic patterns to accommodate specific construction activities.

Prior approval of the Engineer shall be obtained before any construction traffic is allowed to travel in a reverse direction. If the Contractor's submittal is approved, the construction traffic shall be separated from normal traffic by appropriate traffic control devices.

The parking of Contractor's and/or workers' personal vehicles within the work area or adjacent to traffic is prohibited. It shall be the responsibility of the Worksite Traffic Control Supervisor to ensure that any vehicle present at the worksite is necessary for the completion of the work.

#### **I. Environmental Impacts**

The Contractor shall ensure that dust, mud, and other debris from construction activities do not interfere with normal traffic operations or adjacent properties.

#### **J. Existing Street Lights**

Existing street lighting shall remain lighted as long as practical and until removal is approved by the Engineer.

#### **K. Nighttime Work Lighting**

Adequate temporary lighting shall be provided at all nighttime work sites where workers will be immediately adjacent to traffic.

#### **L. Removal/Reinstallation of Miscellaneous Items**

In the prosecution of the Work, if it becomes necessary to remove any existing signs, markers, guardrail, etc. not covered by specific pay item, they shall be removed, stored and reinstalled, when directed by the Engineer, to line and grade, and in the same condition as when removed.

### **150.3.02 Personnel – Worker Safety Apparel**

In accordance with MUTCD (6D.03) all workers, within the right-of-way who are exposed either to traffic or to work vehicles and construction equipment within the TTC zone, shall wear high-visibility safety apparel that meets the Performance Class 2 or better.



### **150.3.03 Signage - General**

#### **A. Signing Requirements of the Temporary Traffic Control (TTC) Plan**

When existing regulatory, warning or guide signs are required for proper traffic and pedestrian control, the Contractor shall maintain these signs in accordance with the temporary traffic control (TTC) plan. The Contractor shall review the status of all existing signs, interim signs added to the work, and permanent sign installations that are part of the work to eliminate any conflicting or non-applicable signage in the TTC Plan. The Contractor's review of all signs in the TTC Plan shall establish compliance with the requirements of the MUTCD and Section 150. Any conflicts shall be reported to the Engineer immediately and the WTCS shall take the necessary measures to eliminate the conflict.

The Contractor shall make every effort to eliminate the use of interim signs as soon as the Work allows for the installation of permanent signs.

All existing illuminated signs shall remain lighted and be maintained by the Contractor.

Existing street name signs shall be maintained at street intersections.

#### **B. Conflicting or Non-Applicable Signs**

Any sign(s) or portions of a sign(s) that are not applicable to the TTC plan shall be covered so as not to be visible to traffic or shall be removed from the roadway when not in use. The WTCS shall review all traffic shifts and changes in the traffic patterns to ensure that all conflicting signs have been removed. The review shall confirm that the highest priority signs have been installed and that signs of lesser significance are not interfering with the visibility of the high priority signs. High priority signs include signs for road closures, shifts, detours, lane closures and curves. Any signs, such as speed zones and speed limits, passing zones, littering fines and litter pick up, that reference activities that are not applicable due to the presence of the Work shall be removed, stored and reinstalled when the Work is completed.

Failure to promptly eliminate conflicting or non-applicable signs shall be considered as non-performance under Subsection 150.5.01.

#### **C. Removal of Existing Signs and Supports**

The Contractor shall not remove any existing signs and supports without prior approval from the Engineer. All existing signs and supports which are to be removed shall be stored and protected if this material will be required later in the work as part of the TTC plan. If the signs are not to be utilized in the work then the signs will become the property of the Contractor unless otherwise specified in the contract documents.

#### **D. Interim Guide, Warning and Regulatory Signs**

Interim guide, warning, or regulatory signs required to direct traffic and pedestrians shall be furnished, installed, reused, and maintained by the Contractor in accordance with the MUTCD, the Plans, Special Provisions, Special Conditions, or as directed by the Engineer. These signs shall remain the property of the Contractor. When the signs are used for long-term stationary operations as defined MUTCD (6G.02), the bottom of all interim signs shall be mounted seven feet (7') to eight feet (8') above the level of the pavement edge or sidewalk. The signs offset should be six feet (6') to twelve feet (12') from the pavement edge or two feet ( $\geq 2'$ ) minimum for sidewalks according to MUTCD (6F-1). Special Conditions under Subsection 150.6 may modify this requirement.

Portable signs may be used when the duration of the work is less than three (3) days or as allowed by the special conditions in Subsection 150.6. Portable signs shall be used for all punch list work. Portable interim signs shall be mounted a minimum of one foot ( $\leq 1'$ ) above the level of the pavement edge for directional traffic of two (2) lanes or less and at seven feet (7') for directional traffic of three (3) or more lanes according to MUTCD (6F-2). Signs shall be mounted at the height recommended by the manufacturer's crashworthy testing requirements.

All sign blanks shall be rigid whether the sign is mounted as a portable sign, on a Type III barricade or as a permanent mount height sign. Utilities and their subcontractors working in the project limits, and not included in the project contract, may use non-rigid signs.

## **E. Existing Special Guide Signs**

Existing special guide signs on the Project shall be maintained until conditions require a change in location or legend content. When change is required, existing signs shall be modified and continued in use if the required modification can be made within existing sign borders using design requirements (legend, letter size, spacing, border, etc.) equal to that of the existing signs, or of Subsection 150.3.E.2. Differing legend designs shall not be mixed in the same sign.

### **1. Special Guide Signs**

Special guide signs are those expressway or freeway guide signs that are designed with message content (legend) that applies to a particular roadway location. When an existing special guide sign is in conflict with work to be performed, the Contractor shall remove the conflicting sign and reset it in a new, non-conflicting location which has been approved by the Engineer.

### **2. Interim Special Guide Signs**

When it is not possible to utilize existing signs, either in place or relocated, the Contractor shall furnish, erect, maintain, modify, relocate, and remove new interim special guide signs in accordance with the Plans or as directed by the Engineer. Interim special guide signs that may be required in addition to, or a replacement for, existing expressway and freeway (interstate) signs shall be designed and fabricated in compliance with the minimum requirements for guide signing contained in Part 2E "Guide Signs – Freeway and Expressway" of the MUTCD. All interstate shields on these signs shall be 48 inches and 60 inches for two-numeral and three-numeral routes, respectively.

The road name of the exit or route shield shall be placed on the exit gore sign.

### **3. Interim Overhead Guide Sign Structures**

Interim overhead special guide sign structures are not required to be lighted unless specifically required by the Plans. If lighting is required, the sign shall be lighted as soon as erected and shall remain lighted, during the hours of darkness, until the interim sign is no longer required. The Contractor shall notify the Power Company at least thirty (30) days prior to desire connection to the power source.

### **4. Permanent Special Guide Signs**

The installation of new permanent special guide signs and the permanent modification or resetting of existing special guide signs, when included in the contract, shall be accomplished as soon as practical to minimize the use of interim special guide signs. If lighting is required by the Plans, all new permanent overhead special guide signs shall be lighted as soon as erected.

## **F. Stop Sign Regulated Intersections**

For intersections that utilize stop sign(s) to control the flow of traffic and to restrict the movement of vehicles, the stop sign(s) shall be maintained for the duration of the work or until such time that the stop condition is eliminated or until an interim or permanent traffic signal can be installed to provide proper traffic control. The traffic signal shall be installed and properly functioning before the removal of the existing stop sign(s) is permitted. If the existing intersection is enhanced traffic control features, such as stop lines, double indicated stop signs, oversized signs, advanced warning stop ahead signs, rumble strips on the approaches or flashing beacons located overhead or on the shoulders then these features shall be maintained for the duration of the project or until the permanent traffic control plan has been implemented.

Whenever the staging of the work requires that the traveled way be relocated or realigned the Contractor shall reinstall all enhanced traffic control features noted above on the newly constructed sections of the work. The cost of relocating the stop lines, stop signs, advanced warning signs, the rumble strips and the flashing beacons shall be included in the price bid for Traffic Control - Lump Sum unless individual pay items are included in the contract for rumble strips and/or flashing beacons. When pay items are included in the contract for rumble strips or flashing beacons then these items will be paid per each.

When staging requires the relocation or realignment of an existing stop condition, it may be necessary to consider the addition of enhanced traffic control features even though none existed at the original location. Horizontal and vertical alignment changes at a new location may have decreased or restricted sight distance or the stop condition may occur sooner than in the previous alignment. If these conditions occur, then the Engineer and/or the WTCS should consider additional measures to enhance the motorist's awareness of the changes even though the staging plans may not address enhanced features. Stop signs should be a minimum of 36 inches for interim situations. The use of 48 inch stop signs may be warranted under project specific conditions. Flags may be used on interim/permanent stop signs that are mounted at seven (7') feet in height for a short duration in order to direct additional attention to a new or relocated stop sign(s). Flags should not be used for durations exceeding two weeks unless unusual or site specific conditions warrant a longer period of time. The use of Type "A" flashing red light(s) attached to the stop sign(s) may be appropriate during the same period that the flags are in use to increase attention.

The use of rumble strips and/or portable changeable message signs may be considered. The use of new rumble strips, where none previously existed, shall have the prior approval of District Traffic Operations before being included as part of the temporary traffic control plan. The message(s) displayed on any PCMS shall have the prior approval of the Engineer and the message(s) shall be included as part of the TTC plan for the interim staging.

The placement of any additional interim ground mounted signs and posts or stop lines shall be considered as incidental to the price bid for Traffic Control - Lump Sum. The installation of rumble strips, flashing beacons or the use of Portable Changeable Message Signs (PCMS) shall be considered as Extra Work unless pay items are included in the contract.

## **G. Low Shoulder Signage**

### **1. Low Shoulder for Construction/Reconstruction/Resurfacing Projects**

"Low Shoulder" (W8-9) signs shall be erected when a difference in elevation less than four ( $< 4'$ ) feet from the traveled way, exceeds one inch ( $> 1"$ ) but does not exceed three inches ( $\leq 3"$ ) between the travel lane and any type of shoulder.

The spacing of the signs shall not exceed one (1) mile and the signs shall be placed immediately past each crossroad intersection. The "Low" signs shall remain in place until the difference in elevation is eliminated and the shoulder has been dressed and permanently grassed for a minimum of thirty (30) calendar days. These signs shall be furnished, installed, maintained and removed by the Contractor as part of Traffic Control-Lump Sum. These signs shall be fluorescent orange with black borders.

## 2. Shoulder Drop-Off for Construction/Reconstruction/Resurfacing Project

“Shoulder Drop-Off” (W8-17) signs shall be used when a difference in elevation, less than four feet ( $< 4'$ ) from the traveled way, exceeds three inches ( $> 3''$ ) and is not protected by positive barrier protection. These warning signs shall be placed in advance of the drop-off.

The spacing of the signs shall not exceed one (1) mile and the signs shall be placed immediately past each crossroad intersection. The “Shoulder Drop-Off” signs shall remain in place until the difference in elevation is eliminated and the shoulder has been dressed and permanently grassed for a minimum of thirty (30) calendar days. These signs shall be furnished, installed, maintained, and removed by the Contractor as part of Traffic Control-Lump Sum. These signs shall be black borders on fluorescent orange background.

## H. Bump Signage

A bump sign (W8-1) shall be utilized when a transverse joint in the pavement structure has a vertical difference in elevation of three quarters ( $\geq 3/4''$ ) of an inch or greater in depth with no horizontal taper to ramp the traffic from one elevation to the other. This condition typically occurs at approach slabs during pavement milling operations and at transverse joints in asphaltic pavement lifts. Other conditions include utility and storm drainage repairs that require concrete placement for patching and/or steel plating.

The W8-1 sign shall be placed sufficiently in advance to warn the motorist of the condition.

## I. Sign Visibility

All existing, interim and new permanent signs shall be installed so as to be completely visible and legible for an advance distance in compliance with the MUTCD. Any clearing required for maintaining the line of sight to existing, interim or permanent signs shall be done as part of the requirements of the TTC plan. The clearing shall include any advance warning signs, both interim and permanent, that are installed as a part of the work including advance warning signs that are installed outside the limits of the project. Limbs, brush, construction equipment and materials shall be kept clear of the driver's line of sight to all signs that are part of the TTC plan.

### 150.3.04 Advance Warning Signs

#### A. Project Signs - All Type of Highways

Advance warning signs shall be placed ahead of the work area in accordance with Part 6 of the MUTCD and shall include a series of at least three advance road work (W20-1) signs placed at the termini of the project. The series shall have the legend ROAD WORK (1500 FEET, 1000 FEET, AND 500 FEET).

At grade intersecting roadways and on-ramps shall be signed with a minimum of one ROAD WORK AHEAD sign.

When work terminates at a “T” intersection, a minimum of one “ROAD WORK AHEAD” sign shall be placed in advance of the intersection and one “END ROAD WORK” sign shall be placed at the termination end of the intersection. Field conditions may require the use of additional warning signage.

#### 1. State Routes

Advanced Warning Signs on State Routes shall be a minimum dimension of forty-eight inches by forty-eight inches (48" x 48"). When a State Route intersects a project which consists of adding travel lanes, reconstructing an existing roadway or new location work, the State Route approaches shall have a

minimum of three (W20-1) advanced warning signs (1500 ft., 1000 ft., 500 ft.). The termination end of an intersecting State Route shall have END ROAD WORK signage.

The W20-1 signs shall be placed at the termini of the project or sufficiently in advance of the termini to allow for lane shifts, lane closures and other activities which may also require advanced warning signs. The advanced warning signs for the project should not overlap with the advanced warning signs for lane shifts, lane closures, etc.

The length of a work zone should be held to the minimum length required to accomplish the work. If a project has multiple individual worksites within the overall limits of the project, each site should be signed individually if the advance warning signs for each site can be installed without overlapping an adjacent worksite. As soon as the work is completed at any individual site, the warning signs shall be removed from that site. Clean-up work and punch list work shall be performed with portable signage.

Project mileage indicated on the G20-1 sign shall be the actual project mileage rounded up to the nearest whole mile. Projects less than two (< 2) miles in length or individual worksites that are part of a multiple worksite project may delete this sign. The G20-1 sign shall be forty-eight inches by twenty-four inches (48" x 24") and the G20-2 sign shall be forty-eight inches by twenty-four inches (48" x 24").

## 2. Interstate, Limited Access and Multilane Divided Highways

In addition to the W20-1 signs required at 500 ft., 1000 ft. and 1500 ft., multi-lane divided highways shall also have additional advanced warning signs installed with the legend "ROAD WORK (2 MILES, 1 MILE and 1/2 MILE). All construction warning signs on divided highways shall be double indicated (i.e., on the left and right sides of the roadway.) If the use of the half (1/2) mile, one (1) mile and two (2) mile advanced warning signs cause an overlap with other work or do not benefit field conditions then the Engineer may review the use of these signs and eliminate their installation. When the posted speed limit is fifty ( $\leq$  50) mph or less, the one-half (1/2) mile, one (1) mile and two (2) mile signs should be eliminated especially in urban areas.

The W20-1 advance warning signs for ROAD WORK 500 FEET; 1000 FEET; and 1500 FEET shall be temporarily covered when work involving the advanced warning signs for lane shifts and lane closures overlap these signs. The ROAD WORK 1/2 MILE, ROAD WORK 1 MILE, and ROAD WORK 2 MILES shall be in place when the 500, 1000 and 1500 foot signs are temporarily covered.

When the temporary traffic control zone already has advanced warning (W20-1) signs installed the W20-1 signs required for lane closures under Standard 9106 should be eliminated.

## 3. Ramp Work on Limited Access Highways

The work zone shall not be signed for the entire length of the mainline of a limited access highway when only short individual worksites, interchange or ramp work is being performed.

When work is restricted to ramp reconstruction or widening activities, the advance warning signs on the mainline section of the limited access highway shall be limited to the use of portable advance warning signs. These portable advance warning signs shall only be utilized when work activity is within the gore point of the ramp and the mainline traveled way or work is active in the acceleration/deceleration lane adjacent to the mainline traveled way. Portable advance warning signs (W20-1: 1500 ft. /1000 ft. /500 ft.) shall be installed on the traveled way of the limited access highway when the above conditions are present. The advance warning signs shall be installed only in one direction where work is active. All portable signs shall be double indicated. When work is not active, the ramp work shall be advanced warned by the use of a single forty-eight inches by forty-eight inches (48" x 48") "ROAD WORK AHEAD" (W20-1) with an "ON RAMP" plaque (W13-4p) sign along the right shoulder of the mainline traveled way prior to the beginning of the taper for the deceleration lane. Differences in elevation shall be in compliance with the requirements of Subsection 150.3.11 prior to the removal of the portable (W20-1) advanced warning signs from the mainline.

## B. Highway Work Zone

In accordance with Georgia Code, O.C.G.A. § 40-6-188, all sections or segments of the roadway under construction or reconstruction shall be signed as a Highway Work Zone except non-state highway two-lane two-way resurfacing projects. Two conditions can be applied to a Highway Work Zone. Condition 1 is when no reduction in the existing speed limit is required. Condition 2 is when worksite conditions require a reduction of the speed limit through the designated Work Zone. Properly marking a Highway Work Zone shall include the following minimum requirements:

### 1. No Reduction in the Existing Posted Speed Limit in Highway Work Zone

- a. Signage shall be posted at the beginning point of the Highway Work Zone warning the traveling public that increased penalties for speeding violations are in effect. The beginning point of Highway Work Zone is at the project limits, start of work zone, or at the start of the first taper. The HWZ-2 sign shall be placed a minimum of 600 feet in advance of the Highway Work Zone and shall not be placed more than 1000 feet in advance of the Work Zone. If no speed reduction is required, it is recommended that the HWZ-2 be placed at 750 feet from the work area between the ROAD WORK 500 FT. and the ROAD WORK 1000 FT. signs.

HWZ-2 signs shall be placed at intervals not to exceed one mile for the length of the project. HWZ-2 signs should be placed on the mainline after all major intersections except State Routes. State Routes shall be signed as per the requirements for intersecting roadways below.

- b. The existing speed limit shall be posted at the beginning of the Work Zone. Existing Speed Limit signs (R2-1) shall be maintained.
- c. Intersecting state routes shall be signed in advance of each intersection with the Work Zone with a HWZ-2 sign to warn motorists that increased fines are in effect. All other intersecting roadways that enter into a designated Highway Work Zone may be signed in advance of each intersection with the Work Zone. When construction equipment and personnel are present in the intersection on the mainline of a multi-lane roadway, the intersecting side roads shall be signed in advance with HWZ-2 signs. As soon as the work operation clears the intersection, the signage may be removed.
- d. Sign HWZ-3 shall be posted at the end of the Highway Work Zone indicating the end of the zone and indicating that increased penalties for speeding violations are no longer in effect.
- e. When a designated Highway Work Zone is no longer necessary, all signs shall be removed immediately.

### 2. Reducing the Speed Limit in a Highway Work Zone

Highway Work Zone signs shall be posted as required in Condition 1 above in accordance with Detail 150-C.

A “Reduce Speed Limit Ahead” (W3-5) sign shall be posted 600 feet prior to the reduced speed limit.

Then a “Speed Limit” signage (R2-1) for the reduced speed limit shall be erected at the beginning of the work zone. Additional signs shall be placed at whichever is least:

- a. on non-interstate roads after every junction with a numbered (state or U.S.) route.
- b. on interstates entrance ramp 1,500 feet from the end of the entrance taper. Detail 150-D
- c. on non-interstate and interstate a maximum spacing of no greater than one (1) mile apart.

On multi-lane divided highways, the speed limit signs shall be double indicated when the reduced speed is in use.

Additional signs may be necessary to adjust for actual field conditions.

For limited access (interstate) highways and controlled access multi-lane divided highways, the posted speed limit shall be reduced as required below.

When any one or more of the following conditions exist and the existing speed limit is sixty-five (65) mph or seventy (70) mph, the speed limit shall be reduced by ten (10) mph. If the existing speed limit is sixty (60) mph, the speed limit should be reduced by five (5) mph. If the existing speed limit is fifty-five ( $\leq 55$ ) mph or less, the Contractor can only reduce the speed limit with the prior approval of the Engineer. The reduction in the speed limit shall be no greater than ten (10) mph:

- a) Lane closure(s) of any type and any duration.
- b) The difference in elevation exceeds two inches ( $> 2''$ ) adjacent to a travel lane as shown in Subsection 150.3.11, Detail 150-E, Detail 150-F.
- c) Any areas where equipment or workers are within ten feet (10') of a travel lane.
- d) Temporary portable concrete barriers located less than two feet (2') from the traveled way.
- e) As directed by the Engineer for conditions distinctive to this project.

When the above conditions are not present, the speed limit shall be immediately returned to the existing posted speed limit. A speed reduction shall not be put in place for the entire length of the project unless conditions warranting the speed reduction are present for the entire project length. All existing speed limit signs within the temporary speed reduction zone shall be covered or removed while the temporary reduction in the speed limit is in effect. All signs shall be erected to comply with the minimum requirements of the MUTCD.

At a minimum, the following records shall be kept by the WTCS:

- a) Identify the need for the reduction.
- b) Record the time of the installation and removal of the temporary reduction.
- c) Fully describe the location and limits of the reduced speed zone.
- d) Document any accident that occurs during the time of the reduction.

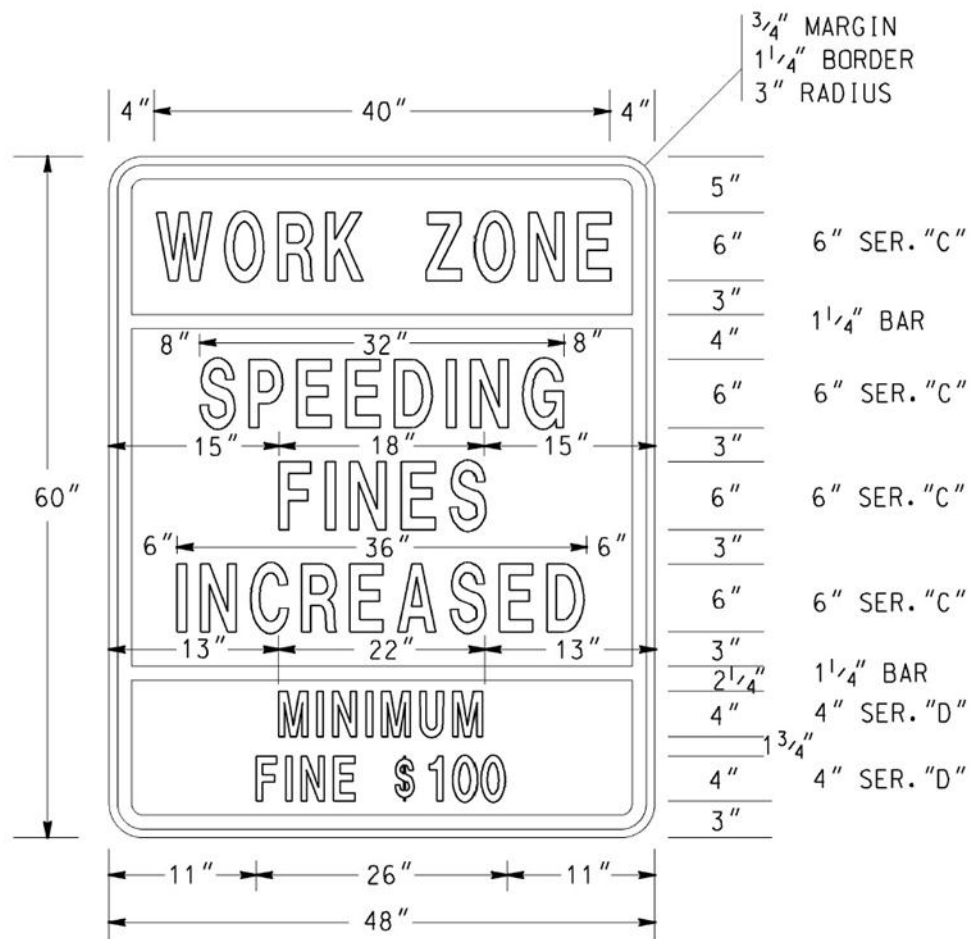
A copy of the weekly records for reduced speed zones shall be submitted to the Engineer.

When a pilot vehicle is used on a two-lane two-way roadway, the speed limit should not be reduced. For special conditions specific to the work, on two-lane two-way roadways or multi-lane highways, the contractor may reduce the posted speed limit with the prior approval of the Engineer.

### 3. Variable Speed Limit Zones

Projects that are within or extends into variable speed limit zones shall be posted according to condition 1 with HWZ-1, HWZ-2, and HWZ-3 signs. No additional "speed limit" signs, (R2-1), shall be posted. Any reduction or increase in speed limits will be controlled by the normal operation of the variable speed limit system.

Upon request, a maximum speed limit of fifty-five (55) mph can be set for the project limits.



HWZ-2

#### COLORS TOP PANEL

LEGEND & BORDER - BLACK (NON-REFL)  
BACKGROUND - FLUORESENT ORANGE

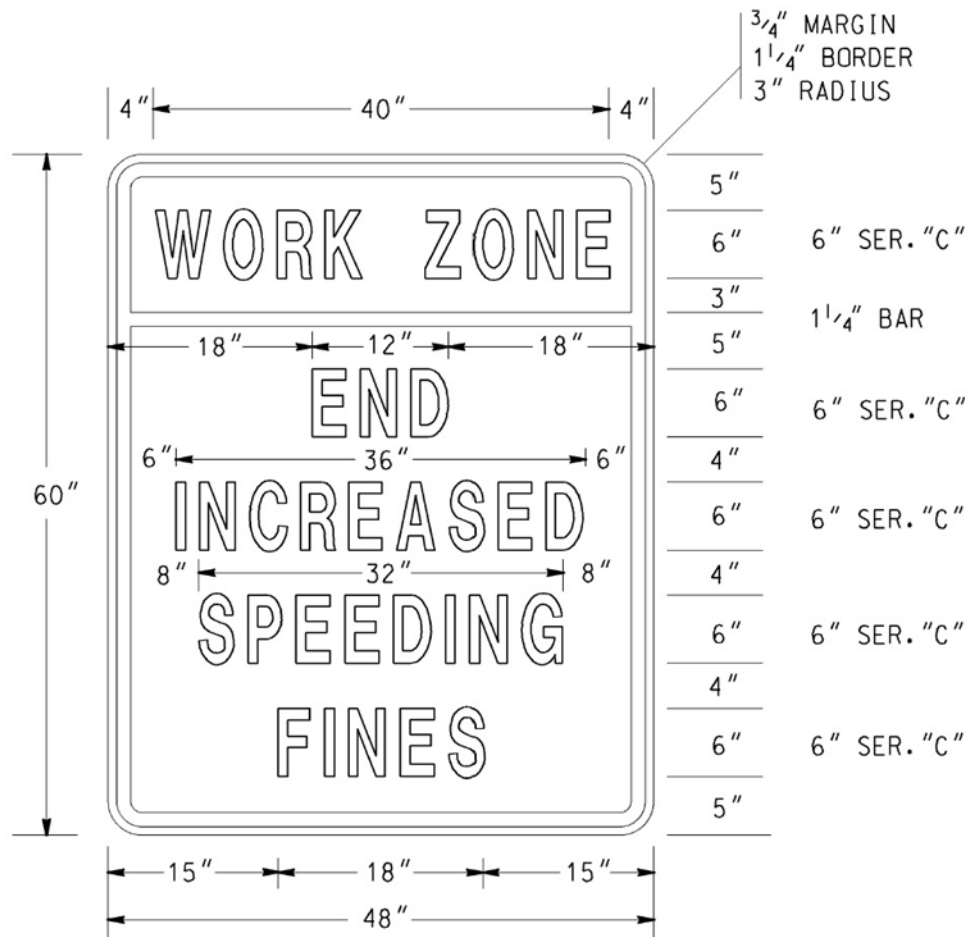
#### MIDDLE & BOTTOM PANELS

LEGEND & BORDER - BLACK  
BACKGROUND - WHITE

#### NOTES:

1. ALL HWZ-2 SIGN PANELS SHALL BE RIGID.
2. THE SIZE OF THE HWZ-2 SIGN SHALL NOT BE REDUCED FOR USE ON TWO-LANE ROADWAYS.





HWZ-3

#### COLORS

##### TOP PANEL

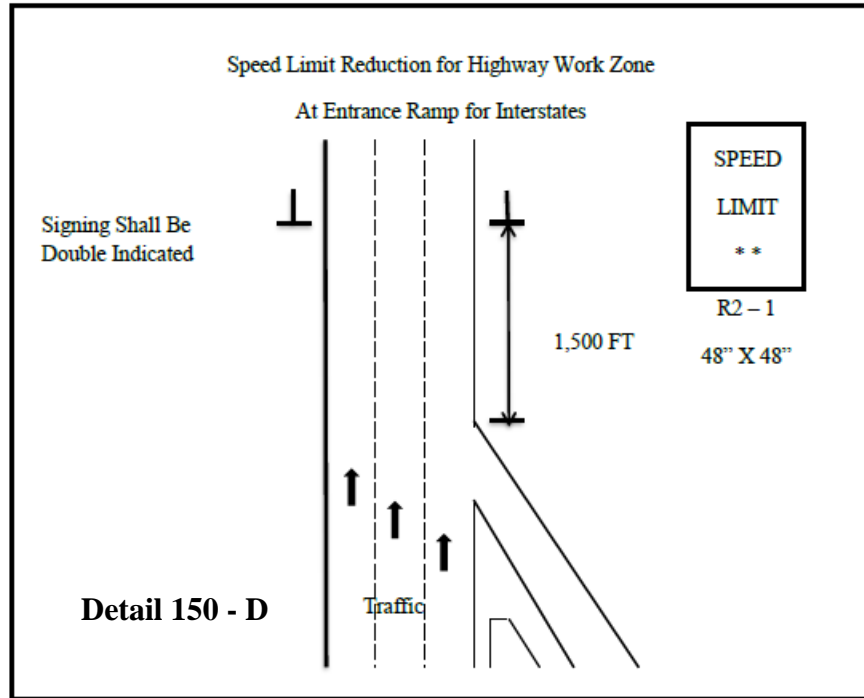
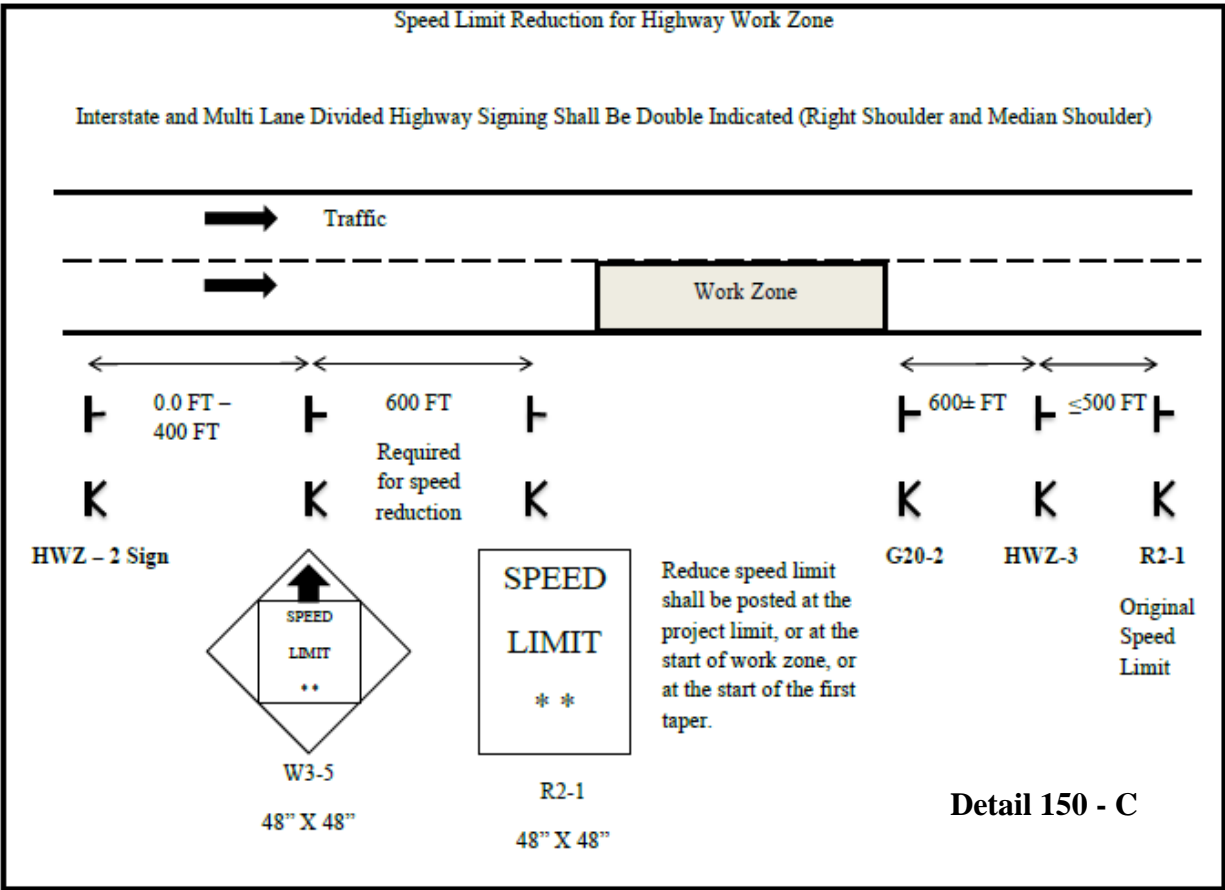
LEGEND & BORDER - BLACK (NON-REFL)  
BACKGROUND - FLUORESENT ORANGE

##### BOTTOM PANEL

LEGEND & BORDER - BLACK (NON-REFL)  
BACKGROUND - WHITE

#### NOTES:

1. ALL HWZ-3 SIGN PANELS SHALL BE RIGID.
2. THE SIZE OF THE HWZ-3 SIGN SHALL NOT BE REDUCED FOR USE ON TWO-LANE ROADWAYS.



### **C. Installation/Removal of Work Area Signage**

No payment will be made for Traffic Control-Lump Sum until the Work has actually started on the project. The installation of traffic control signage does not qualify as the start of work. Advanced warning signs shall not be installed until the actual beginning of work activities. Any permanent mount height signs installed as the work is preparing to start shall be covered until all signs are installed unless all signs are installed within seven ( $\leq 7$ ) calendar days after beginning installation.

All temporary traffic control devices shall be removed as soon as practical when these devices are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate, shall be removed or covered.

All construction warning signs shall be removed within seven ( $\leq 7$ ) calendar days after time charges are stopped or pay items are complete. If traffic control devices are left in place for more than ten ( $> 10$ ) calendar days after completion of the Work, the Department shall have the right to remove such devices, claim possession thereof, and deduct the cost of such removal from any monies due, or which may become due, the Contractor.

**PUNCH LIST WORK:** Portable signs shall be utilized to accomplish the completion of all punch list items. The portable signs shall be removed daily. All permanent mount height signs shall be removed prior to the beginning of the punch list work except “Low/Soft Shoulder” signs and any signs that have the prior written approval of the Engineer to remain in place while the punch list work is in progress.

Failure to promptly remove the construction warning signs within the seven (7) calendar days after the completion of the Work or failure to remove or cover signs when work is suspended for short periods of time shall be considered as non-performance under Subsection 150.5.01.

## **150.3.05 Shoulder/Lane Closures**

### **A. Approval/Restrictions**

All shoulder closures and lane closures of any type or duration shall have the prior approval of the Engineer.

#### **1. Closure Length**

The length of a shoulder closure and a lane closure shall not exceed two (2) miles in length excluding the length of the tapers unless the prior approval of the Engineer has been obtained. The Engineer may extend the length of the closure based upon field conditions; however, the length of a work zone should be held to the minimum length required to accomplish the Work. Shoulder closure and Lane Closures shall not be spaced closer than one mile. The advanced warning signs for the project should not overlap with the advanced warning signs for lane shifts, lane closures, etc.

#### **2. Duration**

The first three (3) calendar days of any lane closure shall be signed and marked as per Georgia Standard 9106 “Traffic Control Detail for Lane Closure on Multi-Lane Divided Highway” or Georgia Standard 9107 “Traffic Control Detail for Lane Closure on Multi-Lane Undivided Highway”. However, lane closures that exist for a duration longer than three ( $> 3$ ) calendar days may be signed and marked as per the details in Georgia Standard 9121 “Tapers, Signs, and Markings for Passing Lanes”, provided the prior approval of the Engineer is obtained. The approved lane drop shall utilize only the signs and markings shown for the termination end of the lane drop in Georgia Standard 9121. All warning signs in the lane

drop sequence shall be used. Drums may be substituted for the Type I Crystal Delineators at the same spacing.

## **B. Shoulder Closures**

In accordance with MUTCD 6G.07, when paved shoulders, having a width of eight feet ( $\geq 8'$ ) or more are closed, at least one (1) advance warning sign shall be used. The sign(s) should read SHOULDER CLOSED (W21-5a). The signs are only posted on the side with the shoulder closure. Where the downstream end of the shoulder closure extends beyond the distance that can be perceived by road users, a supplementary plaque bearing the message NEXT XX FEET(W16-4P) or MILES (W7-3aP) should be placed below the SHOULDER CLOSED (W21-5a) sign. These signs shall be placed 500 feet prior to the shoulder closure. For multi-shoulder closures, the Shoulder Closed sign shall be repeated after two (2) miles at 500 feet prior to the next shoulder closure.

A shoulder closure will require a shoulder taper of  $(1/3) L$  ( $L$ =merging taper length). Traffic drums shall be used for the taper. Arrow boards are not required.

If positive barriers are used to close the shoulder, the taper and drums shall be in accordance with Standard 4960, Temporary Barrier (End Treatment Options). The approach end of the barrier taper should be 10:1 or flatter slope.

## **C. Lane Closure**

### **1. Advance Warning Signs**

The advance Warning signs shall be in accordance with MUTCD and Georgia Standard 9106 "Traffic Control Detail for Lane Closure on Multi-Lane Divided Highway" and Georgia Standard 9107 "Traffic Control Detail for Lane Closure on Multi-Lane Undivided Highway".

When the temporary traffic control zone already has advanced warning (W20-1) signs installed the W20-1 signs required for lane closures under Standard 9106 and 9107 should be eliminated.

For Interstate, Limited Access and Multi-lane Divided Highways, an additional Portable Changeable Message Sign (PCMS) shall be placed one (1) mile in advance of a lane closure with a message denoting the appropriate lane closure one (1) mile ahead. No other message shall be displayed on this PCMS. The PCMS shall be placed on the outside shoulder in accordance with Detail 150-B [PCMS]. This is in addition to the other traffic control devices required by Standard 9106.

At the discretion of the Engineer, the Contractor may start placing advance warning signs a half-hour (1/2 hr.) prior to the lane closure.

### **2. Transition Area – Taper**

Drums shall be used on all transition tapers. If traffic drums with retroreflectivity of less than type VI are used for a merge taper that exists into the night, all drums located in the taper shall have, for the length of the taper only, a six inch (6") fluorescent orange (ASTM Type VI, VII, VIII, IX or X) reflectorized top stripe on each drum. The top six inch (6") stripe may be temporarily attached to the drum while in use in a taper. The Engineer may allow the fluorescent orange reflectorized six inch (6") top stripe on each drum in a merging taper to remain in place during daylight hours provided there is a lane closure(s) with a continuous operation that begins during one nighttime period and ends during another nighttime period. All drums that have the six inch (6") top stripe permanently attached shall not be used for any other conditions.

In accordance with MUTCD (6C.08), the minimum length for a merging taper for a lane closure on the travel way shall be as shown in Table 150-1:

**TABLE 150-1**

Posted Speed Limit, MPH	Lane Width 9 Feet	Lane Width 10 Feet	Lane Width 11 Feet	Lane Width 12 Feet	Maximum Drum Spacing in Tapers, (Feet)
Minimum Taper Length (L) in Feet					
20	60	70	75	80	20
25	95	105	115	125	25
30	135	150	165	180	30
35	185	205	225	245	35
40	240	270	295	320	40
45	405	450	495	540	45
50	450	500	550	600	50
55	495	550	605	660	55
60	540	600	660	720	60
65	585	650	715	780	65
70	630	700	770	840	70
75	675	750	825	900	75

If site conditions require a longer taper, then the taper shall be lengthened to fit particular individual situations.

The length of shifting tapers should be at least one-half (1/2) L.

Multiple Lane Closures:

- a. A maximum of one (1) lane at a time shall be closed with each merge taper.
- b. A minimum tangent length of two ( $\geq 2$ ) L shall be installed between each individual lane closure taper. The tangent length is part of the transition area. Therefore, only traffic drums can be used in the tangent.

### 3. Activity Area

The activity area consists of a buffer and the work space. Georgia Standard 9106 “Traffic Control Detail for Lane Closure on Multi-Lane Divided Highway” states “Buffer zones of 300’ minimum, 500’ desirable are required for tangent sections and shall be increased for horizontal or vertical curves due to sight distance considerations”

Georgia Standard 9107 “Traffic Control Detail for Lane Closure on Multi-Lane Undivided Highway” requires a fifty feet (50’) buffer. The buffer shall be increased for horizontal or vertical curves due to sight distance considerations”

The channelization devices are spaced at a maximum of eighty feet (80’).

#### 4. Termination Area

Georgia Standard 9106 "Traffic Control Detail for Lane Closure on Multi-Lane Divided Highway" requires a 150 feet buffer and a minimum 200 feet downstream taper.

Georgia Standard 9107 "Traffic Control Detail for Lane Closure on Multi-Lane Undivided Highway" requires 150 feet downstream taper.

#### D. Removal of Lane Closures

To provide the greatest possible convenience to the public in accordance with Section 107, the Contractor shall remove all signs, lane closure markings, and devices immediately when lane closure work is completed or temporarily suspended for any length of time or as directed by the Engineer. All portable signs and portable sign mounting devices shall be removed from the roadway to an area which will not allow the sign to be visible and will not allow the sign or sign mounting device to be impacted by traffic. All devices shall be stored beyond the clear zone or behind positive protection.

#### E. Exit and Entrance Ramps

On multi-lane highways, where traffic has been shifted to the inside lanes, the exit and entrance ramps shall have drums placed on both sides of the ramp. This requirement will apply to any situation where traffic is shifted to contra flows or inside staging lanes to facilitate reconstruction work in the vicinity of exit and entrance ramps. The temporary ramp taper length should be greater than, or equal to, the existing taper length. Interim EXIT gore signs shall be placed at the ramp divergence. The "EXIT OPEN" sign shown in Figure TA-42 of the MUTCD shall be utilized. For exit ramps, drums spacing shall be decreased to ten feet (10') for 200 feet in advance of the temporary gore, and be decreased to ten feet (10') for the first 100 feet of the temporary gore, and throughout the exit ramp. For on-ramps, drums should be used 200 feet prior to the ramp and end 100 feet past the merge taper. The drum spacing for the on ramp may be decreased but should not obstruct the view of the drivers i.e. for the ramp vehicles.

### 150.3.06 Traffic Pacing Method

#### A. Pacing Of Traffic

With prior approval from the Engineer, traffic may be paced allowing the Contractor up to twenty (20) minutes maximum to work in or above all lanes of traffic for the following purposes:

1. Placing bridge members or other bridge work.
2. Placing overhead sign structures.
3. Other work items requiring interruption of traffic.

The Contractor shall provide a uniformed law enforcement officer with patrol vehicle and blue flashing light for each direction of pacing. The law enforcement officer, Engineer, and flaggers at ramps shall be provided with a radio which will provide continuous contact with the Contractor.

When ready to start the work activity, the law enforcement vehicle will act as a pilot vehicle slowing the traffic, thereby providing a gap in traffic allowing the Contractor to perform the Work. Any on-ramps between the pace and the work area shall be blocked during pacing of traffic, with a flagger properly dressed and equipped with a Stop/Slow paddle. Each ramp should be opened after the law enforcement vehicle has passed.

Pilot vehicles shall travel at a safe pace speed. The Contractor shall provide a vehicle to proceed in front of the law enforcement vehicle and behind the other traffic in order to inform the Contractor's work force when all vehicles have cleared the area.

Traffic should not be permitted to stop during pacing unless approved by the Engineer.

#### **B. Methods of Signing For Traffic Pacing**

At a point not less than 1,000 feet in advance of the beginning point of the pace, the Contractor shall place a portable changeable message sign with the message "TRAFFIC SLOWED AHEAD SHORT DELAY".

### **150.3.07 Flagging Operations**

#### **A. Flaggers**

Flaggers shall be provided as required to handle traffic, as specified in the Plans or Special Provisions, and as required by the Engineer.

#### **B. Flagger Certification**

All flaggers shall meet the requirements of the MUTCD and shall have received training and a certificate upon completion of the training from one of the following organizations:

National Safety Council

American Traffic Safety Services Association (ATSSA)

On-line classes are not accepted.

Failure to provide certified flaggers as required above shall be reason for the Engineer suspending work involving the flagger(s) until the Contractor provides the certified flagger(s). Flaggers shall have proof of certification and valid identification (photo I.D.) available any time they are performing flagger duties.

#### **C. Flagger Appearance and Equipment**

Flaggers shall wear Performance Class 3 or better high-visibility clothing. Flagger stations shall be illuminated at night according to MUTCD (6F.82). They shall use a Stop/Slow paddle meeting the requirements of the MUTCD (6E.03) for controlling traffic. The Stop/Slow paddles shall have a shaft length of seven feet ( $\geq 7'$ ) minimum. The Stop/Slow paddle shall be retroreflectorized for both day and night usage. In addition to the Stop/Slow paddle, a flagger may use a flag as an additional device to attract attention. This flag shall meet the minimum requirements of the MUTCD (6E.03). The flag shall, as a minimum, be twenty-four inches ( $\geq 24''$ ) square and red or red/orange in color.

#### **D. Flagger Warning Signs**

Signs for flagger traffic control shall be placed in advance of the flagging operation, in accordance with the MUTCD and Georgia Standard 9102 “Traffic Control Detail for Lane Closure on Two-Lane Highway”. In addition, signs at regular intervals, warning of the presence of the flagger shall be placed beyond the point where traffic can reasonably be expected to stop under the most severe conditions for that day’s work.

#### **E. Pilot Vehicle Requirements**

Pilot vehicles should be required during placement of bituminous surface treatment or asphaltic concrete on two-lane roadways unless otherwise specified. Pilot vehicles shall meet the requirements of the MUTCD (6C.13).

#### **F. Automated Flagger Assistance Devices**

The Contractor may request, in writing, the use of Automated Flagger Assistance Devices (AFAD). The equipment shall meet the requirements of MUTCD (6E.04). As a part of this request, the Contractor shall also submit an alternate temporary traffic control plan in the event of a failure of the AFAD. Any alternate plan that requires the use of flaggers shall include the use of certified flaggers. The Contractor shall obtain the approval of the Engineer before the use of any AFAD will be permitted.

#### **G. Portable Temporary Traffic Control Signals**

The Contractor may request, in writing, the substitution of portable temporary traffic control signals for flaggers on two-lane two-way roadways provided the temporary signals meets the requirements of the MUTCD, Section 647, and subsection 150.2.11. As a part of this request, the Contractor shall also submit an alternate temporary traffic control plan in the event of a failure of the signals. Any alternate plan that requires the use of flaggers shall include the use of certified flaggers. The Contractor shall obtain the approval of the Engineer before the use of any portable temporary traffic control signals will be permitted.

### **150.3.08 Traffic Signals**

#### **A. Responsibility/Cost**

If the sequence of operations, staging, or the temporary traffic control plan requires the relocation or shifting of any components of an existing traffic signal system then any work on these traffic signals will be considered as part of Traffic Control – Lump Sum.

#### **B. Law Enforcement Officer Requirement**

In accordance with Georgia law § 40-6-20, law enforcement officers shall be used to regulate and maintain traffic control at functioning signalized intersections when lane closures or traffic shifts block or restrict movements causing interference with road user flows and will not allow the activated traffic signal to guide the traffic through the signal site.



### **150.3.09 Mobile Operations**

A mobile operation is defined by a minimum speed of three (3) mph. When pavement markings (centerlines, lane lines, and edge lines) are applied in a continuous operation by moving vehicles and equipment, the following minimum equipment and warning devices shall be required. These devices and equipment are in addition to the minimum requirements of the MUTCD.

All vehicles shall be equipped with the official slow moving vehicle symbol sign. All vehicles shall have a minimum of two (2) flashing or rotating beacons visible in all directions. All protection vehicles shall have an arrow panel mounted on the rear. All vehicles requiring an arrow panel shall have, as a minimum, a Type B panel. All vehicle mounted signs shall be mounted with the bottom of the sign a minimum height of forty-eight inches (48") above the pavement. All sign legends shall be covered or removed from view when work is not in progress.

The lead vehicle may be a separate vehicle or the work vehicle applying the pavement markings may be used as the lead vehicle. The lead vehicle shall have an arrow panel mounted so that the panel is easily visible to oncoming (approaching) traffic. The arrow panel should operate in the caution mode.

The work vehicle(s) applying markings shall have an arrow panel mounted on the rear. The arrow panel should typically operate in the caution mode. The work vehicle placing cones shall follow directly behind the work vehicle applying the markings.

A protection vehicle shall follow the last work vehicle at all times and shall be equipped with a truck mounted attenuator that shall be certified for impacts not less than sixty-two (62) mph in accordance with MASH/NCHRP350 Test Level Three (3).

### **150.3.10 Pavement Markings**

#### **A. General**

Full pattern pavement markings in conformance with Section 3A and 3B, except 3B.02, of the MUTCD are required on all courses before the roadway is opened to traffic, unless noted in this section. No passing zones shall be marked to conform to Subsection 150.3.10.D.1.b. During construction and maintenance activities on all highways open to traffic, both existing markings and markings applied under this Section shall be fully maintained until Final Acceptance. If the pavement markings are, or become, unsatisfactory in the judgment of the Engineer due to wear, weathering, or construction activities, they shall be restored immediately.

Markings on the final surface course, which must be removed, shall be a removable type. The Contractor will be permitted to use paint, thermoplastic, or tape on pavement which is to be overlaid as part of the project, unless otherwise directed by the Engineer. Partial (skip) reflectorization (i.e. reflectorizing only a portion of a stripe) will not be allowed.

#### **1. Resurfacing Projects**

Pavement markings shall be provided on all surfaces that are placed over existing markings. Interim and final markings shall conform in type and location to the markings that existed prior to resurfacing unless changes or additions are noted in the Contract. The replacement of parking spaces will not be required unless a specific item or note has been included in the Contract. Any work to make additions to the markings that existed prior to resurfacing is to be considered as extra work.

2. Widening And Reconstruction Projects

If the lane configuration is altered from the preconstruction layout then pavement markings will be as required by the plans or the Engineer.

3. New Location Construction Projects

Pavement marking plans will be provided.

## **B. Installation and Removal of Pavement Markings**

1. Installation

All pavement markings, both interim and permanent, shall be applied to a clean surface. The Contractor shall furnish the layout and preline the roadway surface for the placement of pavement markings applied as part of the temporary traffic control plan. All interim marking tape and RPM's on the final surface shall be removed prior to the placement of the final markings.

The Contractor shall sequence the work in such a manner as to allow the installation of markings in the final lane configuration at the earliest possible stage of the work.

2. Removal

Markings no longer applicable shall be removed in accordance with Section 656.

The elimination of conflicting pavement markings by overpainting with unapproved paint or any type of liquid asphalt is not acceptable.

3. Intermediate Surface

Interim markings shall be removed by methods that will cause minimal damage to the pavement surface, while also ensuring that traveling public will not be confused or misdirected by any residual markings remaining on the intermediate surface. The use of approved black-out tape and black-out paint (manufactured for the sole purpose of covering existing pavement markings) may be permitted on some interim surfaces, provided the results are satisfactory to the Engineer.

4. Final Surface

No interim paint or thermoplastic markings will be permitted on any final surface unless the interim markings are in alignment with the location of the permanent markings and the interim marking will not interfere or adversely affect placement of the permanent markings. The proposed method of removal for layout errors that require markings to be removed from the final surface shall have the prior approval of the Engineer. Any damage to the final pavement surface caused by the pavement marking removal process shall be repaired at the Contractor's expense by methods acceptable and approved by the Engineer. Section 400 shall apply when corrective measures are required. The use of black-out tape or black-out paint will not be permitted under any circumstance to correct layout errors on any final surface.

Traffic shifts that are done on the final surface shall be accomplished using interim traffic marking tape that can be removed without any blemishing of the final surface. Interim traffic marking tape shall be used on any of the following final surfaces; asphaltic concrete, Portland cement concrete, and bridge deck surfaces. The contractor may propose alternate traffic markings and removal methods on the final surface. Submitted proposals shall include the type of material, method of removal and a cost comparison to the traffic marking tape method. Prior to any approval, the contractor shall field demonstrate to the satisfaction of the Engineer that the proposed traffic markings can be removed without any blemishing of the final surface. If the proposal is determined to be acceptable, a supplemental agreement will be executed prior to the installation of the proposed alternate traffic markings. The supplemental agreement shall denote the type of

traffic marking materials, method of removal and any cost and/or time savings to the Department. The Department will not consider or participate in any cost increase that may result from implementing the proposed alternate method.

#### 5. Pay Factor Reduction for Asphaltic Concrete Final Surfaces

When the correction of an error in the layout of the final pavement markings requires the final surface to be grounded, blemished, scarred, or polished the pay factor shall be reduced to 0.95 for the entire surface area of the final topping that has a blemish, polished or a scarred surface. The reduced pay factor shall not be confined to only the width and length of the stripe or the dimensions of the blemished areas, the whole roadway surface shall have the reduced pay factor applied. The area of the reduced pay factor shall be determined by the total length and the total width of the roadway affected. If the affected area is not corrected, the reduction in pay shall be deducted from the final payment for the topping layer of asphaltic concrete. The Engineer shall make the final determination whether correction or a reduced pay factor is acceptable.

The eradication of pavement markings on intermediate and final concrete surfaces shall be accomplished by a method that does not grind, polish, or blemish the surface of the concrete. The method used for the removal of the interim markings shall not spall chip the joints in the concrete and shall not damage the sealant in the joints. Any joint or sealant repairs shall be included in the bid price for Traffic Control-Lump Sum. The proposed method of removal shall have the prior approval of the Engineer.

Failure to promptly remove conflicting or non-applicable pavement markings shall be considered as non-performance under Subsection 150.5.01.

#### 6. Preparation and Planning For Traffic Shifts

When shifting of traffic necessitates removal of centerline, lane lines, or edge lines, all such lines shall be removed prior to, during, or immediately after any change so as to present the least interference with traffic. Interim traffic marking tape shall be used as a temporary substitute for the traffic markings being removed.

Before any change in traffic lane(s) alignment, marking removal equipment shall be present on the project for immediate use. If marking removal equipment failures occur, the equipment shall be repaired or replaced (including leasing equipment if necessary), so that the removal can be accomplished without delay.

Except for the final surface, markings on asphaltic concrete may be obliterated by an overlay course, when approved by the Engineer. When an asphaltic concrete overlay is placed for the sole purpose of eliminating conflicting markings and the in place asphaltic concrete section will allow, said overlay will be eligible for payment only if designated in the Plans. Overlays to obliterate lines will be paid for only once and further traffic shifts in the same area shall be accomplished with removable markings. Only the minimum asphaltic concrete thickness required to cover lines will be allowed. Excessive build-up will not be permitted. When an overlay for the sole purpose of eliminating conflicting markings is not allowed, the markings no longer applicable shall be removed in accordance with Section 656.

### C. Raised Pavement Markers

Retroreflective raised pavement markers (RPMs) should be placed as listed below for all asphaltic concrete pavements before the roadway is open to traffic, unless noted this section. On the final surface, RPM's shall be placed according to the timeframes specified in Subsection 150.3.10.D for full pattern pavement markings. When Portland Cement Concrete is an intermediate or final surface and is open to traffic, one (1) calendar day is allowed for cleaning and drying before the installation of RPMs is required.

Raised pavement markers are not allowed on the right edge lines under any situation.

Retroreflective raised pavement markers (RPMs) should be placed and/or maintained on intermediate pavements surfaces on all highways that are open to traffic. This includes all resurfacing projects along with widening and reconstruction projects. The RPMs shall be placed as follows:

1. Supplementing Lane Lines:
  - a. Eighty foot (80') center on skip lines with curvature less than three degrees. (Includes tangents)
  - b. Forty foot (40') centers on solid lines and all lines with curvature between three degrees and six degrees.
  - c. Twenty foot (20') centers on curves over six degrees.
  - d. Twenty foot (20') centers on lane transitions or shifts.
2. Supplementing Ramp Gore Lines:
  - a. Twenty foot (20') centers, two each, placed side by side.
3. Other Lines:
  - a. As shown on the plans or directed by the Engineer.

#### **D. Exceptions for Interim Markings**

Some exceptions to the time of placement and pattern of markings are permitted as noted below; however, full pattern pavement markings are required for the completed project.

##### **1. Two-Lane, Two-Way Roadways**

###### **a. Skip Lines**

If used, interim temporary tape or paint skip (broken) stripe may only be used for a maximum of three (3) calendar days. The stripes shall be at least two feet ( $> 2'$ ) long with a maximum gap of thirty-eight feet ( $\leq 38'$ ). On curves greater than six degrees ( $> 6^\circ$ ), a one-foot ( $1'$ ) stripe with a maximum gap of nineteen feet ( $\leq 19'$ ) shall be used. In lane shift areas, solid lines will be required.

Interim raised pavement markers may be substituted for the interim skip (broken) stripes. If raised pavement markers are substituted for the two foot ( $2'$ ) interim skip stripe, three (3) markers spaced at equal intervals over a two foot ( $2'$ ) distance will be required. No separate payment will be made if the interim raised pavement markers are substituted for interim skip lines.

Interim raised pavement markers shall be retro-reflective, shall be the same color as the pavement markers for which they are substituted, and shall be visible during daytime.

The type of interim marker and method of attachment to the pavement shall be approved by the Office of Materials and Testing but in no case will the markers be attached by the use of nails. Flexible reflective markers, Type 14 or Type 15, may be used for a maximum of three (3) calendar days as an interim marker. Any flexible reflective markers in use shall be from the QPL-76.

The interim raised pavement markers shall be maintained until the full pattern pavement markings are applied. At the time full pattern markings are applied the interim raised markers shall be removed in a manner that will not interfere with application of the full pattern pavement markings.

b. No Passing Zones Two-Lane, Two-Way Roadways

Passing zones shall be re-established in the locations existing prior to resurfacing. No changes to the location of passing zones shall be done without the written approval of the Engineer. For periods not to exceed three (3) calendar days where interim skip centerlines are in place, no-passing zones shall be identified by using post or portable mounted DO NOT PASS regulatory signs (R4-1) twenty-four inches by thirty inches ( 24" x 30") at the beginning and at intervals not to exceed one-half ( $\leq \frac{1}{2}$ ) mile within each no-passing zone. A post or portable mounted PASS WITH CARE regulatory sign (R4-2) twenty-four inches by thirty inches ( 24" x 30") shall be placed at the end of each no-passing zone. Post mounted signs shall be placed in accordance with the MUTCD. Portable signs shall be secured in such a manner to prevent misalignment and minimize the possibility of being blown over by weather conditions or traffic.

On new location projects and on projects where either horizontal or vertical alignments has been modified, the location of No-Passing Zones will be identified by the Engineer.

c. Edge lines

- Bituminous Surface Treatment Paving

Edge lines will not be required on intermediate surfaces (including asphaltic concrete leveling for bituminous surface treatment paving) that are in use for a period of less than sixty (<60) calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edge lines shall be placed within thirty ( $\leq 30$ ) calendar days of the time that the final surface was placed.

- All Other Types of Pavement

Edge lines will not be required on intermediate surfaces that are in use for a period of less than thirty (<30) calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edge lines shall be placed within fourteen ( $\leq 14$ ) calendar days of the time that the surface was placed.

2. Multi-Lane Highways – With No Paved Shoulder(s) or Paved Shoulder(s) Four Feet or Less ( $\leq 4'$ )

a. Undivided Highways (Includes Paved Center Turn Lane)

- Centerlines and No-Passing Barrier-Full Pattern centerlines and no-passing barriers shall be restored before opening to traffic.
- Lane lines- Interim skip (broken) stripe as described in Subsection 150.3.10.D.1.a. may be used for periods not to exceed three ( $\leq 3$ ) calendar days. Skip lines are not permitted in lane shift areas. Solid lines shall be used.
- Edge lines- Edge lines shall be placed on intermediate and final surfaces within three (3) calendar days of obliteration.

b. Divided Highways (Grass or Raised Median)

- Lane lines- Full pattern skip stripe shall be restored before opening to traffic. Skip lines are not permitted in lane shift areas. Solid lines shall be required.
- Centerline/Edge line- Solid lines shall be placed on intermediate and final surfaces within three calendar days of obliteration.

3. Limited Access Roadways and Roadways with Paved Shoulders Greater Than Four Feet (> 4')

a. Same as Subsection 150.3.10.D.2 except as noted in (b) below.

b. Edge lines-

- Asphaltic Concrete Pavement- Edge lines shall be placed on intermediate and final surfaces prior to opening to traffic.
- Portland Cement Concrete Pavement- Edge lines shall be placed on any surface open to traffic no later than one calendar day after work is completed on a section of roadway. All water and residue shall be removed prior to daily striping.

4. Ramps for Multi-Lane Divided Highways

A minimum of one solid line edge stripe shall be placed on any intermediate surface of a ramp prior to opening the ramp to traffic. The other edge stripe may be omitted for a maximum period of three (3) calendar days on an intermediate surface. Appropriate channelization devices shall be spaced at a maximum of twenty-five feet (25') intervals until the other stripe has been installed.

The final surface shall have both stripes placed prior to opening the ramp to traffic.

5. Miscellaneous Pavement Markings

a. Final Surface

School zones, railroads, symbols, words and other similar markings shall be placed on final surfaces conforming to Section 652 within fourteen (14) calendar days of completion of the final surface. Final markings shall conform to the type of pay item in the plans. When no pay item exists in the plans the final markings shall conform to Section 652 for painted markings.

b. Intermediate Surface

Intermediate surfaces that will be in use for more than forty-five (45) calendar days shall have the miscellaneous pavement markings installed to conform to the requirement of Section 652. Under Subsection 150.6, Special Conditions, or as directed by the Engineer these markings may be eliminated.

c. Stop Line

All stop signs and traffic signals shall have temporary twelve inch (12") stop lines placed in accordance with MUTCD (3B.16) on all surfaces prior to opening to traffic. Temporary tape can be used.

### 150.3.11 Differences In Elevations Between Travel Lanes And Shoulders

All time frames and requirements may be changed with the Engineer's approval.

#### A. Differences in Elevations

Difference in elevations due to construction between travel lanes and/or shoulders within the clear zone should be limited to the following:

1. Difference of two inches ( $\leq 2''$ ) or less between adjacent travel lanes should remain for a maximum period of fourteen (14) calendar days.
2. Difference of two inches ( $\leq 2''$ ) or less between adjacent travel lane and paved shoulder should remain for a maximum of thirty (30) calendar days. Traffic control devices shall be in accordance with Detail 150-G.
3. Difference of greater than two inches ( $> 2''$ ) is permitted for continuous operations. Traffic control devices shall be in accordance with Detail 150-E.
4. Difference of greater than two inches ( $> 2''$ ) between travel lanes and/or shoulders for non-continuous operations will not be allowed for more than a twenty-four (24) hour period. For the first twenty-four (24) hours, traffic control shall be in accordance with Detail 150-E. After twenty-four (24) hours the section should be healed according to Detail 150-H. This condition can exist for a maximum sixty (60) calendar days.
  - a. A single length of area that does not exceed 1000 feet total length may be left open as a startup area for periods not to exceed forty-eight (48) hours provided the Contractor can demonstrate the ability to complete the Work in a proficient manner. Prior approval of the Engineer shall be obtained before any startup area may be allowed.
  - b. For cement stabilized base, work adjacent to the travel lane and/or shoulders shall be healed as per Detail 150-H within forty-eight (48) hours after the seven (7) calendar day curing period is complete for each section placed. During the placement and curing period, traffic control shall be in accordance Detail 150-E.

Failure to meet these requirements shall be considered as non-performance of Work under Subsection 150.5.01.

## **B. Healed Section**

Healed section and traffic control devices should be placed in accordance with Detail 150-H. If crushed stone materials are used to provide a healed section no separate payment will be made for the material used to heal any section. The Contractor may submit a plan to utilize existing pay items for crushed stone provided the plan clearly demonstrates that the materials used to heal an area will be incorporated into the work with minimal waste. Handling and hauling of any crushed stone used to heal shall be kept to a minimum. The Engineer shall determine if the crushed stone used to heal meets the specifications for gradation and quality when the material is placed in the final location.

## **C. Emergency Situations**

Inclement weather, traffic accidents, and other events beyond the control of the Contractor may prevent the work from being completed as required above. The Contractor shall notify the Engineer in writing stating the conditions and reasons that have prevented the Contractor from complying with the time limitations. The Contractor shall also outline a plan detailing immediate steps to complete the work. Failure to correct these conditions on the first calendar day that conditions will allow corrective work shall be considered as non-performance of Work under Subsection 150.5.01.

#### **D. Plating**

Plating for drainage structures, utility facilities, etc. is prohibited on the interstates. Plating on State Routes and secondary roads will required the prior approval of the project engineer. Steel plates shall not be used on highways with a posted speed greater than forty-five (45) mph. The plate shall completely cover the pavement cut or excavation. The plate shall be adequately secured and shall provide a safe and reasonable transition to the adjoining roadway surface. An asphalt wedge can be used to provide a smooth transition over the plate(s). Temporary traffic control warning signs W8-24 shall be posted in advance warning motorist about plates in roadway in accordance with the MUTCD. Plating should not remain in place for more than four (4) calendar days.

#### **E. Asphaltic Concrete Resurfacing Projects**

##### **1. Shoulder Construction Included as a Part of the Contract**

When the placement of asphaltic concrete materials creates a difference in elevation greater than two inches ( $> 2''$ ) between the earth shoulder (grassed or un-grassed) and the edge of travel lane or between the earth shoulder and a paved shoulder that is less than four feet ( $< 4'$ ) in width, the Contractor shall place and maintain drums in accordance with the requirements of Subsection 150.2.04.B.3. When the edge of the paved surface is tapered with a safety edge, drums may be spaced at two (2) times the speed limit in MPH. Drums shall remain in place and be maintained until the difference in elevation has been eliminated by the placement of the appropriate shoulder materials.

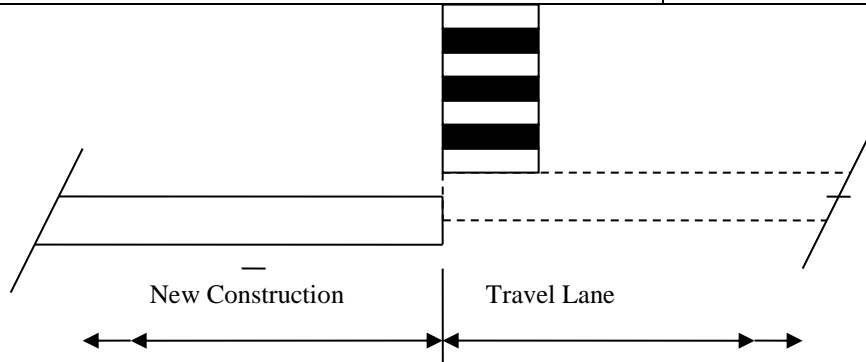
##### **2 Shoulder Construction Not Included as a Part of the Contract**

When the placement of asphaltic concrete materials creates a difference in elevation greater than two inches ( $> 2''$ ) between the earth shoulder (grassed or un-grassed) and the edge of travel lane or between the earth shoulder and a paved shoulder that is less than four feet ( $< 4'$ ) in width, the Contractor shall notify the Engineer, in writing, when the resurfacing work including all punch list items has been completed.



Drums spaced at twenty foot (20') intervals. **Note:** If the travel way width is reduced to less than ten feet (< 10') by the use of drums, vertical panels shall be used in lieu of drums.

Location of drums when Elevation Difference exceeds four inches (> 4")

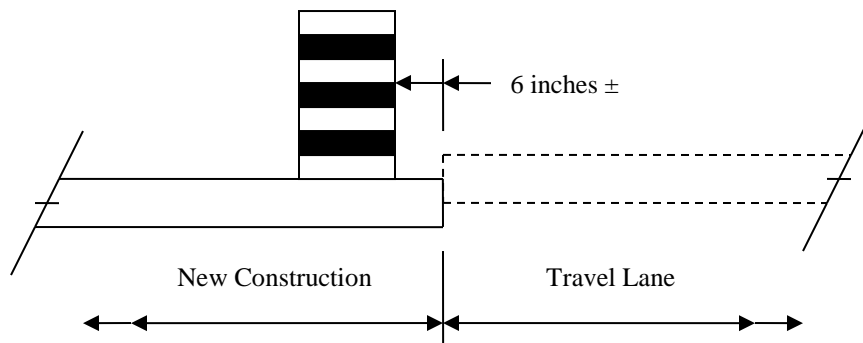


ELEVATION DIFFERENCE GREATER THAN FOUR INCHES (> 4")

DETAIL 150-E

Drums spaced at forty foot (40') intervals.

Location of drums when Elevation Difference is greater than two inches (> 2") to four inches (4")

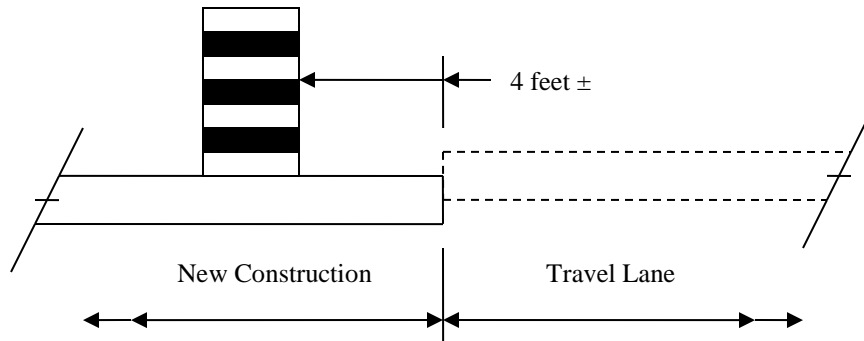


ELEVATION DIFFERENCE GREATER THAN TWO INCHES (> 2") TO  
FOUR INCHES (4")

DETAIL 150-F

Drums spaced at eighty foot (80') intervals.

Location of drums when Elevation Difference is two inches ( $\leq 2''$ ) or less.



ELEVATION DIFFERENCE OF TWO INCHES ( $\leq 2''$ ) OR LESS

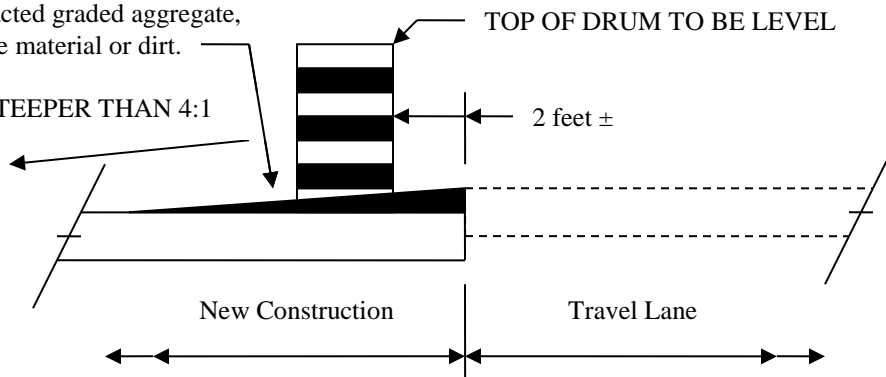
DETAIL 150-G

Location of drums immediately after completion of healed sections spaced at 40 foot (40') intervals

Healed Section

Compacted graded aggregate, subbase material or dirt.

NO STEEPER THAN 4:1



HEALED SECTION

DETAIL 150-H

### **150.3.12 Work Zone Law Enforcement**

Work zone law enforcement consists of utilizing a uniformed law enforcement officer equipped with patrol vehicle and blue flashing lights to enforce traffic laws in construction work zones and the administration of this service. Payment for work zone law enforcement will be made only for the utilization in work zones during lane closures, traffic pacing, or other activities that occur within travel lanes. The Contractor will be responsible for negotiating a rate of reimbursement and making reimbursement to that law enforcement agency.

The Contractor will be responsible for coordinating and scheduling the utilization of the work zone law enforcement. The Engineer may require the use of work zone law enforcement at specific times and locations.

## **150.4 Measurement**

### **150.4.01 Traffic Control Items**

#### **A. Traffic Control**

When listed as a pay item in the Proposal, payment will be made at the lump sum price bid, which will include all traffic control not paid for separately, and will be paid as follows:

When the first Construction Report is submitted, a payment of twenty-five percent (25%) of the lump sum price will be made. For each progress payment thereafter, the total of the Project percent complete shown on the last pay statement plus twenty-five percent (25%) will be paid (less previous payments), not to exceed one hundred percent (100%).

When no payment item for Traffic Control-Lump Sum is shown in the Proposal, all of the requirements of Section 150 and the Temporary Traffic Control Plan shall be in full force and effect. The cost of complying with these requirements will not be paid for separately, but shall be included in the overall bid submittal.

#### **B. Changeable Message Sign, Portable**

Portable changeable message sign will be measured as specified in Section 632.

#### **C. Flashing Beacon Assembly**

Flashing beacon assemblies will be measured as specified in Section 647.

#### **D. Pavement Markings**

Pavement markings will be measured as specified in Section 150.

#### **E. Portable Impact Attenuators**

Each portable impact attenuator will be measured by the unit/array which shall include all material components, hardware, incidentals, labor, site preparation, and maintenance, including spare parts recommended by the manufacturer for repairing accident damage. Each unit will be measured only once regardless of the number of locations installed, moves required, or number of repairs necessary because of traffic damage. Upon completion of the project, the units shall be removed and retained by the Contractor.

#### **F. Signs**

When shown as a pay item in the contract, interim special guide signs will be paid for as listed below. All other regulatory, warning, and guide signs, as required by the Contract, will be paid for under Traffic Control Lump Sum or included in the overall bid submitted.

1. Interim ground mounted or interim overhead special guide signs will be measured for payment by the square foot. This payment shall be full compensation for furnishing the signs, including supports as required, erecting, illuminating overhead signs, maintaining, removing, re-erecting, and final removal from the Project. Payment will be made only one time regardless of the number of moves required.
2. Remove and reset existing special guide signs, ground mount or overhead, complete, in place, will be measured for payment per each. Payment will be made only one time regardless of the number of moves required.
3. Modify special guide signs, ground mount or overhead, will be measured for payment by the square foot. The area measured shall include only that portion of the sign modified. Payment shall include materials, removal from posts or supports when necessary, and remounting as required.

#### **G. Temporary Audible Information Device**

Temporary audible information devices are measured as the actual number furnished and installed in accordance with the manufacturer's recommendations, which shall include all necessary materials, equipment, labor, site preparation, maintenance and removal. Each temporary audible information device will be paid for only one time regardless of the number of times it's reused during the duration of The Work. These devices shall remain the property of the Contractor.

#### **H. Temporary Barrier**

Temporary barrier shall be measured as specified in Sections 620.

#### **I. Temporary Curb Cut Wheelchair Ramps**

Temporary curb cut wheelchair ramps are measured as the actual number formed and poured, complete and accepted, which shall include all necessary materials, equipment, labor, site preparation, maintenance and removal. No additional payment will be made for sawing existing sidewalk and removal and disposal of removed material for temporary wheelchair ramp construction. No additional payment will be made for constructing the detectable warning surface.

#### **J. Temporary Guardrail Anchorage, Type 12**

Temporary guardrail anchorage- type 12 will be measured by each assembly, complete in place and accepted according to the details shown in the plans, which shall also include the additional guardrail and appurtenances necessary for transition and connection to temporary concrete barrier. Payment shall include all necessary materials, equipment, labor, site preparation, maintenance and removal.

#### **K. Temporary Walkways with Detectable Edging**

Temporary walkways with detectable edging will be measured in linear feet (meters), complete in place and accepted, which shall include all necessary materials, equipment, labor, site preparation, temporary pipes, passing spaces, maintenance and removal. Excavation and backfill are not measured separately for payment. No payment will be made for temporary walkways where existing pavements or existing edging (that meets the requirements of MUTCD) are utilized for the temporary walkway. Payment for temporary detectable edging, including approved barriers and channelizing devices, installed on existing pavement shall be included in Traffic Control-Lump Sum.

#### **L. Traffic Signal Installation- Temporary**

Temporary traffic signal installation will be measured as specified in Section 647.

#### **M. Work Zone Law Enforcement**

When work zone law enforcement is shown as a pay item, work zone law enforcement will be measured for payment by the hour. The Contractor shall provide a daily work record containing the actual number of hours charged by the law enforcement officer. The daily work record shall be compiled on a form provided by the Department, signed by the law enforcement officer, signed by the Contractor's Worksite Traffic Control Supervisor attesting that the law enforcement was utilized during the time recorded, and then submitted to the Engineer.

Work zone law enforcement will be measured for payment by the hour up to the maximum number of hours included in the contract. The Engineer may at his discretion increase the maximum number of hours.

Payment shall be full compensation for reimbursing the law enforcement agency, and for all cost incurred by the Contractor in coordinating, scheduling, and administering the item work zone law enforcement.

If no work zone law enforcement pay item is included in the contract, then all work zone law enforcement cost shall be included in Traffic Control – Lump Sum.

## 150.5 Payment

When shown in the Schedule of Items in the Proposal, the following items will be paid for separately. Payment will be made under:

Item No. 150	Traffic control -	Lump sum
Item No. 150	Traffic control, solid traffic stripe ___ inch, (color)	Per linear mile
Item No. 150	Traffic control, skip traffic stripe ___ inch, (color)	Per linear mile
Item No. 150	Traffic control, solid traffic stripe, thermoplastic 24 inch, color	Per linear mile
Item No. 150	Traffic control, raised pavement markers –all types	Per each
Item No. 150	Remove and reset, existing special guide signs, overhead, complete-in-place	Per each
Item No. 150	Temporary walkways with detectable edging	Per linear foot
Item No. 150	Temporary curb cut wheelchair ramps	Per each
Item No. 150	Temporary audible information device	Per each
Item No. 150	Single lane closure	Per each
Item No. 150	Multilane closure	Per each
Item No. 150	Work Zone Law Enforcement	Per hour

### 150.5.01 Enforcement and Adjustments

The safe passage of pedestrians and traffic through and around the temporary traffic control zone, while minimizing confusion and disruption to traffic flow, shall have priority over all other Contractor activities. Continued failure of the Contractor to comply with the requirements of Section 150 - Traffic Control will result in non-refundable deductions of monies from the Contract as shown in this Subsection for non-performance of Work.

Failure of the Contractor to comply with this Specification shall be reason for the Engineer suspending all other work on the Project, except erosion control and traffic control, taking corrective action as specified in Section 105, and/or withholding payment of monies due to the Contractor for any work on the Project until traffic control deficiencies are corrected. These other actions shall be in addition to the deductions for non-performance of traffic control.

SCHEDULE OF DEDUCTIONS FOR EACH CALENDAR DAY OF DEFICIENCIES OF TRAFFIC CONTROL INSTALLATION AND/OR MAINTENANCE		
ORIGINAL TOTAL CONTRACT AMOUNT		
From More Than	To and Including	Daily Charge
\$0	\$100,000	\$250
\$100,000	\$1,000,000	\$650
\$1,000,000	\$5,000,000	\$1,300
\$5,000,000	\$20,000,000	\$2,000
\$20,000,000	\$40,000,000	\$2,600
\$40,000,000	\$-----	\$4,000

**DEPARTMENT OF TRANSPORTATION  
COBB COUNTY GEORGIA**

**SPECIAL PROVISION**

**OLD 41 HIGHWAY OVER CSX RAILROAD BRIDGE  
REPLACEMENT / PROJECT NO. X2116**

**SECTION 150 – TRAFFIC CONTROL**

---

**ADD the following:**

**150.3 CONSTRUCTION REQUIREMENTS**

**150.3.01 GENERAL**

**C. Traffic Interruption Restrictions**

The Contractor shall not install lane closures, pace traffic or move equipment or materials between the hours of 6:00 a.m. and 9:00 a.m. and 4:00 p.m. to 7:00 p.m. Monday through Friday.

Failure to adhere to these restrictions will result in non-refundable deductions as specified in Section 150.5.01 Enforcement and Adjustments.

**D. CSXT Traffic Control**

In accordance with Exhibit A: Allocation of work of the CSXT Construction Agreement, the Contractor will provide traffic control for any work performed by the railroad if requested.





**DEPARTMENT OF TRANSPORTATION  
COBB COUNTY**

**SPECIAL PROVISION**

**Section 153 - Field Engineer's Office**

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**153.1 General Description**

The County will designate 2800 Canton Road, Suite 1400, Marietta, GA 30066, a retail office located in the Piedmont Village Shopping Center as a Field Engineer's Office. This includes providing, furnishing, and maintenance as required in accordance with this Specification.

The Engineering personnel will use the building exclusively for as long as they consider necessary, but no longer than the date of Final Acceptance of the Project.

**153.1.01 Definitions**

General Provisions 101 through 150.

**153.1.02 Related References**

**A. Standard Specifications**

[Section 636—Highways Signs](#)

[Section 643—Fence](#)

[Section 910—Sign Fabrication](#)

[Section 911—Sign Posts](#)

[Section 912—Sign Blanks and Panels](#)

[Section 913—Reflectorizing Materials](#)

**B. Referenced Documents**

NFPA-10A

**153.1.03 Submittals**

Before installing Project Office signs, submit a signage plan for this work to the Engineer for approval.

**153.2 Materials**

Ensure that all materials are of commercial grade. Sampling and testing is not required.

**153.2.01 Delivery, Storage, and Handling**

General Provisions 101 through 150.

**153.3 Construction Requirements**

**153.3.01 Personnel**

General Provisions 101 through 150.

**153.3.02 Equipment**

General Provisions 101 through 150.

**153.3.03 Preparation**

General Provisions 101 through 150.

#### **153.3.04 Fabrication**

Delete this section in its entirety.

#### **153.3.05 Construction**

##### **A. Field Engineer's Office Location**

###### **2. Office Building Type 3:**

Delete and substitute the following:

The County will designate 2800, Suite 1400, Canton Road, Marietta, GA 30066, located outside the project limits, a Field Engineer's Office. Contractor shall enter into lease agreement with **Repwest Insurance Company, an Arizona Corporation**, beginning on or about June 1, 2020. Monthly utilities and other expenses will begin at Notice to Proceed.

##### **B. Building Requirements**

Delete and substitute the following:

The Field Engineer's office will be located in the Piedmont Village Shopping Center, 2800 Canton Road, Suite 1400, Marietta, GA 30066. Ensure that the office meets the following minimum requirements:

1. Connect all utilities including water, sewage, gas, electricity, internet, and telephone service to their service source, ready for use, before the Engineer's occupancy. Process and pay the monthly bills for all utility services as required.
2. Equip the building with at least one approved fire extinguisher that meets the following requirements:

- ☐ Multipurpose dry chemical type extinguisher
- ☐ Underwriters Laboratory rating 4A-40BC

Mount the extinguisher(s) in a convenient and conspicuous location that is easily accessible from any part of the building. Maintain the extinguisher(s) according to the requirements of NFPA-10A.

3. Provide one telephone, with rollover capabilities, connected to two handsets (located on either end of the office). Provide separate telephone lines for the computer and the fax machine, as directed by the Engineer. Install and maintain these lines for the life of the Project. Provide telephone access to the Local Area Telephone Service (LATS) only for outgoing. An automatic answering system that can give a greeting message, record incoming messages, and activated remotely shall be provided.
4. Provide a multifunction copier (Canon Image or approved equal) with the capability of making letter-size copies (8½" x 11"), legal-size copies (8½"x 14"), two-sided copies, at least thirty copies per minute, and possess an auto-feed feature. Furnish all consumable and non-consumable supplies for the life of the Project.
5. Provide two each, four-drawer, letter size, steel, fireproof, lockable, and must have at least two keys, and two each, four-drawer, letter size, steel file cabinets.
6. Provide plan racks capable of holding two complete sets of Project Plans (not more than 100 sheets per hanger).
7. Provide potable water and water cooler (may be bottled water supplied by Contractor).
8. Provide indoor toilet facilities that meet local sanitary requirements.
9. Provide for and ensure that heat can be maintained to a minimum inside temperature of 72°F, and air conditioning can be maintained to a minimum inside temperature of 20°F cooler than the outside temperature.

10. Provide for cleaning service, including trash removal, on a weekly basis. Stock and replenish all necessary consumable supplies (i.e paper towels, toilet paper, soap, etc.) for the life of the Project.

11. Install an alarm system that includes the following items and maintain in good operating condition:

- All doors and windows with wired contacts.
- Outside sirens with wired contacts.
- Tamper-proof box with wired contacts.
- Inside sirens with wired contacts.
- Two smoke and heat detectors.

Tie all of the above equipment to a 24hour control monitoring system using a wired keyboard system. Do not use a remote system. Process and pay the monthly bills for the alarm system and monitoring.

12. Provide three (3) Desktop Computers and Accessories meeting the following minimum requirements:

**Hardware:**

- Intel Core i3 4130 3.4 GHz dual core processor or equal
- 8 GB of memory
- 1 TB SATA Hard Drive or larger
- Super Multi DVD Burner Drive
- 7 in 1 Multimedia Card Reader
- Intel HD Graphics
- Wi-Fi 502.11 b/g/n
- 20" Flat Panel LCD, 1680 x 1050 Resolution
- Two (2) -- 2 GB Flash Drives
- Human Input Device (Mouse)
- Standard Windows Keyboard

**Software:**

- MS Windows 10
- MS Outlook (Most Recent Version) /Windows Office (most recent version)
- WS-FTP
- WinZip
- A restore CD

**Uninterruptible Power Supply:**

- American Power Conversion Corporation Back-UPS ES 650 or Newpoint 750 VA Battery Backup or Equal (minimum 5 Receptacles)

**DSL or Cable Broadband Internet Service**

- Provide DSL Internet Service with static IP address or provide Cable Broadband Internet Service as approved by the Engineer.

### **153.3.06 Quality Acceptance**

General Provisions 101 through 150.

### **153.3.07 Contractor Warranty and Maintenance**

Whether the building is owned, leased, or rented, the Contractor who provides the building retains possession of each office building.

The Engineer will control the use, location, relocation, and removal of the building. When the building is no longer needed, remove each building from the Project at the Engineer's direction.

Retain possession of all items that are required as part of the Field Office when the Engineer determines that these items are no longer needed.

### **153.4 Measurement**

Field Engineer's offices, as required by the Engineer, will be paid for as follows: Lease-Annual, Lump Sum payment; Utilities/Expenses, monthly payments.

An allowance pay item has been set up for the Field Engineers Office. The County and Contractor will mutually agree on annual and monthly payment amounts.

Payment will be made under:

Item No. 153	Field Engineer's office type 3	Lump Sum (Allowance)
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**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

1st Use: Nov 2013  
Revised: March 9, 2016

**SPECIAL PROVISION**

**Section 161—Control of Soil Erosion and Sedimentation**

*Add the following:*

**161.1 General Description**

This Work includes using control measures shown on the Plans, ordered by the Engineer, or as required during the life of the Contract to control soil erosion and sedimentation through the use of any of the devices or methods referred to in this Section.

**161.1.01 Definitions**

Certified Personnel— certified personnel are defined as persons who have successfully completed the Level IA, or higher, certification course approved by the Georgia Soil and Water Conservation Commission. For Department projects the certified person must also have successfully completed the Department’s WECS certification course.

Design Professional as defined in the current GAR100002 NPDES permit.

**161.1.02 Related References**

**A. Standard Specifications**

[Section 105—Control of Work](#)

[Section 106—Control of Materials](#)

[Section 107—Legal Regulations and Responsibility to the Public](#)

[Section 109—Measurement and Payment](#)

[Section 160—Reclamation of Material Pits and Waste Areas](#)

[Section 162—Erosion Control Check Dams](#)

[Section 163—Miscellaneous Erosion Control Items](#)

[Section 166—Restoration or Alteration of Lakes and Ponds](#)

[Section 170—Silt Retention Barrier](#)

[Section 171—Temporary Silt Fence](#)

[Section 205—Roadway Excavation](#)

[Section 434—Sand Asphalt Paved Ditches](#)

[Section 441—Miscellaneous Concrete](#)

[Section 603—Rip Rap](#)

[Section 700—Grassing](#)

[Section 710—Permanent Soil Reinforcing Mat](#)

[Section 715—Bituminous Treated Roving](#)

[Section 716—Erosion Control Mats \(Blankets\)](#)

Erosion control measures contained in the Specifications include:

<b>Erosion Control Measure</b>	<b>Section</b>
Temporary Check Dams	<a href="#"><u>163.3.05.J</u></a>

<b>Erosion Control Measure</b>	<b>Section</b>
Bituminous Treated Mulch	<a href="#">700.3.05.G</a>
Concrete Paved Ditches	<a href="#">441</a>
Bituminous Treated Roving	<a href="#">715</a>
Erosion Control Mats (Blankets)	<a href="#">716</a>
Erosion Control Check Dams	<a href="#">162</a>
Grassing	<a href="#">700</a>
Maintenance of Temporary Erosion Control Devices	<a href="#">165</a>
Permanent Soil Reinforcing Mat	<a href="#">710</a>
Reclamation of Material Pits and Waste Areas	<a href="#">160</a>
Rip Rap	<a href="#">603</a>
Restoration or Alteration of Lakes and Ponds	<a href="#">166</a>
Sand-Asphalt Ditch Paving	<a href="#">434</a>
Sediment Basin	<a href="#">163.3.05.C</a>
Silt Control Gate	<a href="#">163.3.05.A</a>
Silt Retention Barrier	<a href="#">170</a>
Sod	<a href="#">700.3.05.H</a> & <a href="#">700.3.05.I</a>
Mulch	<a href="#">163</a>
Temporary Grassing	<a href="#">163.3.05.F</a>
Temporary Silt Fence	<a href="#">171</a>
Temporary Slope Drains	<a href="#">163.3.05.B</a>
Triangular Sediment Barrier	<a href="#">720</a>
Silt Filter Bag	<a href="#">719</a>
Organic & Synthetic Material Fiber Blanket	<a href="#">713</a>

## **B. Referenced Documents**

Erosion and Sedimentation Pollution Control Plans (ESPCP)

### **161.1.03 Submittals**

#### **A. Status of Erosion Control Devices**

The Worksite Erosion Control Supervisor (WECS) or certified personnel will inspect the installation and maintenance of the Erosion Control Devices according to [Subsection 167.3.05.B](#) and the ESPCP.

1. Submit all reports to the Engineer within 24 hours of the inspection. Refer to [Subsection 167.3.05.C](#) for report requirements.
2. The Engineer will review the reports and inspect the Project for compliance and concurrence with the submitted reports.
3. The Engineer will notify the WECS or certified personnel of any additional items that should be added to the reports.
4. Items listed in the report requiring maintenance or correction shall be completed within 72 hours.

#### **B. Erosion and Sedimentation Pollution Control Plan**

1. Project Plans

An erosion and sedimentation pollution control plan (ESPCP) for the construction of the project will be provided by the Department. The ESPCP will be prepared for the various stages of construction necessary to complete the project.

If the Contractor elects to alter the stage construction from that shown in the plans, it will be the responsibility of the Contractor to have the plans revised and prepared in accordance with the current GAR100002 NPDES permit by a Design Professional to reflect all changes in Staging. This will also include any revisions to erosion and sedimentation control item quantities. If the changes affect the Comprehensive Monitoring Program (CMP), the Contractor will be responsible for any

revisions to the CMP as well. Submit revised plans and quantities to the Engineer for review prior to land disturbing activities.

2. Haul Roads, Borrow Pits, Excess Material Pits, etc.

The Contractor is responsible for amending the approved erosion and sedimentation control plans if they add a haul road that is outside of the project roadway but within the right of way or construct any borrow pits, or excess material pits inside the Right of Way. Prepare these plans for all stages of construction and include the appropriate items and quantities. Submit these plans to the Engineer for review prior to land disturbing activities. These plans are to be prepared by a Design Professional.

If construction of haul roads, or borrow pits, or excess material pits, etc., (inside the Right of Way) encroach within the 25 foot (7.6 m) buffer along the banks of all state waters or within the 50 ft. (15 m) buffer along the banks of any state waters classified as a "trout stream", a state water buffer variance must be obtained by the Contractor prior to beginning any land disturbing activity in the stream buffer.

3. Erosion Control for Borrow and Excess Material Pits Outside the Right-of-Way

Erosion control for borrow pits and excess material pits outside the right of way is the responsibility of the Contractor. If borrow or excess material pits require coverage under the National Pollutant Discharge Elimination System permit (NPDES) or other permits or variances are required, submit a copy of all documentation required by the permitting agency to the Engineer. All costs associated with complying with local, state, and federal laws and regulations are the responsibility of the Contractor.

4. Culverts and Pipes

The ESPCP does not contain approved methods to construct a stream diversion or stream diversion channel. The Contractor shall prepare a diversion plan utilizing a Design Professional as defined in the current NPDES permit. See [Subsection 161.3.05 G](#) for additional information.

5. Temporary Asphalt or Concrete Batch Plants

In addition to the requirements of any applicable specifications, if the Department authorizes the temporary installation and use of any asphalt, concrete or similar batch plants within its right of way, the contractor shall submit an NOI to the Georgia Environmental Protection Division for coverage under the following NPDES permits; The Infrastructure permit for the construction of the plant, and the Industrial permit for the operation of, such a plant. The contractor shall submit the NOIs as both the Owner and the Operator.

## 161.2 Materials

General Provisions 101 through 150.

### 161.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

## 161.3 Construction Requirements

### 161.3.01 Personnel

#### A. Duties of the Worksite Erosion Control Supervisor

Before beginning Work, designate a Worksite Erosion Control Supervisor (WECS) to initiate, install, maintain, inspect, and report the condition of all erosion control devices as described in Sections 160 through 171 or in the Contract and ESPCP documents. The designee shall submit their qualifications on the Department provided resume form for consideration and approval. The contractor may utilize additional persons having WECS qualifications to facilitate compliance however, only one WECS shall be designated at a time.

The WECS and alternates shall:

Be an employee of the Prime Contractor.

Have at least one year of experience in erosion and sediment control, including the installation, inspection, maintenance and reporting of BMPs.

Successfully completed the Georgia Soil and Water Conservation Commission Certification Course Level IA and the Department's WECS Certification Course.

Provide phone numbers where the WECS can be located 24 hours a day.

The WECS' duties include the following:

1. Be available 24 hours a day and have access to the equipment, personnel, and materials needed to maintain erosion control, and to the extent practicable, flooding control. An approved representative can be substituted for the WECS in regard to 24 hour availability. This representative shall be at least GSWCC Level IA, or higher, but is not required to be certified as a WECS.

2. Inform the Engineer in writing whenever the alternate WECS will assume project responsibilities for more than 3 (three) days.
3. Ensure that erosion control deficiencies are corrected within seventy two (72) hours. Deficiencies that interfere with traffic flow, safety, or downstream turbidity are to be corrected immediately.
4. Be on the site within three (3) hours after receiving notification of an emergency prepared to positively respond to the conditions encountered. The Department may handle emergencies without notifying the Contractor. The Department will recover costs for emergency maintenance work according to [Subsection 105.15, "Failure to Maintain Roadway or Structures."](#)
5. Maintain and submit for project record, "As-built" Erosion and Sedimentation Control Plans that supplement and graphically depict EC-1 reported additions and deletions of BMPs. The As-Built plans are to be accessed and retained at a Department facility at all times.
6. Ensure that both the WECS and the alternate meet the criteria of this Subsection.
7. The WECS shall maintain a current certification card for the duration of the project. Recertification of the WECS will be required prior to the expiration date shown on the Certification card in order to remain as Certified Personnel and the WECS for the project.

### **161.3.02 Equipment**

General Provisions 101 through 150.

### **161.3.03 Preparation**

General Provisions 101 through 150.

### **161.3.04 Fabrication**

General Provisions 101 through 150.

### **161.3.05 Construction**

Coordinate the temporary and permanent erosion control provisions in this Specification with the permanent erosion control provisions in the Contract to ensure economical, effective, and continuous erosion control throughout the construction and post-construction periods.

At all times that land disturbing activity is underway, a person meeting the requirements of, "certified person" as defined by the GSWCC (Level IA, or higher) must be on the project.

#### **A. Control Dust Pollution**

The contractor shall keep dust pollution to a minimum during any of the activities performed on the project. It may be necessary to apply water or other BMPs to roadways or other areas reduce pollution.

#### **B. Perform Permanent or Temporary Grassing**

Perform permanent grassing, temporary grassing, or mulching on cut and fill slopes weekly (unless a shorter period is required by [Subsection 107.23](#)) during grading operations. When conditions warrant, the Engineer may require more frequent intervals.

Under no circumstances shall the grading ( height of cut) exceed the height operating range of the grassing equipment. It is extremely important to obtain a cover, whether it is mulch, temporary grass or permanent grass. Adequate mulch is a must.

When grading operations or other soil disturbing activities have stopped, perform grassing or erosion control as shown in the Plans, as shown in an approved Plan submitted by the Contractor, or as directed by the Engineer.



### C. Seed and Mulch

Refer to [Subsection 161.3.05.B, “Perform Permanent or Temporary Grassing”](#).

### D. Implement Permanent or Temporary Erosion Control

1. Silt fence shown along the perimeter, e.g. right of way, and sediment containment devices, e.g. sediment basins, shall be installed prior to or concurrently with clearing and grubbing operations.
2. Incorporate permanent erosion control features into the Project at the earliest practicable time, e.g. velocity dissipation, permanent ditch protection.
3. Use temporary erosion control measures to address minor conditions that develop during construction, e.g. between construction stages.
4. Use temporary erosion control measures when installation of permanent erosion control features cannot be accomplished.

The Engineer has the authority to:

Limit the surface area of erodible earth material exposed by clearing and grubbing.

Limit the surface area of erodible earth material exposed by excavation and borrow and fill operations.

Limit the area of excavation, and embankment operations in progress to correspond with the Contractor’s ability to keep the finish grading, mulching, seeding, and other permanent erosion control measures current.

Direct the Contractor to provide immediate permanent or temporary erosion control to prevent contamination of adjacent streams or water courses, lakes, ponds, or other areas of water impoundment.

Such Work may include constructing items listed in the table in [Subsection 161.1.02.A, “Related References”](#) or other control devices or methods to control erosion.

### E. Erodible Area

**NOTE: Never allow the surface area of erodible earth material exposed at one time to exceed 17 acres (7 ha) except as approved by the State Construction Engineer.**

The maximum of 17 acres (7 ha) of exposed erodible earth applies to the entire Project and to all of its combined operations as a whole, not to the exposed erodible earth of each individual operation.

Upon receipt of a written request from the contractor the State Construction Engineer, or his designee, will review; the request, any justifications and the Project conditions for waiver of the 17 acres (7 ha) limitation. If the 17 acre limitation is increased by the State Construction Engineer, the WECS shall not be assigned to another project in that capacity and should remain on site each work day that the exposed acreage exceeds 17 acres.

After installing temporary erosion control devices, e.g., grassing, mulching, stabilizing an area, and having it approved by the Engineer, that area will be released from the 17 acres (7 ha) limit.

### F. Perform Grading Operations

Perform the following grading operations:

1. Whenever practicable, complete each roadway cut and embankment continuously
2. Maintain the top of the earthwork in roadway sections throughout the construction stages to allow water to run off to the outer edges, including techniques to minimize concentrated flow.
3. Provide temporary slope drain facilities with inlets and velocity dissipaters (straw bales, silt fence, aprons, etc.) to carry the runoff water to the bottom of the slopes. Place drains at intervals to handle the accumulated water.
4. Continue temporary erosion control measures until permanent drainage facilities have been constructed, pavement placed, and the grass on planted slopes stabilized to deter erosion.

### G. Perform Construction in Rivers and Streams

Perform construction in river and stream beds as follows:

1. Unless otherwise agreed to in writing by the Engineer, restrict construction operations in rivers, streams, and impoundments to:

Areas where channel changes or access for construction are shown on the Plans to construct temporary or permanent structures.

2. If channel changes or diversions are not shown on the Plans, the Contractor shall develop diversion plans prepared in accordance with the current GAR100002 NPDES Infrastructure Construction permit utilizing a design professional as defined within the permit. The Engineer will review prepared diversion plans for content only and accepts no responsibility for design errors or omissions. Amendments will be made part of the project plans by attachment. Include any associated costs in the price bid for the overall contract. Any contract time associated with the submittal or its review and subsequent response will not be considered for an extension of Contract time. All time associated with this subsection shall be considered incidental.
3. If additional access for construction or removal of work bridges, temporary roads/access or work platforms is necessary, and will require additional encroachment upon river or stream banks and bottoms, the contractor shall prepare a plan in accordance with the current GAR100002 NPDES Infrastructure Construction permit utilizing a design professional as defined within the permit. Plans should be submitted at least 12 weeks prior to the date the associated work is expected to begin. If necessary, the plan will be provided to the appropriate regulating authority, e.g. United States Army Corps of Engineers by the Department for consideration and approval. No work that impacts areas beyond what has been shown in the approved plans will be allowed to begin until written approval of the submitted plan has been provided by the Department. Approved plan amendments will be made part of the project plans by attachment. Include any associated costs in the price bid for the overall contract. Any contract time associated with the submittal or its review and subsequent response will not be considered for an extension of Contract time. All time associated with this subsection shall be considered incidental.
4. Clear rivers, streams, and impoundments of the following as soon as conditions permit:
  - Falsework
  - Piling that is to be removed
  - Debris
  - Other obstructions placed or caused by construction operations
5. Do not ford live streams with construction equipment.
6. Use temporary bridges or other structures that are adequate for a 25-year storm for stream crossings. Include costs in the price bid for the overall contract.
7. Do not operate mechanized equipment in live streams except to construct channel changes or temporary or permanent structures, and to remove temporary structures, unless otherwise approved in writing by the Engineer.

## **H. State Water Buffers and Environmental Restrictions**

1. The WECS shall review the plans and contract documents for environmental restrictions, Environmentally Sensitive Areas (ESA), e.g. buffers, etc prior to performing land disturbing activities.
2. The WECS shall ensure all parties performing land disturbing activities within the project limits are aware of all environmental restrictions.
3. Buffer delineation shall be performed prior to clearing, or any other land disturbing activities. Site conditions may require temporary delineation measures are implemented prior to the installation of orange barrier/safety fencing. The means of temporary delineation shall have the Engineer's prior approval.
4. The WECS shall allow the Engineer to review the buffer delineation prior to performing any land disturbing activities, including but not limited to clearing, grubbing and thinning of vegetation. Any removal and relocation of buffer delineation based upon the Engineer's review will not be measured for separate payment.
5. The WECS shall advise the Engineer of any surface water(s) encountered that are not shown in the plans. The WECS shall prevent land disturbing activities from occurring within surface water buffers until the Engineer provides approval to proceed.

## **I. General Requirements**

**Projects that consist of asphalt resurfacing, shoulder reconstruction and/or shoulder widening; schedule and perform the construction of the project to comply with the following:**

After temporary and permanent erosion control devices are installed and the area permanently stabilized (temporary or permanent) and approved by the Engineer, the area may be released from the 1 acre (0.4 ha) limit.

The maximum of 1 acre (0.4 ha) of erodible earth applies to the entire project and to all combined operations, including borrow and excess material operations that are within the right of way, not 1 acre (0.4 ha) of exposed erodible earth for each operation.

**NOTE: Never allow the surface area of erodible earth material exposed at one time to exceed 1 acre (0.4 ha).**

1. Do not allow the disturbed exposed erodible area to exceed 1 acres (0.4 ha). This 1 acre (0.4 ha) limit includes all disturbed areas relating to the construction of the project including but not limited to slope and shoulder construction.
2. At the end of each working day, permanently stabilize all of the area disturbed by slope and shoulder reconstruction to prevent any contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment. For purposes of this Specification, the end of the working day is defined as when the construction operations cease. For example, 6:00 a.m. is the end of the working day on a project that allows work only between 9:00 p.m. and 6:00 a.m.)
3. Stabilize the cut and fill slopes and shoulder with permanent or temporary grassing and a Wood Fiber Blanket ([Section 713](#), Type II). Mulching is not allowed. Borrow pits, soil disposal sites and haul roads will not require daily applications of wood fiber blanket. The application rate for the Wood Fiber Blanket on shoulder reconstruction is the rate specified for Shoulders. For shoulder reconstruction, the ground preparation requirements of [Subsection 700.3.05.A.1](#) are waived. Preparation consists of scarifying the existing shoulders 4 to 6 in (100 to 150 mm) deep and leaving the area in a smooth uniform condition free from stones, lumps, roots or other material.
4. If a sudden rain event occurs that would not allow the Contractor to apply the Type II Wood Fiber Blanket per [Section 713](#), install Wood Fiber Blanket Type I per [Section 713](#) if directed by the Engineer. Wood Fiber Blanket Type I application is for emergency use only.

Install temporary grass or permanent grass according to seasonal limitations and Specifications. When temporary grass is used, use the overseeding method ([Subsection 700.3.05.E.4](#)) when planting permanent grass.

3. Remove and dispose of all material excavated for the trench widening operation at an approved soil disposal site by the end of each working day. When shoulder reconstruction is required, this material may be used to reconstruct the graded shoulder after all asphaltic concrete pavement has been placed.
4. Provide immediate permanent and/or temporary erosion control measures for borrow pits, soil disposal sites and haul roads to prevent any contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment.
5. Place asphalt in the trench the same day as the excavation occurs. Place asphalt or concrete in driveways and side roads being re-graded the same day as the excavation occurs. Stabilize any disturbed or exposed soil that is not covered with asphalt with a Wood Fiber Blanket (and grass seed). Payment will be made for the Wood Fiber Blanket and grass seed only if the shoulder has been constructed to final dimensions and grade and no further grading will be required.
6. Do not allow the grading (height of cut or fill) to exceed the operating range of the grassing equipment.
7. When grading operations or other soil disturbing activities are suspended, regardless of the reason, promptly perform all necessary permanent stabilization and/or erosion control work.
8. Use temporary erosion control measures to:
  - To correct conditions that develop during construction but were unforeseen during the design stage.
  - To use as needed before installing permanent erosion control features.
  - To temporarily control erosion that develops during normal construction practices but are not associated with permanent control features on the Project.
9. When conditions warrant, such as unfavorable weather (rain event), the Engineer may require more frequent intervals for this work.

### **161.3.06 Quality Acceptance**

Before Final Acceptance of the Work, clean drainage structures within the project limits, both existing and newly constructed, and ensure that they are functioning properly. Costs to accomplish this work are incidental and shall be included in the overall bid for the Contract.

### **161.3.07 Contractor Warranty and Maintenance**

Maintain the erosion control features installed to:

- Contain erosion within the limits of the right-of-way
- Control storm water discharges from disturbed areas

Effectively install and maintain the erosion control features. Ensure these features contain the erosion and sediment within the limits of the rights of way and control the discharges of storm-water from disturbed areas to meet all local, state, and federal requirements on water quality.

## **161.4 Measurement**

Control of soil erosion and sedimentation is not measured separately for payment.

### **161.4.01 Limits**

General Provisions 101 through 150.

## 161.5 Payment

When no pay item is shown in the Contract, the requirements of this Specification and the Erosion Control Plan shall be in full effect. The cost of complying with these requirements will not be paid for separately, but shall be included in the overall bid submitted with the exception of inspections performed by qualified personnel which will be included in Section 167.

When listed as a pay item in the Contract, payment will be made at the unit price bid for each particular item.

No payment will be made for erosion control outside the Right-of-Way or construction easements except as provided for by the Plans.

### 161.5.01 Enforcement and Adjustments

#### A. Failure to Provide a WECS

If a designated WECS is not maintained cease activities except traffic control and erosion control work. Monies that are due or that may become due also may be withheld according to the Specifications

#### B. Failure to Comply with Specifications

If the Contractor repeatedly fails to comply with any of the requirements of this Specification, all activities should cease immediately except traffic control and erosion control related work.

Monies that are currently due or that may become due shall be withheld according to the specifications. In addition, nonrefundable monies shall be deducted from the contract as shown in the Schedule of Deductions table below. These deductions are in addition to any actions taken in the above subsections. Deductions assessed for uncorrected deficiencies shall continue until all corrections are completed to the satisfaction of the Engineer.

Failure of the WECS or alternate to perform the duties specified in the Contract, or whose performance, has resulted in a citation being received from a State or Federal Regulatory Agency, e.g. the Georgia Environmental Protection Division, should result in one or more of the following;

Suspension of the WECS' certification for a period of not less than 30 days

Removal of the Contractor's project superintendent in accordance with [Subsections 105.05](#) and [108.05](#) for a period not less than 14 days

Department wide revocation of the WECS certification for a period of 12 months

Removal of the Contractor's project superintendent in accordance with [Subsections 105.05](#) and [108.05](#)

#### D. Receipt of a Consent Order or Notice of Violation, etc

Regulatory enforcement actions will be resolved including the minimum following steps;

The Department will perform an internal review of the alleged violations

The Department will then meet with the Contractor to review and further determine responsibilities for the alleged violations

The Department will then arrange to collectively meet with the regulatory agencies to negotiate resolutions and/or settlements.

The Department does not waive any rights of the Contractor to resolve such matters however, in the event that regulatory agency communication is addressed jointly to the Department and to the contractor, the Department reserves the right to coordinate all communications, e.g., written correspondence, and to schedule jointly attended meetings with Regulatory agencies such that timely and accurate responses are known to the Department.

Such Orders or Notices may result in the assessment of Deductions from the table below for each day the condition remains non-compliant following an agreed remedy.

Monetary penalties for which the contractor is obligated for as a result of regulatory enforcement may be withheld from future monies due the contractor.

<b>Schedule of Deductions for Each Calendar Day of Erosion Control Deficiencies</b> <b>Initial Occurrence* Original</b> <b>Total Contract Amount</b>		
From More Than	To and Including	Daily Charge
0	\$100,000	\$750
\$100,000	\$1,000,000	\$1125
\$1,000,000	\$5,000,000	\$2000
\$5,000,000	\$15,000,000	\$3000
\$15,000,000	-	\$5000

\*Continued non-compliance with the requirements of this specification may result in the doubling of the above tabulated Daily Charge.

Upon written request from the Contractor, the Engineer may allow, limited activities to concurrently proceed once significant portions of the corrective work have been completed. This authorization may be similarly rescinded if in the opinion of the Engineer corrective work is not being diligently pursued.



**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**  
**SPECIAL PROVISION**

**Section 163—Miscellaneous Erosion Control Items**

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*Delete Section 163 and substitute the following:*

**163.1 General Description**

This work includes constructing and removing:

- Silt control gates
- Temporary erosion control slope drains shown on the Plans or as directed
- Temporary sediment basins
- Sediment barriers and check dams
- Rock filter dams
- Stone filter berms
- Stone filter rings
- Temporary sediment traps
- Other temporary erosion control structures shown on the Plans or directed by the Engineer

This work also includes applying mulch (e.g., straw, hay, erosion control compost), and temporary grass.

**163.1.01 Related References**

**A. Standard Specifications**

Section 109—Measurement and Payment

Section 161—Control of Soil Erosion and Sedimentation

Section 171—Silt Fence

Section 500—Concrete Structures

Section 576—Slope Drain Pipe

Section 603—Rip Rap

Section 700—Grassing

Section 711—Turf Reinforcement Matting

Section 716—Erosion Control Mats (Slopes)

Section 720 – Triangular Silt Barrier

Section 800—Coarse Aggregate

Section 801—Fine Aggregate

Section 822—Emulsified Asphalt

Section 845—Smooth Lined Corrugated Polyethylene (PE) Culvert Pipe

Section 860—Lumber and Timber

Section 863—Preservative Treatment of Timber Products

Section 881—Fabrics

## Section 163 – Miscellaneous Erosion Control Items

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Section 890—Seed and Sod

Section 893—Miscellaneous Planting Materials

### B. Referenced Documents

AASHTO M252

AASHTO M294

#### 163.1.02 Submittals

Provide written documentation to the Engineer as to the average weight of the bales of mulch.

### 163.2 Materials

Provide materials shown on the Plans, such as pipe, spillways, wood baffles, and other accessories including an anti-seep collar, when necessary. The materials shall remain the Contractor's property after removal, unless otherwise shown on the Plans.

Materials may be new or used; however, the Engineer shall approve previously used materials before use.

Materials shall meet the requirements of the following Specifications:

Material	Section
Mulch	893.2.02
Temporary Silt Fence	171
Concrete Aprons and Footings shall be Class A	500
Rip Rap	603
Temporary Grass	700
Triangular Silt Barrier	720
Coarse Aggregate	800
Lumber and Timber	860.2.01
Preservative Treatment of Timber Products	863.1
Corrugated Polyethylene Temporary Slope Drain Pipe	845

#### 163.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

### 163.3 Construction Requirements

#### 163.3.01 Personnel

General Provisions 101 through 150.

#### 163.3.02 Equipment

General Provisions 101 through 150.

#### 163.3.03 Preparation

General Provisions 101 through 150.

#### 163.3.04 Fabrication

General Provisions 101 through 150.

#### 163.3.05 Construction

##### A. Silt Control Gates

If silt control gates are required or are directed by the Engineer, follow these guidelines to construct them:

1. Clear and grade only that portion of the roadway within the affected drainage area where the drainage structure will be constructed.



## Section 163 – Miscellaneous Erosion Control Items

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2. Construct or install the drainage structure and backfill as required for stability.
3. Install the silt control gate at the inlet of the structure. Use the type indicated on the Plans.
4. Vary the height of the gate as required or as shown on the Plans.
5. Finish grading the roadway in the affected drainage area. Grass and mulch slopes and ditches that will not be paved. Construct the ditch paving required in the affected area.
6. Keep the gate in place until the work in the affected drainage area is complete and the erodible area is stabilized.
7. Remove the Type 1 silt gate assembly by sawing off the wood posts flush with the concrete apron. Leave the concrete apron between the gate and the structure inlet in place. The gate shall remain the property of the Contractor.

### B. Temporary Slope Drains

If temporary slope drains are required, conduct the roadway grading operation according to Section 161 and follow these guidelines:

1. Place temporary pipe slope drains with inlets and velocity dissipaters (straw bales, silt fence, or aprons) according to the Plans.
2. Securely anchor the inlet into the slope to provide a watertight connection to the earth berm. Ensure that all connections in the pipe are leak proof.
3. Place temporary slope drains at a spacing of 350 ft (105 m) maximum on a 0% to 2% grade and at a spacing of 200 ft (60m) maximum on steeper grades, or more frequently as directed by the Engineer. Keep the slope drains in place until the permanent grass has grown enough to control erosion.
4. Remove the slope drains and grass the disturbed area with permanent grass. However, the temporary slope drains may remain in place to help establish permanent grass if approved by the Engineer.

### C. Temporary Sediment Basins

Construct temporary sediment basins according to the Plans at the required locations, or as modified by the Engineer.

1. Construct the unit complete as shown, including:
  - Grading
  - Drainage
  - Riprap
  - Spillways
  - Anti-seep collar
  - Temporary mulching and grassing on internal and external slopes
  - Accessories to complete the basin
2. When the sediment basin is no longer needed, remove and dispose of the remaining sediment.
3. Remove the sediment basin. Grade to drain and restore the area to blend with the adjacent landscape.
4. Mulch and permanently grass the disturbed areas according to Section 700.

### D. Sediment Barriers

Construct sediment barriers according to the Plan details.

The following items may be used for sediment barriers

1. Type A Silt Fence.
2. Type C Silt Fence.
3. Rectangular, mechanically produced and standard-sized baled wheat straw.
4. Triangular Silt Barrier.
5. Synthetic Fiber: Use synthetic fiber bales of circular cross section at least 18 in (450 mm) in diameter. Use synthetic bales of 3 ft or 6 ft (0.9 m or 1.8 m) in length that are capable of being linked together to form a continuous roll of the desired total length. Use bales that are enclosed in a geotextile fabric and that contain a pre-made stake hole for anchoring.
6. Coir: Use coir fiber bales of circular cross section at least 16" (400mm) in diameter. Use coir bales of 10 ft, 15 ft, or 20 ft (3 m, 4.5 m, or 6 m) in length. Use coir baled with coir twine netting with 2 in X 2 in (50 mm X 50 mm)

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**Section 163 – Miscellaneous Erosion Control Items**

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openings. Use coir bales with a dry density of at least 7 lb/ft<sup>3</sup> (112 kg/m<sup>3</sup>). Anchor in place with 2 in X 4 in (50 mm X 100 mm) wooden wedges with a 6 in (150 mm) nail at the top. Place wedges no more than 36 in (900 mm) apart.

7. Excelsior: Use curled aspen excelsior fiber with barbed edges in circular bales of at least 18 in (450 mm) in diameter and nominally 10 ft (3 m) in length. Use excelsior baled with polyester netting with 1 in X 1 in (25 mm by 25 mm) triangular openings. Use excelsior bales with a dry density of at least 1.4 lb/ft<sup>3</sup> (22 kg/m<sup>3</sup>). Anchor in place with 1 in (25 mm) diameter wooden stakes driven through the netting at intervals of no more than 2 ft (600 mm).
8. Compost Filter Sock: Use general use compost (see Subsection 893.2.02.A.5.b) in circular bales at least 18 in (450 mm) diameter. Use compost baled with photo-degradable plastic mesh 5 mils thick with a maximum 0.38 in X 0.38 in (10 mm X 10 mm) openings. Anchor in place with 1 in (25 mm) diameter wooden stakes driven through the netting at intervals of no more than 2 ft (600 mm) in concentrated flow applications and no more than 5 ft (1500 mm) in sheet flow applications. The sock shall be dispersed on site when no longer required, as determined by the Engineer. Do not use Compost Filter Socks in areas where the use of fertilizer is restricted.
9. Compost Filter Berm: Use erosion control compost (see Subsection 893.2.02) to construct a noncompacted 1.5 ft to 2 ft (450 mm to 600 mm) high trapezoidal berm which is approximately 2 ft to 3 ft (600 mm to 1 m) wide at the top and minimum 4 ft (1.2 m) wide at the base. Do not use Compost Filter Berms in areas where the use of fertilizer is restricted.

The construction of the compost filter berm includes the following:

- a. Keeping the berm in a functional condition.
- b. Installing additional berm material when necessary.
- c. Removing the berm when no longer required, as determined by the Engineer. At the Engineer's discretion, berm material may be left to decompose naturally, or distributed over the adjacent area.

**E. Other Temporary Structures**

When special conditions occur during the design stage, the Plans may show other temporary structures for erosion control with required materials and construction methods.

**F. Temporary Grass**

Use a quick-growing species of temporary grass such as rye grass, millet, or a cereal grass suitable to the area and season.

Use temporary grass in the following situations:

- When required by the Specifications or directed by the Engineer to control erosion where permanent grassing cannot be planted.
- To protect an area for longer than mulch is expected to last (60 calendar days), plant temporary grass as follows:
  1. Use seeds that conform to Subsection 890.2.01, "Seed." Perform seeding according to Section 700; except use the minimum ground preparation necessary to provide a seed bed if further grading is required.
  2. Prepare areas that require no further grading according to Subsection 700.3.05.A, "Ground Preparation." Omit the lime unless the area will be planted with permanent grass without further grading. In this case, apply the lime according to Section 700.
  3. Apply mixed grade fertilizer at 400 lbs/acre (450 kg/ha). Omit the nitrogen. Mulch (with straw or hay) temporary grass according to Section 700. (Erosion control compost Mulch will not be allowed with grassing.)
  4. Before planting permanent grass, thoroughly plow and prepare areas where temporary grass has been planted according to Subsection 700.3.05.A, "Ground Preparation".
  5. Apply Polyacrylamide (PAM) to all areas that receive temporary grassing.
  6. Apply PAM (powder) before grassing or PAM (emulsion) to the hydroseeding operation.
  7. Apply PAM according to manufacturer specifications.
  8. Use only anionic PAM.

For projects that consist of shoulder reconstruction and/or shoulder widening, refer to Section 161.3.05H for Wood Fiber Blanket requirements.

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## Section 163 – Miscellaneous Erosion Control Items

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### G. Mulch

When staged construction or other conditions prevent completing a roadway section continuously, apply mulch (straw or hay or erosion control compost) to control erosion. Mulch may be used without temporary grassing for 60 calendar days or less. Areas stabilized with only mulch (straw/hay) shall be planted with temporary grass after 60 calendar days.

Apply mulch as follows:

1. Mulch (Hay or Straw) - Without Grass Seed
  - a. Uniformly spread the mulch over the designated areas from 2 in to 4 in (50 mm to 100 mm) thick.
  - b. After spreading the mulch, walk in the mulch by using a tracked vehicle (preferred method), empty sheep foot roller, light disking, or other means that preserves the finished cross section of the prepared areas. The Engineer will approve of the method.
  - c. Place temporary mulch on slopes as steep as 2:1 by using a tracked vehicle to imbed the mulch into the slope.
  - d. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
2. Erosion control compost - Without Grass Seed
  - a. Uniformly spread the mulch (erosion control compost) over the designated areas 2 in (50 mm) thick.
  - b. When rolling is necessary, or directed by the Engineer, use a light corrugated drum roller.
  - c. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
  - d. Plant temporary grass on area stabilized with mulch (erosion control compost) after 60 calendar days.
  - e. Do not use Erosion Control Compost in areas where the use of fertilizer is restricted.

### H. Miscellaneous Erosion Control Items Not Shown on the Plans

When conditions develop during construction that were unforeseen in the design stage, the Engineer may direct the Contractor to construct temporary devices such as but not limited to:

- Bulkheads
- Sump holes
- Half round pipe for use as ditch liners
- U-V resistant plastic sheets to cover critical cut slopes

The Engineer and the Contractor will determine the placement to ensure erosion control in the affected area.

### I. Diversion Channels

When constructing a culvert or other drainage structure in a live stream that requires diverting a stream, construct a diversion channel.

### J. Check Dams

Check dams are constructed of the following materials;

- Stone plain riprap according to Section 603 (Place woven plastic filter fabric on ditch section before placing riprap.)
- Sand bags as in Section 603 without Portland cement
- Baled wheat straw
- Compost filter socks
- Fabric (Type C silt fence)

Check dams shall be constructed according to plan details and shall remain in place until the permanent ditch protection is in place or being installed and the removal is approved by the Engineer.

### K. Construction Exits

Locate construction exits at any point where vehicles will be leaving the project onto a public roadway. Install construction exits at the locations shown in the plans and in accordance with plan details.

Construction exit tire wash assemblies shall be installed when conditions dictate additional tire cleaning measures are necessary to assist in protecting public roadways. Install construction exit tire wash assemblies in accordance with the Plan details as directed by the Engineer. The Contractor may submit other construction exit tire wash assembly and

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## **Section 163 – Miscellaneous Erosion Control Items**

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sediment storage methods for review and approval by the Engineer. Remove the construction exit tire wash assembly from the construction exit as directed by the Engineer.

### **L. Retrofits**

Add the retrofit device to the permanent outlet structure as shown on the Plan details.

When all land disturbing activities that would contribute sediment-laden runoff to the basin are complete, clean the basin of sediment and stabilize the basin area with vegetation.

When the basin is stabilized, remove the retrofit device from the permanent outlet structure of the detention pond.

### **M. Inlet Sediment Traps**

Inlet sediment traps consist of a temporary device placed around a storm drain inlet to trap sediment. An excavated area adjacent to the sediment trap will provide additional sediment storage.

Inlet sediment traps may be constructed of Type C silt fence, plastic frame and filter, hay bales, baffle box, or other filtering materials approved by the Engineer. Construct inlet sediment traps according to the appropriate specification for the material selected for the trap. Place inlet sediment traps as shown on the Plans or as directed by the Engineer.

### **N. Rock Filter Dams**

Construct rock filter dams of the material selected as shown in the approved erosion and sediment control plan. Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.

Rock filter dams shall remain in place until the permanent ditch protection is in place or is being installed and their removal is approved by the Engineer.

### **O. Stone Filter Berms**

Construct stone filter berms of the material selected as shown in the approved erosion and sediment control plan. Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.

Stone filter berms shall remain in place until the permanent slope protection is in place or is being installed and their removal is approved by the Engineer.

### **P. Stone Filter Rings**

Construct stone filter rings of the material selected as shown in the approved erosion and sediment control plan. Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.

A stone filter ring shall remain in place until final stabilization of the area which drains toward it is achieved and its removal is approved by the Engineer.

### **Q. Temporary Sediment Traps**

Construct temporary sediment traps of the material selected as shown in the approved erosion and sediment control plan. Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.

A temporary sediment trap shall remain in place until final stabilization of the area which drains toward it is achieved and its removal is approved by the Engineer.

### **163.3.06 Quality Acceptance**

General Provisions 101 through 150.

### **163.3.07 Contractor Warranty and Maintenance**

General Provisions 101 through 150.

### 163.4 Measurement

#### A. Silt Control Gates

Silt control gates are measured for payment by the entire structure constructed at each location complete in place and accepted. Silt control gates constructed at the inlet of multiple lines of drainage structures are measured for payment as a single unit.

#### B. Temporary Slope Drains

Temporary slope drains are measured for payment by the linear foot (meter) of pipe placed. When required, the inlet spillway and outlet apron and/or other dissipation devices are incidental and not measured separately.

#### C. Temporary Sediment Basins

Temporary sediment basins are measured for payment by the entire structure complete, including construction, maintenance, and removal. Temporary grassing for sediment basins is measured separately for payment. Measurement also includes:

- Earthwork
- Drainage
- Spillways
- Baffles
- Riprap
- Final cleaning to remove the basin

#### D. Sediment Barriers

Sediment barriers are measured by the linear foot (meter).

#### E. Other Temporary Structures

Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

#### F. Temporary Grass

Temporary grass is measured for payment by the acre (hectare). Lime, when required, is measured by the ton (megagram). Mulch and fertilizer are measured separately for payment.

#### G. Mulch

Mulch (straw or hay, or erosion control compost) is measured for payment by the ton (megagram).

#### H. Miscellaneous Erosion Control Items Not Shown on the Plans

These items are not measured for payment. The cost for construction, materials, and removal is included in the price bid for other contract items.

#### I. Diversion Channels

Diversion channels are not measured for payment. The cost for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other contract items.

#### J. Check Dams

Stone, sand bags, baled wheat straw, and compost filter sock check dams are measured per each, which includes all work necessary to construct the check dam including woven plastic filter fabric placed beneath stone check dams. Fabric check dams are measured per linear foot.

#### K. Construction Exits

Construction exits are measured per each which will include all work necessary to construct the exit including the required geotextile fabric placed beneath the aggregate.

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## Section 163 – Miscellaneous Erosion Control Items

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Construction exit tire wash assemblies are measured per each when added to an existing construction exit. Measurement includes all work necessary to construct the construction exit tire wash assembly including an acceptable sediment trap, water source, and removal.

### **L. Retrofits**

Retrofit will be measured for payment per each. The construction of the detention pond and permanent outlet structure will be measured separately under the appropriate items.

### **M. Inlet Sediment Traps**

Inlet sediment traps, regardless of the material selected, are measured per each which includes all work necessary to construct the trap including any incidentals and providing the excavated area for sediment storage.

### **N. Rock Filter Dams**

Rock filter dams are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

### **O. Stone Filter Berms**

Stone filter berms are measured for payment per linear foot (meter) required. This includes the entire structure at each location and all the work necessary for construction.

### **P. Stone Filter Rings**

Stone filter rings are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

### **Q. Temporary Sediment Traps**

Temporary sediment traps are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

## **163.4.01 Limits**

General Provisions 101 through 150.

## **163.5 Payment**

### **A. Silt Control Gates**

The specified silt control gates are paid for at the Contract Unit Price per each. Payment is full compensation for:

- Furnishing the material and labor
- Constructing the concrete apron as shown on the Plans
- Excavating and backfilling to place the apron
- Removing the gate

### **B. Temporary Slope Drains**

Temporary slope drains are paid for by the linear foot (meter). Payment is full compensation for materials, construction, removal (if required), inlet spillways, velocity dissipaters, and outlet aprons.

When temporary drain inlets and pipe slope drains are removed, they remain the Contractor's property and may be reused or removed from the Project as the Contractor desires. Reused pipe or inlets are paid for the same as new pipe or inlets.

### **C. Temporary Sediment Basins**

Temporary sediment basins, measured according to Subsection 163.4,C "Measurement," are paid for by the unit, per each, for the type specified on the Plans. Price and payment are full compensation for work and supervision to construct, and remove the sediment basin, including final clean-up.

### **D. Sediment Barriers**

Sediment barriers are paid by the linear foot (meter). Price and payment are full compensation for work and supervision to construct, and remove the sediment barrier, including final clean-up.

## **Section 163 – Miscellaneous Erosion Control Items**

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### **E. Other Temporary Structures**

Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

### **F. Temporary Grass**

Temporary grass is paid for by the acre (hectare). Payment is full compensation for all equipment, labor, ground preparation, materials, wood fiber mulch, polyacrylamide, and other incidentals. Lime (when required) is paid for by the ton (megagram). Mulch and fertilizer are paid for separately.

### **G. Mulch**

Mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

The weight for payment of straw or hay mulch will be the product of the number of bales used and the average weight per bale as determined on certified scales provided by the Contractor or state certified scales. Provide written documentation to the Engineer stating the average weight of the bales.

The weight of erosion control compost mulch will be determined by weighing each loaded vehicle on the required motor truck scale as the material is hauled to the roadway, or by using recorded weights if a digital recording device is used. The Contractor may propose other methods of providing the weight of the mulch to Engineer for approval.

### **H. Miscellaneous Erosion Control Items Not Shown on the Plans**

These items are not paid for separately. They are included in the price bid for other contract items.

### **I. Diversion Channel**

Diversion channels are not paid for separately. They are included in the price bid for other contract items.

### **J. Check Dams**

Payment is full compensation for all materials, construction, and removal. Stone plain riprap, sand bag, baled wheat straw, or compost filter socks check dams are paid for per each. The required woven filter fabric required under each stone check dams is included in the bid price. Fabric check dams are paid for per linear foot.

### **K. Construction Exits**

Construction exits are paid for per each. Payment is full compensation for all materials including the required geotextile, construction, and removal.

Construction exit tire wash assemblies are paid for per each when added to an existing construction exit. Payment is full compensation for all labor, equipment, materials, construction, and removal. An acceptable sediment trap and water source is required and included in the price bid for each.

### **L. Retrofits**

This item is paid for at the Contract Unit Price per each. Payment is full compensation for all work, supervision, materials (including the stone filter), labor and equipment necessary to construct and remove the retrofit device from an existing or proposed detention pond outlet structure.

### **M. Inlet Sediment Traps**

Inlet sediment traps are paid for per each. Payment is full compensation for all materials, construction, and removal.

### **N. Rock Filter Dams**

Rock filter dams are paid for per each. Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under rock filter dams and is included in the price bid for each.

### **O. Stone Filter Berms**

Stone filter berms are paid for per linear foot (meter). Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under rock filter berms and is included in the price bid for linear foot (meter).

## Section 163 – Miscellaneous Erosion Control Items

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### P. Stone Filter Rings

Stone filter rings are paid for per each. Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under stone filter rings and is included in the price bid for each.

### Q. Temporary Sediment Traps

Temporary sediment traps are paid for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

The items in this section (except temporary grass and mulch) are made as partial payments as follows:

- When the item is installed and put into operation the Contractor will be paid 75 percent of the Contract price.
- When the Engineer instructs the Contractor that the item is no longer required and is to remain in place or is removed, whichever applies, the remaining 25 percent will be paid.

Temporary devices may be left in place at the Engineer's discretion at no change in cost. Payment for temporary grass will be made based on the number of acres (hectares) grassed. Mulch will be based on the number of tons (megagrams) used.

Payment is made under:

Item No. 163	Construct and remove silt control gates	Per each
Item No. 163	Construct and remove temporary pipe slope drains	Per linear foot (meter)
Item No. 163	Construct and remove temporary sediment barriers	Per linear foot (meter)
Item No. 163	Construct and remove sediment basins	Per each
Item No. 163	Construct and remove check dams except fabric dams	Per each
Item No. 163	Construct and remove fabric check dams	Per linear foot (meter)
Item No. 163	Construct and remove construction exits	Per each
Item No. 163	Construct and remove construction exit tire wash assembly	Per each
Item No. 163	Construct and remove retrofits	Per each
Item No. 163	Construct and remove rock filter dams	Per each
Item No. 163	Construct and remove stone filter berms	Per linear foot (meter)
Item No. 163	Construct and remove stone filter rings	Per each
Item No. 163	Construct and remove inlet sediment traps	Per each
Item No. 163	Construct and remove temporary sediment traps	Per each
Item No. 163	Temporary grass	Per acre (hectare)
Item No. 163	Mulch	Per ton (megagram)

### 163.5.01 Adjustments

General Provisions 101 through 150.



## DEPARTMENT OF TRANSPORTATION

### STATE OF GEORGIA

#### SPECIAL PROVISION

### Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices

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*Delete Section 165 and substitute the following:*

#### **165.1 General Description**

This work consists of providing maintenance on temporary erosion and sediment control devices, including but not limited to the following:

- Silt control gates
- Temporary erosion control slope drains shown on the Plans or as directed
- Temporary sediment basins
- Silt control gates
- Check dams
- Sediment barriers
- Rock filter dams
- Stone filter berms
- Stone filter rings
- Temporary sediment traps

It also consists of removing sediment that has accumulated at the temporary erosion and sedimentation control devices.

##### **165.1.01 Definitions**

General Provisions 101 through 150.

##### **165.1.02 Related References**

###### **A. Standard Specifications**

General Provisions 101 through 150.

###### **B. Referenced Documents**

General Provisions 101 through 150.

##### **165.1.03 Submittals**

General Provisions 101 through 150

#### **165.2 Materials**

General Provisions 101 through 150.

## **Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices**

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### **165.2.01 Delivery, Storage, and Handling**

General Provisions 101 through 150.

### **165.3 Construction Requirements**

#### **165.3.01 Personnel**

General Provisions 101 through 150.

#### **165.3.02 Equipment**

General Provisions 101 through 150.

#### **165.3.03 Preparation**

General Provisions 101 through 150.

#### **165.3.04 Fabrication**

General Provisions 101 through 150.

#### **165.3.05 Construction**

As a minimum, clean sediment from all temporary erosion control devices (except temporary sediment basins) installed on the project when one-half the capacity by volume, as measured by depth, has been reached. Clean sediment from all temporary sediment basins installed on a project when one-third the capacity of the storage volume has been filled.

Handle excavated sediment from any erosion or sediment control device in one of the following ways:

- Remove sediment from the immediate area and immediately stabilize it to prevent the material from refilling any erosion or sediment control device.
- Place and mix it in the roadway embankment or waste it in an area approved by the Engineer.

Repair or replace at no cost to the Department any erosion or sediment control device that is not functioning properly or is damaged due to negligence or abuse.

#### **A. Temporary Silt Fence**

Maintenance of temporary silt fence consists of furnishing all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0 % filled). Also included is the removal of sediment accumulations ("filtercake") on the fabric by tapping the fabric on the downstream side. Maintenance of silt fence also includes the removal and replacement of any deteriorated filter fabric reducing the effectiveness of the silt fence on any properly installed silt fence.

#### **B. Silt Control Gates**

Maintenance of temporary silt control gates consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). When applicable, this item will include the removal of sediment accumulations on the fabric by tapping the fabric on the downstream side.

#### **C. Check Dams (all types)**

Maintenance of temporary erosion control check dams shall consist of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes. When applicable, this item will include the removal of sediment accumulations on the fabric by tapping the fabric on the downstream side, or from the baled straw by similar means.

## **Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices**

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### **D. Silt Retention Barriers**

Maintenance of temporary silt retention barriers consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled).

### **E. Temporary Sediment Basins**

Maintenance of temporary sediment basins consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original bottom of the basin. This also includes removing accumulated sediment from the rock filter and restoring the rock filter to its original specified condition and any work necessary to restore all other components to the pre-maintenance conditions.

### **F. Sediment Barriers**

Maintenance of sediment barriers consists of furnishing all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0 % filled). Also included is the removal of sediment accumulations on the barriers by tapping.

### **G. Triangular Silt Barriers**

Maintenance of triangular silt barriers consists of all labor, tools, materials, equipment and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled).

### **H. Retrofits**

Maintenance of the retrofits device consists of all labor, tools, materials, equipment and necessary incidentals to remove and properly dispose of accumulated sediment in the permanent detention pond being utilized as a temporary sediment basin. This item also includes any maintenance that is required to ensure the retrofit device is maintained per Plan details and any maintenance of the stone filter to maintain its filtering ability, including cleaning and replacement.

### **I. Construction Exits**

Maintenance of the construction exits consists of all labor, tools, materials, equipment and incidentals, including additional stone and geotextile fabric as required to prevent the tracking or flow of soil onto public roadways. This includes scarifying existing stone, cleaning existing stone, or placement of additional stone.

Maintenance of the construction exit tire wash assembly consists of all labor, tools, materials, and equipment and incidentals, including stone and geotextile fabric as required to prevent the tracking or flow of soil onto public roadways. This includes scarifying existing stone, cleaning existing stone, cleaning tire wash assembly area, or placement of additional stone. It also includes the removal and dispose of accumulated sediment in the required approved sediment storage device down to the original ground line (0% filled).

Cleaning of the construction exit by scraping and/or brooming only will not be measured for payment.

### **J. Inlet Sediment Traps**

Maintenance of inlet sediment traps consists of all labor, tools, materials, equipment, and necessary incidentals to remove and properly dispose of accumulated sediment in the trap and/or the excavated area adjacent to the trap. It also includes any maintenance that is required to remove sediment accumulations (“filtercake”) from the material selected to construct the inlet sediment trap.

### **K. Rock Filter Dams**

Maintenance of rock filter dams consists of all labor, tools, materials, equipment, and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes.

## **Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices**

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### **L. Stone Filter Berms**

Maintenance of stone filter berms consists of all labor, tools, materials, equipment, and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes.

### **M. Stone Filter Rings**

Maintenance of stone filter rings consists of all labor, tools, materials, equipment, and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes.

### **N. Temporary Sediment Traps**

Maintenance of temporary sediment traps consists of all labor, tools, materials, equipment, and necessary incidentals to remove and dispose of accumulated sediment down to the original ground line (0% filled). This item also includes the removal of any material deposited in sump holes.

## **165.3.06 Quality Acceptance**

General Provisions 101 through 150.

## **165.3.07 Contractor Warranty and Maintenance**

General Provisions 101 through 150.

## **165.4 Measurement**

### **A. Temporary Silt Fence**

Maintenance of temporary silt fence, Type A or C, is the actual linear feet (meter) of silt fence measured in place where sediment is removed or where the silt fence has become undermined due to no fault or negligence of the Contractor. Any deteriorated filter fabric reducing the effectiveness of the silt fence that needs to be removed and replaced will be measured as maintenance of temporary silt fence.

### **B. Silt Control Gates**

Maintenance of temporary silt control gates, Type 1, 2, or 3, as specified on the Plans is measured as a single unit.

### **C. Check Dams (All Types)**

Maintenance of temporary erosion control check dams as specified on the Plans is the actual linear feet (meter) of baled straw, or rip rap, measured in place, where sediment is removed.

### **D. Silt Retention Barriers**

Maintenance of temporary silt retention barrier as specified on the Plans is measured by the linear foot (meter) where sediment is removed.

### **E. Temporary Sediment Basins**

Maintenance of temporary sediment basins as specified on the Plans is measured as a single unit.

### **F. Sediment Barriers**

Maintenance of sediment barriers is the actual linear feet (meter) measured in place where sediment is removed.

### **G. Triangular Silt Barriers**

Maintenance of triangular silt barrier as specified on the plans is measured by the linear foot (meter) where sediment is removed.

## **Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices**

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### **H. Retrofits**

Maintenance of retrofit devices at the location specified on the Plans is measured per each.

### **I. Construction Exits**

Maintenance of construction exits at the location specified on the Plans, or as directed by the Engineer is measured per each.

Maintenance of construction exit tire wash assemblies, including the required approved sediment storage device, at the location specified on the Plans, or as directed by the Engineer are measured per each when added to an existing construction exit.

Each location will be measured as either maintenance of construction exit or maintenance of construction exit tire wash assembly, but not measured simultaneously for payment.

### **J. Inlet Sediment Traps**

Maintenance of inlet sediment traps at the location specified on the Plans, or as added by the Engineer is measured per each.

### **K. Rock Filter Dams**

Maintenance of rock filter dams as specified on the plans is measured as a single unit.

### **L. Stone Filter Berms**

Maintenance of stone filter berms as specified on the plans is measured per linear foot (meter).

### **M. Stone Filter Rings**

Maintenance of stone filter rings as specified on the plans is measured as a single unit.

### **N. Temporary Sediment Traps**

Maintenance of temporary sediment traps as specified on the plans is measured as a single unit.

## **165.4.01 Limits**

General Provisions 101 through 150.

## **165.5 Payment**

### **A. Temporary Silt Fence**

Maintenance of temporary silt fence, Type A or C, is paid for at the contract unit price bid per linear foot (meter).

### **B. Silt Control Gates**

Maintenance of temporary silt control gates, Type 1, 2, or 3, as specified on the Plans is paid for at the contract unit price bid per each.

### **C. Check Dams**

Maintenance of check dams as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

### **D. Silt Retention Barriers**

Maintenance of temporary silt retention barriers as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

### **E. Temporary Sediment Basins**

Maintenance of temporary sediment basins as specified on the Plans is paid for at the contract unit price bid per each.

## Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices

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### F. Sediment Barriers

Maintenance of sediment barriers as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

### G. Triangular Silt Barriers

Maintenance of triangular silt barriers as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

### H. Retrofits

Maintenance of the retrofit devices at the location specified on the Plans is paid for at the contract unit price bid per each.

### I. Construction Exits

Maintenance of the construction exits at the location specified on the Plans or as added by the Engineer is paid for at the contract unit price per each.

Maintenance of construction exit tire wash assembly at the location specified on the Plans or as added by the Engineer is paid for at the contract unit price per each when added to an existing construction exit.

### J. Inlet Sediment Traps

Maintenance of the inlet sediment traps at the location specified on the Plans or at the location specified by the Engineer is paid for at the contract unit price per each.

### K. Rock Filter Dams

Maintenance of rock filter dams as specified on the Plans is paid for at the contract unit price bid per each.

### L. Stone Filter Berms

Maintenance of stone filter berms as specified on the Plans is paid for at the contract unit price bid per linear foot (meter).

### M. Stone Filter Rings

Maintenance of stone filter rings as specified on the Plans is paid for at the contract unit price bid per each.

### N. Temporary Sediment Traps

Maintenance of temporary sediment traps as specified on the Plans is paid for at the contract unit price bid per each.

Payment will be made under:

Item No. 165	Maintenance of temporary silt fence	per linear foot (meter)
Item No. 165	Maintenance of silt control gates	per each
Item No. 165	Maintenance of check dams	per linear foot (meter)
Item No. 165	Maintenance of silt retention barriers	per foot (meter)
Item No. 165	Maintenance of temporary sediment basins	per each
Item No. 165	Maintenance of sediment barriers	per linear foot (meter)
Item No. 165	Maintenance of triangular silt barriers	per linear foot (meter)
Item No. 165	Maintenance of retrofits	per each
Item No. 165	Maintenance of construction exits	per each

## Section 165—Maintenance of Temporary Erosion and Sedimentation Control Devices

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Item No. 165	Maintenance of construction exit tire wash assembly	per each
Item No. 165	Maintenance of inlet sediment traps	per each
Item No. 165	Maintenance of rock filter dams	per each
Item No. 165	Maintenance of stone filter berms	per linear foot (meter)
Item No. 165	Maintenance of rock filter dams	per each
Item No. 165	Maintenance of temporary sediment traps	per each

### 165.5.01 Adjustments

General Provisions 101 through 150.





**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA  
SUPPLEMENTAL SPECIFICATION**

**Section 167—Water Quality Monitoring**

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*Delete 167 and substitute the following:*

**167.1 General Description**

This Specification establishes the Contractor's responsibility to meet the requirements of Part IV of the National Pollutant Discharge Elimination System (NPDES) Infrastructure Permit No. GAR100002. In the case of differing requirements between this specification and the Permit, whichever is the more stringent requirement shall be adhered to.

**167.1.01 Definitions**

Certified Personnel are defined as persons who have successfully completed the appropriate certification course approved by the Georgia Soil and Water Conservation Commission. For Department projects the certified person must also have successfully completed the Department's WECS certification course.

Water Quality Monitoring as used within this specification, the term "monitoring" shall be inclusive of the acts of detecting, noting, discerning, observing, etc. for the purpose of gauging compliance with the GAR100002.

Qualifying Rainfall Sampling Event means that which is defined in the current GAR1000002, Part IV.D.6.d(3).

**167.1.02 Related References**

**A. Standard Specifications**

Section 161—Control of Soil Erosion and Sedimentation

**B. Referenced Documents**

NPDES Infrastructure Permit No. GAR100002

GDOT WECS Seminar

EPD Rule Chapter 391-3-7

GSWCC Certification Level IA Course

OCGA 12-7-1

**167.1.03 Submittals**

General Provisions 101 through 150

**167.2 Materials**

General Provisions 101 through 150.

**167.2.01 Delivery, Storage, and  
Handling**

General Provisions 101 through 150.

## **167.3 Construction Requirements**

### **167.3.01 Personnel**

Use GSWCC level IA certified and WECS certified personnel to perform all sampling, inspections, and rainfall data collection. Use the Contractor-designated WECS or select a prequalified consultant from the Qualified Consultant List (QCL) to perform water quality sampling, inspections, and rainfall data collection.

The Contractor is responsible for having a copy of the GAR100002 Permit onsite at all times.

### **167.3.02 Equipment**

Provide equipment necessary to complete the Work or as directed by the Engineer.

### **167.3.03 Preparation**

General Provisions 101 through 150.

### **167.3.04 Fabrication**

General Provisions 101 through 150.

### **167.3.05 Construction**

#### **A. General**

Perform inspections, rainfall data collection, testing of samples, and reporting the test results on the project according to the requirements in Part IV of the GAR100002 and this Specification.

Take samples manually or use automatic samplers, according to the GAR100002. Note that GAR100002 requires the use of manual sampling or rising stage sampling for qualifying events that occur after the first instance of the automatic sampler not being activated during a qualifying event. Analyze all samples according to the Permit, regardless of the method used to collect the samples.

If samples are analyzed in the field using portable turbidimeters, the sampling results shall state they are being used and a digital readout of NTUs is what is provided.

Submit bench sheets, work sheets, etc., when using portable turbidimeters. There are no exceptions to this requirement.

Perform required inspections and submit all reports required by this Specification within the time frames specified. Failure to perform the inspections within the time specified will result in the cessation of all construction activities with the exception of traffic control and erosion control. Failure to submit the required reports within the times specified will result in non-refundable deductions as specified in Subsection 161.5.01.B.

#### **B. Water Quality Inspections**

The Department will provide one copy of the required inspection forms for use and duplication. Inspection forms may change during the contract to reflect regulatory agency needs or the need of the Department. Any costs associated with the change of inspection forms shall be considered incidental and shall be borne by the Contractor. Alternate formats of the provided forms may be created, used and submitted by the Contractor

provided the required content and/or data fields and verbatim certification statements from the Department's current forms are included.

The Engineer shall inspect the installation and condition of each erosion control device required by the erosion control plan within seven days after initial installation. This inspection is performed for each stage of construction when new devices are installed. The WECS shall ensure all installation deficiencies reported by the Engineer are corrected within two business days.

Ensure the inspections of the areas listed below are conducted by certified personnel and at the frequencies listed. Document all inspections on the appropriate form provided by the Department.

1. Daily (when any work is occurring):

Conduct inspections on the following areas:

- a. Petroleum product storage, usage, and handling areas for spills or leaks from vehicles or equipment
- b. All locations where vehicles enter/exit the site for evidence of off-site sediment tracking

Continue these inspections until a Notice of Termination (NOT) is submitted, and use the daily inspection forms.

2. Weekly and after Rainfall Events:

Conduct inspections on these areas every seven calendar days and within twenty-four hours after the end of a rainfall event that is 0.5 in (13 mm) or greater (unless such storm ends after 5:00 PM on any Friday or any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first):

- a. Disturbed areas not permanently stabilized
- b. Material storage areas that are exposed to precipitation
- c. Structural control measures, Best Management Practices (BMPs) to ensure they are operating correctly
- d. Water quality sampling locations and equipment
- e. Discharge locations or points, e.g., outfalls and drainage structures that are accessible to determine if erosion control measures are effective in preventing significant impacts to receiving waters

Continue these inspections until all temporary BMPs are removed and a NOT is submitted. Use the EC-1 Form.

3. Monthly:

Once per month, inspect all areas of the site that have undergone final stabilization or have established a crop of annual vegetation and a seeding of target perennials appropriate for the region. Look for evidence of sediments or pollutants entering the drainage system and or receiving waters. Inspect all permanent erosion control devices remaining in place to verify the maintenance status and that the devices are functioning properly. Inspect discharge locations or points, e.g. outfalls, drainage structures, that are accessible to determine if erosion control measures are effective in preventing significant impacts to receiving waters.

Continue these inspections until the Notice of Termination is submitted and use the monthly inspection form.

### **C. Water Quality Sampling**

When the sampling location is a receiving water, the upstream and downstream samples are taken for comparison of NTU values. When the sampling location is an outfall, a single sample is taken to be analyzed for its absolute NTU value.

#### **D. Reports**

##### **1. Inspection Reports:**

Summarize the results of inspections noted above in writing on the appropriate Daily, Weekly, Monthly, or EC-1 form provided by the Department and includes the following information:

- Date(s) of inspection
- Name of certified personnel performing inspection
- Construction phase
- Status of devices
- Observations
- Action taken in accordance with Part IV.D.4.a.(5) of the GAR100002 Permit
- Signature of personnel performing the inspection
- Any instance of non-compliance

When the report does not identify any non-compliance instances, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation, and Pollution Control Plan. (See the EC-1 form.)

The reports shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination is submitted to the Georgia Department of Natural Resources Environmental Protection Division (GAEPD). Such reports shall be readily available by the end of the second business day and/or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. The inspection form certification sheet shall be signed by the project WECS and the inspector performing inspections on behalf of the WECS (if not the same person). Submit all inspection reports to the Engineer within twenty-four hours of the inspection. The Engineer will review the submitted reports to determine their accuracy. The Engineer will notify the certified personnel of any additional items that should be added to the inspection report.

Correct any items listed in the inspection report requiring routine maintenance within seventy-two (72) hours of notification or immediately during perimeter BMP failure emergencies. Deficiencies that interfere with traffic flow, safety, or downstream turbidity are to be corrected as soon as practical but in no case later than seven (7) calendar days following the inspection.

Assume responsibility for all costs associated with additional sampling as specified in Part IV.D.6.d.3.(c) of the GAR100002 if either of these conditions arises:

- BMPs shown in the Plans are not properly installed and maintained, or
- BMPs designed by the Contractor are not properly designed, installed and maintained.

##### **2. Sampling Reports**

- a. All sampling shall be performed in accordance with the requirements of the GAR100002 Permit for the locations identified in the ESPCP approved by the Department.
- b. Report Requirements  
Include in all reports, the following certification statement, signed by the WECS or consultant providing sampling on the project:

“I certify under penalty of law that this report and all attachments were prepared under my direct supervision in accordance with a system designed to assure that certified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

When a rainfall event requires a sample to be taken, submit a report of the sampling results to the Engineer within seven working days of the date the sample was obtained. Include the following information in each report:

- 1) Date and time of sampling
- 2) Name of certified person(s) who performed the sampling and analyses.
- 3) Date the analyses were performed
- 4) Time the analyses were initiated
- 5) Rainfall amount on the sampling date (sampling date only)
- 6) NTU of each sample & analytical method
- 7) Location where each sample was taken (station number and left or right offset)
- 8) Identification of whether a sample is a receiving-water sample or an outfall sample
- 9) Project number and county
- 10) References and written procedures, whenever available, for the analytical techniques or methods used: whether the samples were taken by automatic sampler, rising-stage sampler, or manually (grab sample)
- 11) The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results
- 12) A clear note if a sample exceeds 1000 NTUs by writing “exceeds 1000 NTUs” prominently upon the report.

c. Report Requirements with No Qualifying Rainfall Events

In the event a qualifying rainfall event does not produce a discharge to sample, or sampling is “impossible”, as defined in the GAR1000002 Permit, a written justification must be included in the report as required at Part IV.D.4.a.(6) of the GAR100002 Permit.

d. Sampling Results

Provide sampling results to the Project Engineer within 48 hours of the samples being analyzed. This notification may be verbal or written. This notification does not replace the requirement to submit the formal summary to the Engineer within 7 working days of the samples being collected. The Engineer will ensure submission of the sampling report to GAEPD by the 15<sup>th</sup> of the month following the sampling results as per the GAR100002 Permit. The WECS will be held accountable for delayed delivery to the Department which results in late submissions to EPD resulting in enforcement actions.

3. Rainfall Data Reports:

Record the measurement of rainfall once each twenty-four hour period, except for non-working Saturdays, non-working Sundays and non-working Federal Holidays until a Notice of Termination is submitted. Project rain gauges and those used to trigger the automatic samplers are to be emptied after every rainfall event. This will prevent a cumulative effect and prevent automatic samplers from taking samples even though the rainfall event is not a qualifying event. The daily rainfall data supplied by the WECS to the Engineer will be the official rainfall data for the project.

### **167.3.06 Quality Acceptance**

General Provisions 101 through 150.

### **167.3.07 Contractor Warranty and Maintenance**

General Provisions 101 through 150.

## **167.4 Measurement**

Water Quality Inspections in accordance with the inspection and reports sub-sections will be measured for payment by the month up to the time the Contract Time expires. Required inspections and reports after Contract Time has expired will not be measured for payment unless a time extension is granted by the Department.

Water Quality Sampling is measured per each. "Each" means each qualifying rainfall sampling event, not each sampled site.

When the sampling location is a receiving water, the upstream and downstream samples constitute one sample for comparison. When the sampling location is an outfall, a single outfall sample constitutes the entire sample.

### **167.4.01 Limits**

General Provisions 101 through 150. Submit the monitoring summary report to the Engineer within 7 working days

## **167.5 Payment**

Payment for Water Quality Inspections and Water Quality Sampling will be made as follows:

Water Quality Inspections will be paid at the Contract Price per month. This is full compensation for performing the requirements of the inspection section of the GAR100002 and this Specification, any and all necessary incidentals, and providing results of inspections to the Engineer, within the time frame required by the GAR100002 and this Specification.

Water Quality Sampling per each qualifying rainfall sampling event is full compensation for meeting the requirements of the sampling sections of the GAR100002 and this Specification, obtaining samples, analyzing samples, any and all necessary incidentals, and providing results of turbidity tests to the Engineer, within the time frame required by the GAR100002 and this Specification. This item is based on the rainfall events requiring sampling as described in Part IV.D. 6 of the GAR100002. The Department will not pay for samples taken and analyzed for rainfall events that are not qualifying events as compared to the daily rainfall data supplied by the WECS.

Payment will be made under:

Item No. 167	Water quality inspections	Per month
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Water Quality Sampling will be paid per each qualifying rainfall sampling event.

Payment will be made under:

Item No. 167	Water quality sampling	Per each
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### **167.5.01 Adjustments**

General Provisions 101 through 150.

Office of Design Policy and Support

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**SPECIAL PROVISION**

**Section 171—Silt Fence**

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*Delete Section 171 and substitute the following:*

**171.1 General Description**

This work includes furnishing, installing, and removing a water permeable filter fabric fence to remove suspended particles from drainage water.

**171.1.01 Definitions**

General Provisions 101 through 150.

**171.1.02 Related References**

**A. Standard Specifications**

[Section 163—Miscellaneous Erosion Control Items](#)

[Section 700—Grassing](#)

[Section 862—Wood Posts and Bracing](#)

[Section 881—Fabrics](#)

[Section 894—Fencing](#)

**B. Referenced Documents**

ASTM D 3786

ASTM D 4355

ASTM D 4632

ASTM D 4751

[GDT 87](#)

[QPL 36](#)

**171.1.03 Submittals**

General Provisions 101 through 150.

**171.2 Materials**

Materials shall meet the requirements of the following Specifications:

<b>Material</b>	<b>Section</b>
Filter Fabrics	<a href="#"><u>881</u></a>
Fencing	<a href="#"><u>894</u></a>
Wood Posts and Bracing	<a href="#"><u>862</u></a>

Conditions during Project construction will affect the quantity of the silt fence to be installed.

The Engineer may increase, decrease, or eliminate the quantity at his or her direction. Variations in quantity are not changes in details of construction or in the character of the work.

For Type A, B, and C fences, use fabric as specified in [Subsection 881.2.07, "Silt Fence Filter Fabric."](#)

#### **171.2.01 Delivery, Storage, and Handling**

During shipment and storage, wrap the fabric in a heavy-duty covering protecting the cloth from sunlight, mud, dust, dirt, and debris. Do not expose the fabric to temperatures greater than 140 °F (60 °C).

When installed, the Engineer will reject the fabric if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

### **171.3 Construction Requirements**

#### **171.3.01 Personnel**

General Provisions 101 through 150.

#### **171.3.02 Equipment**

General Provisions 101 through 150.

#### **171.3.03 Preparation**

General Provisions 101 through 150.

#### **171.3.04 Fabrication**

General Provisions 101 through 150.

#### **171.3.05 Construction**

Install the silt fence according to this Specification, as shown on the Plans, or as directed by the Engineer

##### **A. Install Silt Fence**

1. Install silt fence by either of the following methods:
  - a. Excavated Trench Method  
Excavate a trench 4 to 6 in (100 to 150 mm) deep using equipment such as a trenching machine or motor grader. If equipment cannot be operated on the site, excavate the trench by hand.
  - b. Soil Slicing Method  
Create a mechanical slice in the soil 8 to 12 in (200 to 300 mm) deep to receive the silt fence. Ensure the width of the slice is not more than 3 in (75 mm). Mechanically insert the silt fence fabric into the slice in a simultaneous operation with the slicing ensuring consistent depth and placement.
2. Install the first post at the center of the low point (if applicable). Space the remaining posts a maximum of 6 ft (1.8 m) apart for Types A and B fence and 4 ft (1.2 m) apart for Type C fence.
3. Bury the posts at least 18 in (450 mm) into the ground. If this depth cannot be attained, secure the posts enough to prevent the fence from overturning from sediment loading.
4. Attach the filter fabric to the post using wire, cord, staples, nails, pockets, or other acceptable means.
  - a. Staples and Nails (Wood Posts): Evenly space staples or nails with at least five per post for Type A fence and four per post for Type B fence.
  - b. Pockets: If using pockets and they are not closed at the top, attach the fabric to a wood post using at least one additional staple or nail, or to a steel post using wire. Ensure the additional attachment is within the top 6 in (150 mm) of the fabric.
  - c. Install the filter fabric so 6 to 8 in (150 to 200 mm) of fabric is left at the bottom to be buried. Provide a minimum overlap of 18 in (450 mm) at all splice joints.
  - d. For Type C fence:
    - 1) Woven Wire Supported
      - Steel Post: Use wire to attach the fabric to the top of the woven wire support fence at the midpoint between posts. Also, use wire to attach the fabric to the post.
    - 2) Polypropylene Mesh Supported
      - Wood Post: Use at least six staples per post. Use two staples in a crisscross or parallel pattern to secure the top portion of the fence. Evenly space the remaining staples down the post.
      - Steel Post: Use wire to attach the fabric and polypropylene mesh to the post.



5. Install the fabric in the trench so 4 to 6 in (100 to 150 mm) of fabric is against the side of the trench with 2 to 4 in (50 to 100 mm) of fabric across the bottom in the upstream direction.
6. Backfill and compact the trench to ensure flow cannot pass under the barrier. When the slice method is used, compact the soil disturbed by the slice on the upstream side of the silt fence first, and then compact the downstream side.
7. When installing a silt fence across a waterway producing significant runoff, place a settling basin in front of the fence to handle the sediment load, if required. Construct a suitable sump hole or storage area according to [Section 163](#).

#### **B. Remove the Silt Fence**

1. Keep all silt fence in place unless or until the Engineer directs it to be removed. A removed silt fence may be used at other locations if the Engineer approves of its condition.
2. After removing the silt fence, dress the area to natural ground, grass and mulch the area according to [Section 700](#).
3. The silt fence shall remain until the Project is accepted or until the fence is removed. Also, remove and dispose of the silt accumulations at the silt fence.
4. Remove and replace any deteriorated filter fabric reducing the effectiveness of the silt fence.
5. Repair or replace any undermined silt fence at no additional cost to the Department.

#### **171.3.06 Quality Acceptance**

Approved silt fence is listed in [QPL 36](#). Approved fabrics must consistently exceed the minimum requirements of this Specification as verified by the Office of Materials and Research. The Office of Materials and Research will remove fabric failing to meet the minimum requirements of this specification from the QPL until the products' acceptability has been reestablished to the Department's satisfaction.

At the time of installation, the Engineer will reject the fabric if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

#### **171.3.07 Contractor Warranty**

The silt fence shall remain until the Project is accepted or until the fence is removed. Also, remove and dispose of the silt accumulations at the silt fence.

Remove and replace any deteriorated filter fabric that reduces the effectiveness of the silt fence.

Repair or replace any undermined silt fence at no additional cost to the Department.

#### **171.4 Measurement**

The quantity of silt fence to be paid for is the actual number of linear feet (meters) of silt fence, measured in place from end post to end post of each separate installation. The silt fence must be complete and accepted.

##### **171.4.01 Limits**

General Provisions 101 through 150.

#### **171.5 Payment**

Silt fence Type A, B, or C measured as defined in [Subsection 171.4, "Measurement,"](#) is paid for at the Contract Unit Price bid per linear foot (meter).

Payment is full compensation for the following:

- Furnishing materials
- Erecting the fence
- Dressing and grassing, when required
- Removing the fence, when required

Payment for this Item is made as follows:

- Seventy-five percent of the Contract Price bid per linear foot (meter) is paid when each fence is complete in place.
- Twenty-five percent is paid at removal or acceptance.

If the silt fence must be repaired or removed, as the result of neglect or damage, perform the work at no additional cost to the Department.

Payment will be made under:

Item No. 171	Silt fence, type__	Per linear foot (meter)
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**171.5.01 Adjustments**

General Provisions 101 through 150.

Office of Design Policy and Support

## **DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA**

### **SUPPLEMENTAL SPECIFICATION**

#### **Section 201 – Clearing and Grubbing Right of Way**

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*Delete Subsection 201.3.05.E.3 and substitute the following:*

##### **3. Solid Waste Material**

###### **a. Nonregulated Material**

- 1) Common fill is defined as soil, rock, brick, concrete without reinforcement, concrete with reinforcement where the reinforcement has been removed flush with the surface of the concrete and cured asphalt, provided that such material does not contain hazardous waste constituents above background levels and the material results from Department funded construction contracts. Such fill is not subject to the Georgia Comprehensive Solid Waste Management Act of 1990 and the Solid Waste Management Rules when used as fill material on Department funded construction contracts or Department property or when used as fill material on property not owned by the Department when all requirements of this specification are fully met. Common fill meeting this definition may be placed as follows:

- a. At a permitted municipal, construction and demolition materials or inert landfill fully meeting all requirements of the Solid Waste Rules and Act and any other applicable laws or ordinances.

- b. At an off-site engineered fill location in accordance with the following requirements;

- Place the material in uniform layers 3 ft thick or less and distributed to avoid the formation of large voids or pockets.
- Fill voids with finer material.
- Cover the last layer of fill with at least 2 ft of soil.
- Construct the fill according to Section 208, except compact it to at least 90 percent of the maximum laboratory dry density.
- A Georgia registered professional engineer shall document, certify and submit the following information on behalf of the Contractor to the Department; compaction rates, waste description including average particle size, and the depth of clean earthen fill lying above the engineered fill.

c. On site as compacted fill if prior written approval has been granted by the Engineer and in accordance with the following requirements:

- As compacted fill incorporated into embankment only. No area shall be excavated for the sole purpose of disposing of common fill.
- Place the material in uniform layers 3 ft thick or less and distributed to avoid the formation of large voids or pockets.
- Fill voids with finer material.
- Cover the last layer of fill with at least 2 ft of soil.
- Construct the fill according to Section 208, except compact it to at least 90 percent of the maximum laboratory dry density.
- Records of the exact location by station and offsets, amount disposed per location in cubic yards, waste description including average particle size, compaction rates and depth of clean earthen fill lying above the composite materials shall be kept by the Engineer.

d. Materials that may be recycled or reused such as asphaltic concrete, Portland cement concrete, plastic, metal and materials that qualify under EPD regulations for sale or use may be reclaimed by the Contractor.

b. Regulated Material

- 1) Inert waste is defined as organic debris such as stumps, limbs and leaves, cured asphalt and any of the aforementioned common fill items that do not meet the compaction requirements when placed in an excess materials pit. An inert waste landfill permit shall be obtained in accordance with GDNR/EPD Rules to properly record the disposal of inert waste when compaction requirements are not met at an excess materials pit. If disposed of at a landfill, inert waste may only be disposed at a permitted municipal, construction and demolition materials or inert landfill fully meeting all requirements of the Solid Waste Rules and Act and any other applicable laws or ordinances.
- 2) Construction and demolition waste is defined as construction forms, barrels, scrap metal, and other such by-products of construction not specifically listed above as either common fill or inert waste. Construction and or demolition waste must be disposed of at a permitted municipal, construction and demolition materials, or inert landfill fully meeting all requirements of the Solid Waste Rules and Act and any other applicable laws or ordinances.
- 3) Dispose of oils, solvents, fuels, untreated lead paint residue, and other solid hazardous waste through a properly licensed hazardous waste disposal facility.

- 4) Remove municipal solid waste discovered during construction or shown on the Plans according to Section 215.

c. Solid Waste Handling and Disposal Documentation Requirements:

- 1) Waste disposed at a permitted municipal or construction and demolition landfill – all tipping receipts generated by the receiving landfill shall be provided to the Engineer.
- 2) Waste disposed at inert landfill – a copy of the landfill's Permit By Rule notification, and for landfills exceeding one acre, a copy of the landfill's NPDES General Storm water Permit Notice of Intent (NOI) and any local jurisdiction Land Disturbing Activity Permit, if applicable, shall be provided to the Engineer.
- 3) Any necessary documentation regarding a disposal site's permit status must be obtained by the Contractor and verified by the Department before any common fill, inert waste, or other solid waste is allowed to leave the site.
- 4) The documentation listed herein shall be maintained on-site in the project files and at any other location the Department deems necessary until a valid NPDES Notice of Termination is filed.

Recyclable materials must be separated from all waste materials and shall be properly stored in containers when practicable.

Excluding the above allowances, all types of waste shall be handled in full compliance with the following:

- The Georgia Solid Waste Management Rules, as amended (391-3-4)
- Georgia Comprehensive Solid Waste Management Act of 1990, as amended (O.C.G.A. 12-8-20)
- The Georgia Erosion & Sedimentation Act as amended (O.C.G.A. 12-7-1) and any applicable Local and State requirements as well as the General Permits of the Georgia Water Quality Control Act
- Any other applicable Federal, State, or Local rules or laws



**DEPARTMENT OF TRANSPORTATION  
COBB COUNTY GEORGIA**

**SPECIAL PROVISION**

**OLD 41 HIGHWAY OVER CSX RAILROAD BRIDGE  
REPLACEMENT / PROJECT NO. X2116**

**SECTION 232 – Railroad Construction**

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**ADD the following:**

1. This work is subject to the Terms and Conditions of the attached Construction Agreement with CSX Transportation. The Contractor is required to adhere to all stipulations within the document.





**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**CONSTRUCTION AGREEMENT**

This Construction Agreement (“**Agreement**”) is made as of \_\_\_\_\_, 201\_\_, by and between CSX TRANSPORTATION, INC., a Virginia corporation with its principal place of business in Jacksonville, Florida (“**CSXT**”), and **Cobb County DOT**, a body corporate and political subdivision of the State of **Georgia** (“**Agency**”).

**EXPLANATORY STATEMENT**

1. Agency has proposed to construct, or to cause to be constructed, **Old US-41 Overhead Bridge Replacement over CSXT and the installation of a new #2 signal approx. 120’ North of the existing signal and two new insulated joints and meter service at RR Milepost 0WA-22.48, DOT 340397A, Atlanta Zone, W&A Subdivision, in Marietta, Cobb Co., GA.** (the “**Project**”).
2. Agency has obtained, or will obtain, all authorizations, permits and approvals from all local, state and federal agencies (including Agency), and their respective governing bodies and regulatory agencies, necessary to proceed with the Project and to appropriate all funds necessary to construct the Project.
3. Agency acknowledges that: (i) by entering into this Agreement, CSXT will provide services and accommodations to promote public interest in this Project, without profit or other economic inducement typical of other Agency contractors; (ii) neither CSXT nor its affiliates (including their respective directors, officers, employees or agents) will incur any costs, expenses, losses or liabilities in excess of payments made to CSXT, by or on behalf of Agency or its contractors, pursuant to this Agreement; and (iii) CSXT retains the paramount right to regulate all activities affecting its property and operations.
4. It is the purpose of this Agreement to provide for the terms and conditions upon which the Project may proceed.

NOW, THEREFORE, in consideration of the foregoing Explanatory Statement and other good and valuable consideration, the receipt and sufficiency of which are acknowledged by the parties, the parties agree as follows:

1. **Project Plans and Specifications**

- 1.1 **Preparation and Approval.** Pursuant to **Exhibit A** of this Agreement, all plans, specifications, drawings and other documents necessary or appropriate to the design and construction of the Project shall be prepared, at Agency’s sole cost and expense, by Agency or CSXT or their respective contractors. Project plans, specifications and drawings prepared by or on behalf of Agency shall be subject, at CSXT’s election, to the review and approval of CSXT. Such plans, specifications and drawings, as prepared or approved by CSXT, are referred to as the “**Plans**”, and shall be incorporated and deemed a part of this Agreement. Plans prepared or submitted to and approved by CSXT as of the date of this Agreement are set forth in **Exhibit B** to this Agreement.
- 1.2 **Effect of CSXT Approval or Preparation of Plans.** By its review, approval or preparation of Plans pursuant to this Agreement, CSXT signifies only that such Plans and improvements constructed in accordance with such Plans satisfy CSXT’s requirements. CSXT expressly

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

disclaims all other representations and warranties in connection with the Plans, including, but not limited to, the integrity, suitability or fitness for the purposes of Agency or any other persons of the Plans or improvements constructed in accordance with the Plans.

1.3 Compliance with Plans. The Project shall be constructed in accordance with the Plans.

2. Allocation and Conduct of Work

Work in connection with the Project shall be allocated and conducted as follows:

2.1 CSXT Work. Subject to timely payment of Reimbursable Expenses as provided by Section 4, CSXT shall provide, or cause to be provided, the services as set forth by Exhibit A to this Agreement. Agency agrees that CSXT shall provide all services that CSXT deems necessary or appropriate (whether or not specified by Exhibit A) to preserve and maintain its property and operations, without impairment or exposure to liability of any kind and in compliance with all applicable federal, state and local regulations and CSXT's contractual obligations, including, but not limited to, CSXT's existing or proposed third party agreements and collective bargaining agreements.

2.2 Agency Work. Agency shall perform, or cause to be performed, all work as set forth by Exhibit A and B, at Agency's sole cost and expense.

2.3 Conduct of Work. CSXT shall commence its work under this Agreement following: (i) delivery to CSXT of a notice to proceed from Agency; (ii) payment of Reimbursable Expenses (as provided by Section 4.1) as required by CSXT prior to the commencement of work by CSXT; (iii) issuance of all permits, approvals and authorizations necessary or appropriate for such work; and (iv) delivery of proof of insurance acceptable to CSXT, as required by Section 9. The initiation of any services by CSXT pursuant to this Agreement, including, but not limited to, the issuance of purchase orders or bids for materials or services, shall constitute commencement of work for the purposes of this Section. The parties intend that all work by CSXT or on CSXT property shall conclude no later than **December 31, 2020** unless the parties mutually agree to extend such date.

3. Special Provisions. Agency shall observe and abide by, and shall require its contractors ("**Contractors**") to observe and abide by the terms, conditions and provisions set forth in Exhibit C to this Agreement (the "Special Provisions"). To the extent that Agency performs Project work itself, Agency shall be deemed a Contractor for purposes of this Agreement. Agency further agrees that, prior to the commencement of Project work by any third party Contractor, such Contractor shall execute and deliver to CSXT Schedule I to this Agreement to acknowledge Contractor's agreement to observe and abide by the terms and conditions of this Agreement.

4. Cost of Project and Reimbursement Procedures

4.1 Reimbursable Expenses. Agency shall reimburse CSXT for all costs and expenses incurred by CSXT in connection with the Project, including, without limitation: (1) all out of pocket expenses, (2) travel and lodging expenses, (3) telephone, facsimile, and mailing expenses, (4) costs for equipment, tools, materials and supplies, (5) sums paid to CSXT's consultants and subcontractors, and (6) CSXT labor in connection with the Project, together with CSXT labor overhead percentages established by CSXT pursuant to applicable law (collectively,

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**“Reimbursable Expenses”**). Reimbursable Expenses shall also include expenses incurred by CSXT prior to the date of this Agreement to the extent identified by the Estimate provided pursuant to Section 4.2.

- 4.2 Estimate. The estimated total Reimbursable Expenses to be incurred by CSXT for services rendered in connection with the Agency’s Project are estimated to be as shown on Exhibit D (the **“Estimate”**, as amended or revised). In the event CSXT anticipates that actual Reimbursable Expenses for the Project may exceed such Estimate, it shall obtain Agency’s written approval, prior to incurring any additional Reimbursable Expense(s) or other cost or expense associated with its services to be rendered hereunder and beyond the Estimate. CSXT shall provide Agency with the revised Estimate of the total Reimbursable Expenses, together with a revised Payment Schedule (as defined by Section 4.3.1), for Agency’s written approval and confirmation that sufficient funds have been appropriated to cover the total Reimbursable Expenses of such revised Estimate. CSXT may elect, by delivery of notice to Agency, to immediately cease all further work on the Project, unless and until Agency provides such approval and confirmation.

4.3 Payment Terms.

4.3.1 Agency shall pay CSXT for Reimbursable Expenses in the lump sum amount reflected on the Force Account Estimate attached hereto and as shown on Exhibit E, attached hereto and incorporated herein by reference (the **“Payment Schedule”**, as may be revised pursuant to Section 4.2). CSXT agrees, if applicable, to submit future invoices to Agency for such amounts as may be incurred subsequent to the execution of this Agreement by the parties and for which CSXT has given prior notice to and obtained the prior approval of Agency pursuant to Section 4.3.2 below. Agency, in such instance, shall remit payment to CSXT at the later of thirty (30) days following delivery of each such invoice to Agency or, the payment date (if any) set forth in the Payment Schedule.

4.3.2 Following completion of the Project, CSXT, if applicable, shall submit to Agency a final invoice that reconciles the total Reimbursable Expenses incurred by CSXT against the total payments received from Agency and the payment for which outstanding amounts shall have been previously approved by Agency’s Board of Commissioners (**“BOC”**) at a regularly scheduled public meeting. Subject to such BOC approval, Agency, if required, shall pay to CSXT the amount by which Reimbursable Expenses exceed total Agency payments to date as shown by the final invoice, within eighty (80) days following delivery of such invoice to Agency. In the event that the payments received by CSXT from Agency exceed the Reimbursable expense, CSXT shall remit such excess to Agency no later than ninety (90) days after completion of the Project.

4.3.3 In the event that Agency fails to pay CSXT any sums due CSXT under this Agreement: CSXT may elect, by delivery of notice to Agency: (A) to immediately cease all further work on the Project, unless and until Agency pays the entire delinquent sum; and/or (B) to terminate this Agreement.

4.3.4 All invoices from CSXT shall be delivered to Agency in accordance with Section 16 of this Agreement. All payments by Agency to CSXT shall be made by electronic transfer of funds to an account previously designated in writing to Agency by CSXT.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

- 4.4 Effect of Termination. Agency's obligation to pay to CSXT Reimbursable Expenses in accordance with Section 4 and to the extent actually incurred by CSXT shall survive termination of this Agreement for any reason.
5. Appropriations. Agency represents to CSXT that (i) Agency has budgeted and approved funds sufficient to reimburse CSXT for the Reimbursable Expenses encompassed by the Estimate attached as Exhibit D; (ii) Pursuant to Section 4.3.2 above, CSXT shall provide prior notice to Agency of any increase in the amount of Reimbursable Expenses reflected by Exhibit D and Agency shall use its best efforts to obtain BOC approval for any additional funds necessary to cover such increase in the Reimbursable Expenses encompassed by subsequent Estimates; and (iii) Agency shall promptly notify CSXT in the event that Agency is unable to obtain BOC approval for the expenditure of such additional funds.
6. Easements and Licenses
- 6.1 Agency Obligation. Agency shall acquire all necessary licenses, permits and easements required for the Project.
- 6.2 Temporary Construction Licenses. Insofar as it has the right to do so, CSXT hereby grants Agency a nonexclusive license to access and cross CSXT's property, to the extent necessary for the construction of the Project (excluding ingress or egress over public grade crossings), along such routes and upon such terms as may be defined and imposed by CSXT and such temporary construction easements as may be designated on the Plans approved by CSXT.
- 6.3 Permanent Easements. Insofar as it has the right to do so, CSXT shall grant, without warranty to Agency, easements for the use and maintenance of the Project wholly or partly on CSXT property as shown on the Plans approved by CSXT, if any, on terms and conditions and at a price acceptable to the parties. Upon request by CSXT, Agency shall furnish to CSXT descriptions and plat plans for the easements.
7. Permits. At its sole cost and expense, Agency shall procure all permits and approvals required by any federal, state, or local governments or governmental agencies for the construction, maintenance and use of the Project, copies of which shall be provided to CSXT.
8. Termination
- 8.1 By Agency. For any reason, Agency may terminate this Agreement by delivery of notice to CSXT. Agency shall not be entitled to otherwise pursue claims for consequential, direct, indirect or incidental damages or lost profits as a consequence of CSXT's default or termination of this Agreement or Work on the Project by either party. This provision shall not apply to monies owed under Section 4.3.2 above.
- 8.2 By CSXT. In addition to the other rights and remedies available to CSXT under this Agreement, CSXT may terminate this Agreement by delivery of notice to Agency in the event Agency or its Contractors fail to observe the terms or conditions of this Agreement and such failure continues more than ten (10) business days following delivery of notice of such failure by CSXT to Agency.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

- 8.3 Consequences of Termination. If the Agreement is terminated by either party pursuant to this Section or any other provision of this Agreement, the parties understand that it may be impractical for them to immediately stop the Work. Accordingly, they agree that, in such instance a party may continue to perform Work until it has reached a point where it may reasonably and safely suspend the Work. Agency shall reimburse CSXT pursuant to this Agreement for the Work performed, plus all costs reasonably incurred by CSXT to discontinue the Work and protect the Work upon full suspension of the same, the cost of returning CSXT's property to its former condition, and all other costs of CSXT incurred as a result of the Project up to the time of full suspension of the Work, subject to BOC approval. Termination of this Agreement or Work on the Project, for any reason, shall not diminish or reduce Agency's obligation to pay CSXT for Reimbursable Expenses incurred in accordance with this Agreement. In the event of the termination of this Agreement or the Work for any reason, CSXT's only remaining obligation to Agency shall be to refund to Agency payments made to CSXT in excess of Reimbursable Expenses in accordance with Section 4.
9. Insurance. In addition to the insurance that Agency requires of its Contractor, Agency shall acquire or require its Contractor to purchase and maintain insurance in compliance with CSXT's insurance requirements attached to this Agreement as Exhibit F. Neither Agency nor Contractor shall commence work on the Project until such policy or policies have been submitted to and approved by CSXT's Risk Management Department.
10. Ownership and Maintenance
- 10.1 By Agency. Agency shall own and, without cost to CSXT, maintain, repair, replace and renew, or cause same to be done, in good condition and repair to CSXT's satisfaction, the highway overpass structure, the roadway surfacing, the roadway slopes, the retaining walls, and the highway drainage facilities. In the event that Agency fails to properly maintain such structures and improvements and such failure, in the opinion of CSXT, jeopardizes the safe and efficient operation of its property, CSXT shall be entitled to remedy such failure and recover from Agency the costs incurred by CSXT in doing so. Upon the cessation of use of the Project by Agency, Agency shall remove the bridge structure and restore CSXT's property to its original condition, at Agency's sole cost and expense, to CSXT's satisfaction.
- 10.2 Alterations. Agency shall not undertake any alteration, modification or expansion of the Project, without the prior approval of CSXT, which may be withheld for any reason, and the execution of such agreements as CSXT may require.
11. Indemnification
- 11.1 Generally. To the maximum extent permitted by applicable law, Agency shall cause its Contractors to indemnify, defend, and hold CSXT and its affiliates harmless from and against all claims, demands, payments, suits, actions, judgments, settlements, and damages of every nature, degree, and kind (including direct, indirect, consequential, incidental, and punitive damages), for any injury to or death to any person(s) (including, but not limited to the employees of CSXT, its affiliates, Agency or its Contractors), for the loss of or damage to any property whatsoever (including but not limited to property owned by or in the care, custody, or control of CSXT, its affiliates, Agency or its Contractors, and environmental damages and any related remediation brought or recovered against CSXT and its affiliates), arising directly or indirectly from the negligence, recklessness or intentional wrongful misconduct of the

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**COBB DOT PROJECT NO. X2116**

Contractors, Agency, and their respective agents, employees, invitees, contractors, or its contractors' agents, employees or invitees in the performance of work in connection with the Project or activities incidental thereto, or from their presence on or about CSXT's property. The foregoing indemnification obligation shall not be limited to the insurance coverage required by this Agreement, except to the extent required by law or otherwise expressly provided by this Agreement.

- 11.2 Compliance with Laws. Agency shall comply, and shall require its Contractors to comply, with any federal, state, or local laws, statutes, codes, ordinances, rules, and regulations applicable to its construction and maintenance of the Project. Agency's Contractors shall indemnify, defend, and hold CSXT and its affiliates harmless with respect to any fines, penalties, liabilities, or other consequences arising from breaches of this Section.
- 11.3 "CSXT Affiliates". For the purpose of this Section 11, CSXT's affiliates include CSX Corporation and all entities, directly or indirectly, owned or controlled by or under common control of CSXT or CSX Corporation and their respective officers, directors, employees and agents.
- 11.4 Notice of Incidents. Agency and its Contractor shall notify CSXT promptly of any loss, damage, injury or death arising out of or in connection with the Project work.
- 11.5 Survival. The provisions of this Section 11 shall survive the termination or expiration of this Agreement.
12. Independent Contractor. The parties agree that neither Agency nor its Contractors shall be deemed either agents or independent contractors of CSXT. Except as otherwise provided by this Agreement, CSXT shall exercise no control whatsoever over the employment, discharge, compensation of, or services rendered by Agency or Agency's Contractors, or the construction practices, procedures, and professional judgment employed by Agency or its Contractor to complete the Project. Notwithstanding the foregoing, this Section 12 shall in no way affect the absolute authority of CSXT to prohibit Agency or its Contractors or anyone from entering CSXT's property, or to require the removal of any person from its property, if it determines, in its sole discretion, that such person is not acting in a safe manner or that actual or potential hazards in, on or about the Project exist. In such instance, CSXT shall to the extent feasible provide notice to Agency of any unsafe behavior or actual or potential hazards requiring correction or remediation by Agency.
13. "Entire Agreement". This Agreement embodies the entire understanding of the parties, may not be waived or modified except in a writing signed by authorized representatives of both parties, and supersedes all prior or contemporaneous written or oral understandings, agreements or negotiations regarding its subject matter. In the event of any inconsistency between this Agreement and the Exhibits, the more specific terms of the Exhibits shall be deemed controlling.
14. Waiver. If either party fails to enforce its respective rights under this Agreement, or fails to insist upon the performance of the other party's obligations hereunder, such failure shall not be construed as a permanent waiver of any rights or obligations in this Agreement.
15. Assignment. CSXT may assign this Agreement and all rights and obligations herein to a successor in interest, parent company, affiliate, or future affiliate. Upon assignment of this Agreement by CSXT and the assumption of CSXT's assignee of CSXT's obligations under this Agreement, CSXT shall

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
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**COBB DOT PROJECT NO. X2116**

have no further obligation under this Agreement. CSXT shall give prior notice to Agency of any such assignment and also shall provide accurate and current contact information for CSXT's proposed assignee. Agency shall not assign its rights or obligations under this Agreement without CSXT's prior consent, which consent may be withheld for any reason.

16. Notices All notices, consents and approvals required or permitted by this Agreement shall be in writing and shall be deemed delivered upon personal delivery, upon the expiration of three (3) days following mailing by first class U.S. mail, or upon the next business day following mailing by a nationally recognized overnight carrier, to the parties at the addresses set forth below, or such other addresses as either party may designate by delivery of prior notice to the other party:

If to CSXT: CSX Transportation, Inc.  
500 Water Street, J-301  
Jacksonville, Florida 32202  
Attention: Todd Allton – Project Manager – Public Projects

If to Agency: Erica Parish, Interim Director  
CCDOT  
1890 County Services Pkwy.  
Marietta, GA 30008

Copy To: County Manager  
100 Cherokee St.  
Suite 300  
Marietta, GA 30090

17. Severability The parties agree that if any part, term or provision of this Agreement is held to be illegal, unenforceable or in conflict with any applicable federal, state, or local law or regulation, such part, term or provision shall be severable, with the remainder of the Agreement remaining valid and enforceable.
18. Applicable Law. This Agreement shall be governed by the laws of the State of **Georgia** exclusive of its choice of law rules. The parties further agree that the venue of all legal and equitable proceedings related to disputes under this Agreement shall be situated in Duval County, Florida, and the parties agree to submit to the personal jurisdiction of any State or Federal court situated in Duval County, Florida.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed in duplicate, each by its duly authorized officers, as of the date of this Agreement.

Attest: **Cobb County, Georgia**  
By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Attest: **CSX TRANSPORTATION, INC.**  
By: \_\_\_\_\_  
J. Todd Echler  
Chief Engineer D&C



**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**EXHIBIT A**  
**ALLOCATION OF WORK**

Subject to Section 2.1, work to be performed in connection with the Project is allocated as follows:

- A. Agency shall let by contract to its Contractors:
  - 1. The construction of a new overhead bridge at milepost 0WA-22.48 on the Atlanta Terminal Subdivision to convey Old US-41.
  - 2. Demolish existing Old US-41 bridge structure.
  - 3. Establish and maintain proper drainage and erosion control measures.
  - 4. Agency will provide construction engineering and inspection to protect the interests of the Agency and the traveling public.
  
- B. CSXT shall perform or cause to be performed:
  - 1. Relocation / Installation of new #2 wayside signal, including new insulated joints and meter service.
  - 2. Flagging services and other protective services and devices as may be necessary.
  - 3. Construction engineering and inspection to protect the interests of CSXT.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**EXHIBIT B**

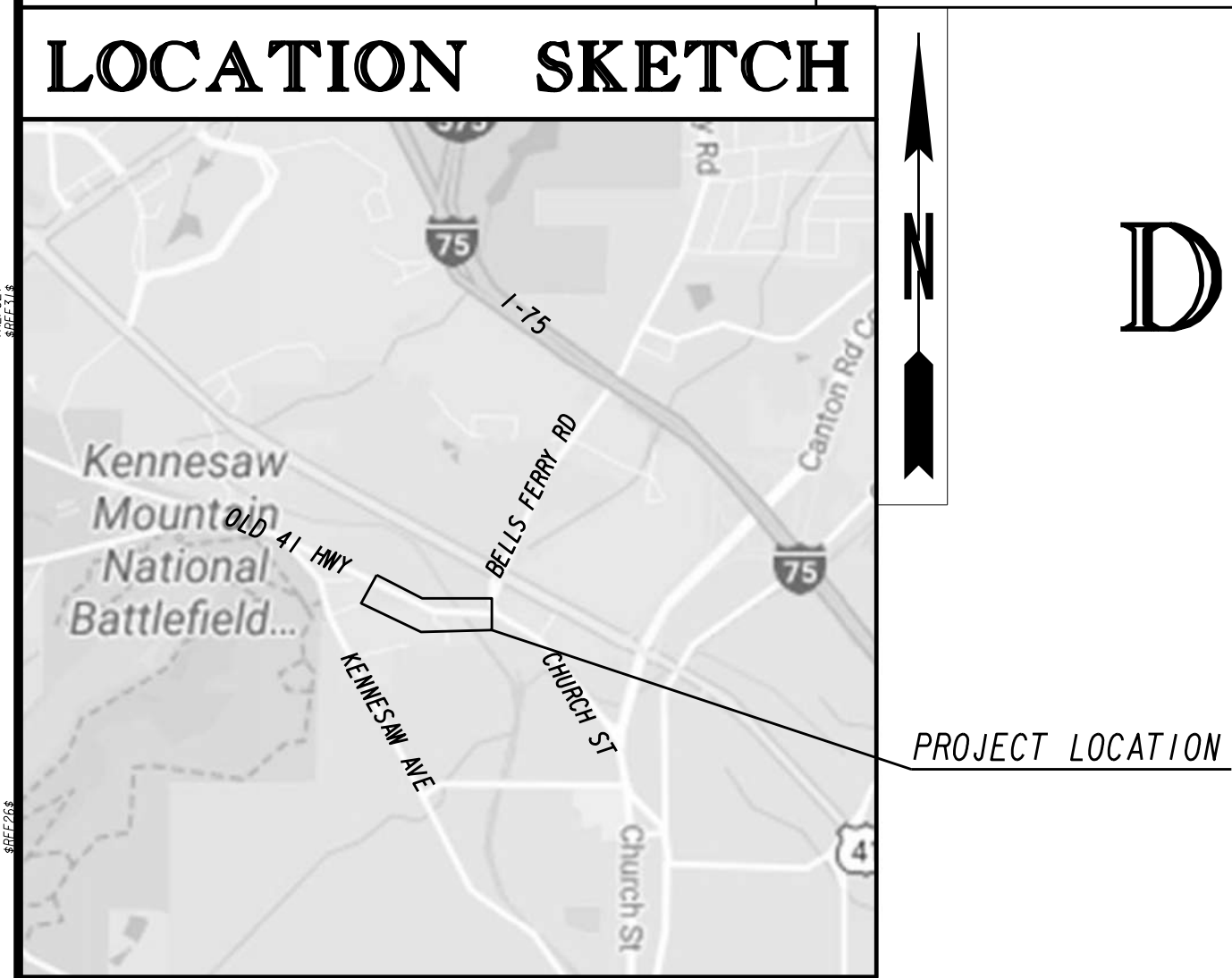
**PLANS AND SPECIFICATIONS**

Plans, Specifications and Drawings:

As of the date of this Agreement, the following plans, specifications and drawings have been submitted by Agency to CSXT for its review and approval.

In the event subsequent plan submissions are made by Agency to CSXT for review and approval, once approved, said plans shall be considered to be incorporated into this Exhibit B as of the date of CSXT's written approval.

<b>SHEET</b>	<b>DESCRIPTION</b>	<b>PREPARER</b>	<b>DATE</b>
01-0001	Cover Sheet	AECOM	10/11/18
04-0002	RR Coord Notes	AECOM	10/11/18
13-0003	Construction Plan	AECOM	10/11/18
15-0002	Mainline Profile	AECOM	10/11/18
15-0003	Mainline Profile	AECOM	10/11/18
16-0002	W&A RR/CSX TOR PROFILE	AECOM	10/11/18
19-0003	Construction Staging Plan – Stage 1	AECOM	10/11/18
19-0010 to 19-0012	Staging Cross Sections – Stage 1	AECOM	10/11/18
19-0017	Construction Staging Plan – Stage 2	AECOM	10/11/18
19-0022 to 19-0024	Staging Cross Sections – Stage 2	AECOM	10/11/18
21-0001	Drainage Area Map	AECOM	10/11/18
23-0006 to 23-0008	Cross Sections	AECOM	10/11/18
24-0003	Utility Plans	AECOM	10/11/18
26-0003	Signing and Marking	AECOM	10/11/18
32-0002 to 32-0006	Retaining Wall Plans Walls 1 & 2	AECOM	10/11/18
35-0001	Plan and Elevation	AECOM	10/12/18
35-0003	Deck Plan	AECOM	10/12/18
35-0004 to 35-0005	Deck Sections	AECOM	10/12/18
35-0006	Miscellaneous Details	AECOM	10/12/18
35-0009	End Bent 1	AECOM	10/12/18
35-0010	End Bent 2	AECOM	10/12/18
54-0003A to 54-0003D	BMP Location Details	AECOM	10/11/18



COBB COUNTY

DEPARTMENT OF TRANSPORTATION

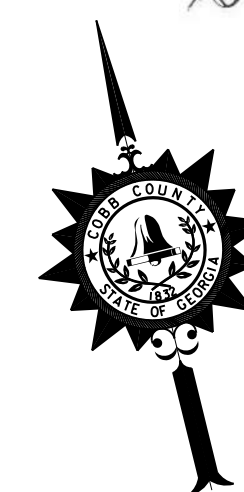


PLAN AND PROFILE OF PROPOSED  
OLD 41 HWY BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY D.O.T. PROJECT NO. X2116



10-12-2018



RECEIVED  
STV Incorporated  
Oct. 12, 2018  
OP# GA2039

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS	
NO EXCEPTION TAKEN	XXX
EXCEPTIONS NOTED	
AMEND & RESUBMIT	
REJECTED - SEE REMARKS	
STV INCORPORATED Date:10/23/2018 By: JAS	

SPEED DESIGN: OLD 41 HWY - 35 MPH

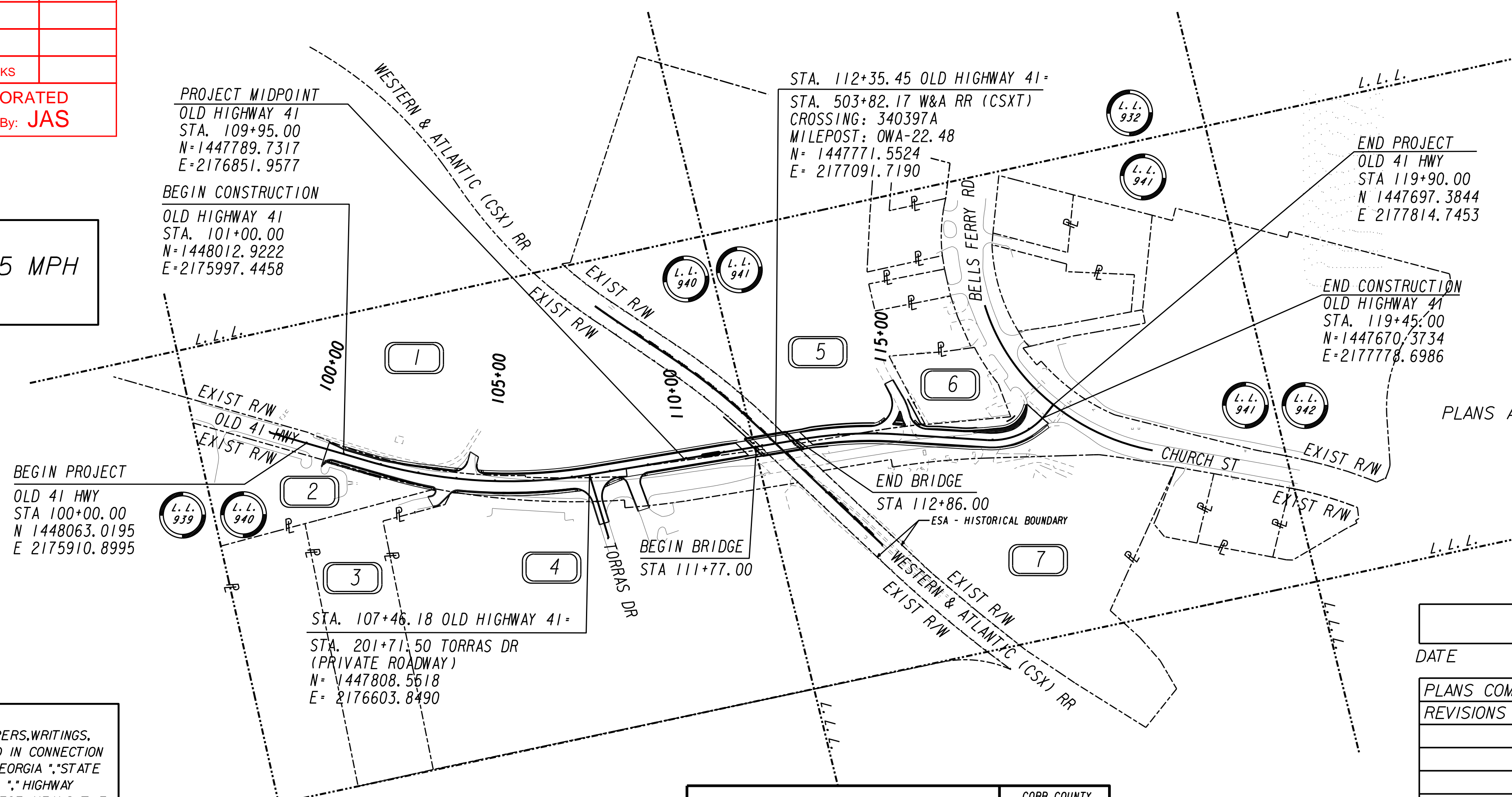
FUNCTIONAL CLASS: MAJOR COLLECTOR

THIS PROJECT IS 100% IN COBB COUNTY  
AND IS 100% IN CONG. DIST. NO. 11  
AND IS 100% IN LAND DIST. NO. 16  
AND IS 59% IN LAND LOT NO. 940  
AND IS 41% IN LAND LOT NO. 941  
PROJECT DESIGNATION: EXEMPT

THIS PROJECT HAS BEEN PREPARED  
USING THE HORIZONTAL GEORGIA  
COORDINATE SYSTEM OF 1984 (NAD  
1983)/94 WEST ZONE, AND THE NORTH  
AMERICAN VERTICAL DATUM (NAVD)  
OF 1988.

NOTE :  
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS,  
DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION  
WITH THIS DOCUMENT, TO "STATE HIGHWAY DEPARTMENT OF GEORGIA", "STATE  
HIGHWAY DEPARTMENT", "GEORGIA STATE HIGHWAY DEPARTMENT", "HIGHWAY  
DEPARTMENT", OR "DEPARTMENT" WHEN THE CONTEXT THEREOF MEANS THE  
STATE HIGHWAY DEPARTMENT OF GEORGIA, AND SHALL BE DEEMED TO MEAN  
THE DEPARTMENT OF TRANSPORTATION.

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY  
INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON  
FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE  
SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF  
TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO  
SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.



LENGTH OF PROJECT	
	COBB COUNTY PROJ. NO. X2116
	MILES
NET LENGTH OF ROADWAY	0.329
NET LENGTH OF BRIDGE / CULVERT	0.021
NET LENGTH OF PROJECT	0.349
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.349

RAILROAD  
SUBMITTAL



PREPARED BY:

AECOM

PLANS PREPARED UNDER THE SUPERVISION OF

GARRICK EDWARDS, P.E.

PLANS ACCEPTED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

DATE \_\_\_\_\_ CHIEF ENGINEER \_\_\_\_\_

PLANS COMPLETED	
REVISIONS	

DRAWING No.

01-0001

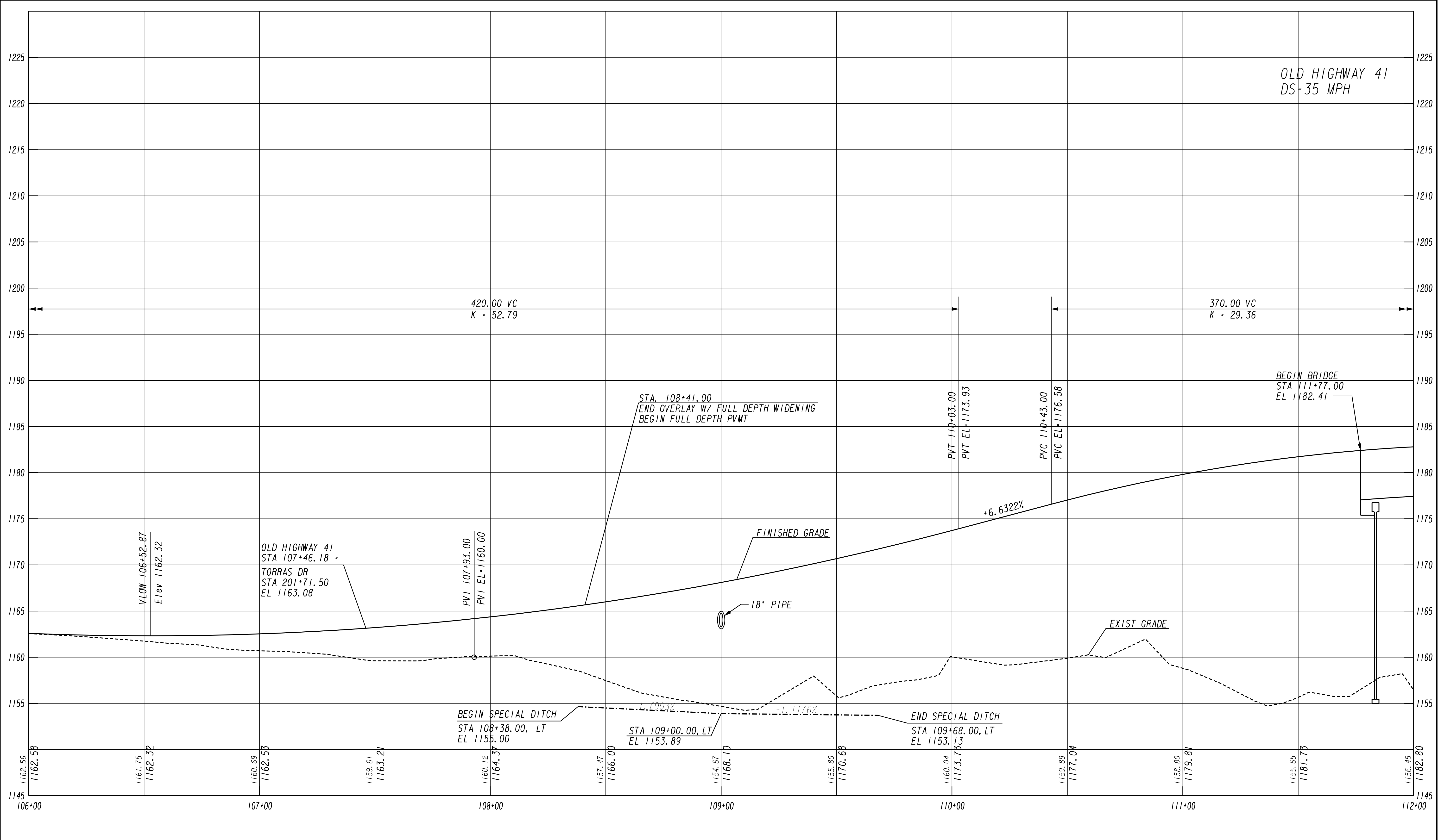


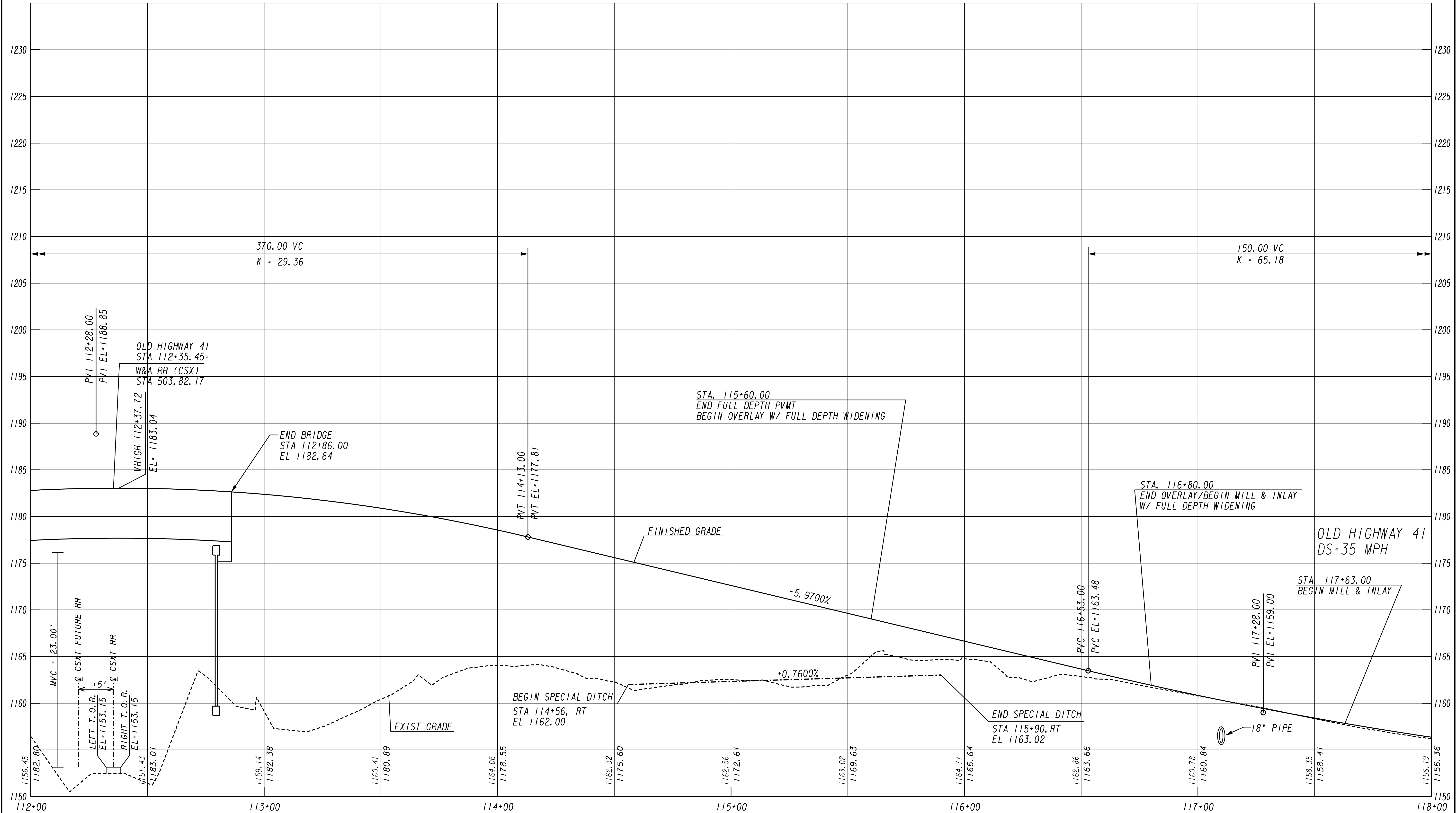
10/11/2018 steven.tate		2:52:36 PM GPLM		GPLM-V8 gploborder-V81-P0.1b1		04-0001.dgn		STATE GA		PROJECT NUMBER X2116																					
<div>RAILROAD COORDINATION GENERAL NOTES</div> <div>1. ALL WORK ON, OVER, UNDER, OR ADJACENT TO CSXT RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE CSXT SPECIAL PROVISIONS WHICH CAN BE FOUND WITHIN THE CSXT PUBLIC PROJECT MANUAL, AVAILABLE AT: <a href="http://www.csx.com/index.cfm/about-us/property">HTTP://WWW.CSX.COM/INDEX.CFM/ABOUT-US/PROPERTY</a>.</div> <div>2. NO WORK SHALL TAKE PLACE WITHIN 50 FEET OF THE CENTERLINE OF THE CSXT TRACK WITHOUT A RAILROAD FLAGMAN BEING PRESENT. PROVIDE THE CSXT FIELD REPRESENTATIVE WITH AT LEAST (30) BUSINESS DAYS ADVANCE NOTICE OF BEGINNING WORK WITHIN THIS AREA TO ALLOW FOR THE SCHEDULING OF THE RAILROAD FLAGMAN.</div> <div>3. CONSTRUCTION CLEARANCES SHALL BE SUBJECT TO APPROVAL BY CSXT. TYPICALLY, REDUCTION IN CLEARANCE FOR CONSTRUCTION IS NOT PERMITTED.</div> <div>4. CONTRACTOR SHALL MAINTAIN ALL DITCHES AND DRAINAGE STRUCTURES FREE OF SILT OR OTHER OBSTRUCTIONS THAT MAY RESULT FROM THEIR OPERATIONS. CONTRACTOR, UPON COMPLETION OF THE PROJECT, SHALL LEAVE CSXT PROPERTY IN NEAT CONDITION, SATISFACTORY TO THE CSXT REPRESENTATIVE.</div> <div>5. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN A GEOTEXTILE FABRIC BALLAST PROTECTION SYSTEM TO PREVENT DEBRIS AND FINES FROM FOULING THE BALLAST. THE BALLAST PROTECTION SYSTEM SHALL EXTEND 25' BEYOND THE OUTER LIMITS OF THE BRIDGE ON BOTH SIDES.</div> <div>6. THE CONTRACTOR MAY NOT USE CSXT RIGHT-OF-WAY FOR STORAGE OF MATERIALS OR EQUIPMENT DURING CONSTRUCTION WITHOUT PRIOR APPROVAL FROM CSXT.</div> <div>7. CSXT SHALL BE FURNISHED AS-BUILT DRAWINGS SHOWING ACTUAL CLEARANCES AS CONSTRUCTED PRIOR TO PROJECT COMPLETION AND CLOSE-OUT.</div> <div>8. THE CONTRACTOR SHALL REFERENCE THE CSXT CONSTRUCTION SUBMISSION CRITERIA FOR CONSTRUCTION RELATED SUBMITTAL REQUIREMENTS WHILE WORKING ON, OVER, UNDER OR ADJACENT TO CSXT RIGHT-OF-WAY. THE CONSTRUCTION SUBMISSION CRITERIA CAN BE FOUND WITHIN THE PUBLIC PROJECT MANUAL. THE CONTRACTOR(S) IS REQUIRED TO SUBMIT A DETAILED WORK PLAN FOR REVIEW AND APPROVAL BY CSXT, INCLUDING BUT NOT LIMITED TO THE BELOW ITEMS:<div><div>A) BRIDGE DEMOLITION</div><div>B) TEMPORARY EXCAVATION AND SHORING</div><div>C) FOUNDATION INSTALLATION</div><div>D) GIRDER ERECTION AND STABILIZATION</div><div>E) TRACK MONITORING</div><div>F) PROTECTIVE FENCING</div><div>G) PAINTING/COATING</div><div>H) PILE INSTALLATION PLAN</div></div></div> <div>9. THE CONTRACTOR SHALL NOTIFY AND COORDINATE THEIR WORK WITH THE ON-SITE CSXT REPRESENTATIVE.</div> <div>10. "ONE CALL" SERVICES DO NOT LOCATE BURIED RAILROAD SIGNAL AND COMMUNICATIONS LINES. THE CONTRACTOR SHALL CONTACT THE RAILROAD'S REPRESENTATIVE TWO (2) DAYS IN ADVANCE OF THOSE PLACES WHERE EXCAVATION, PILE DRIVING, OR HEAVY LOADS MAY DAMAGE RAILROAD UNDERGROUND LINES ON RAILROAD PROPERTY. UPON REQUEST FROM THE CONTRACTOR OR AGENCY, RAILROAD SIGNAL FORCES WILL LOCATE AND PAINT MARK OR FLAG RAILROAD UNDERGROUND SIGNAL, COMMUNICATION, AND POWER LINES IN THE AREA TO BE DISTURBED FOR THE CONTRACTOR. THE CONTRACTOR SHALL AVOID EXCAVATION OR OTHER DISTURBANCE OF THESE LINES WHICH ARE CRITICAL TO THE SAFETY OF THE RAILROAD AND THE PUBLIC. IF DISTURBANCE OR EXCAVATION IS REQUIRED NEAR A BURIED RAILROAD SIGNAL, COMMUNICATION, OR POWER LINE, THE LINE SHALL BE POTHOLED MANUALLY WITH CAREFUL HAND EXCAVATION BY THE CONTRACTOR AND PROTECTED BY THE CONTRACTOR DURING THE COURSE OF THE DISTURBANCE UNDER THE SUPERVISION AND DIRECTION OF A RAILROAD SIGNAL REPRESENTATIVE.</div>																															
<div>GEORGIA811</div> <div>Utilities Protection Center, Inc</div> <div>Know where to call.</div> <div>Call before you dig.</div>						<div>COBB COUNTY STATE OF GEORGIA</div>		<div>AECOM</div> <div>ONE MIDTOWN PLAZA 1360 PEACHTREE ST., N.E., SUITE 500 ATLANTA, GEORGIA 30309 TEL: (404) 965-9600 FAX: (404) 965-9605</div>		<div>REVISION DATES</div> <table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>																				<div>COBB COUNTY DEPARTMENT OF TRANSPORTATION</div> <div>GENERAL NOTES OLD HIGHWAY 41 BRIDGE REPLACEMENT</div> <div>DRAWING No. 04-0002</div>	

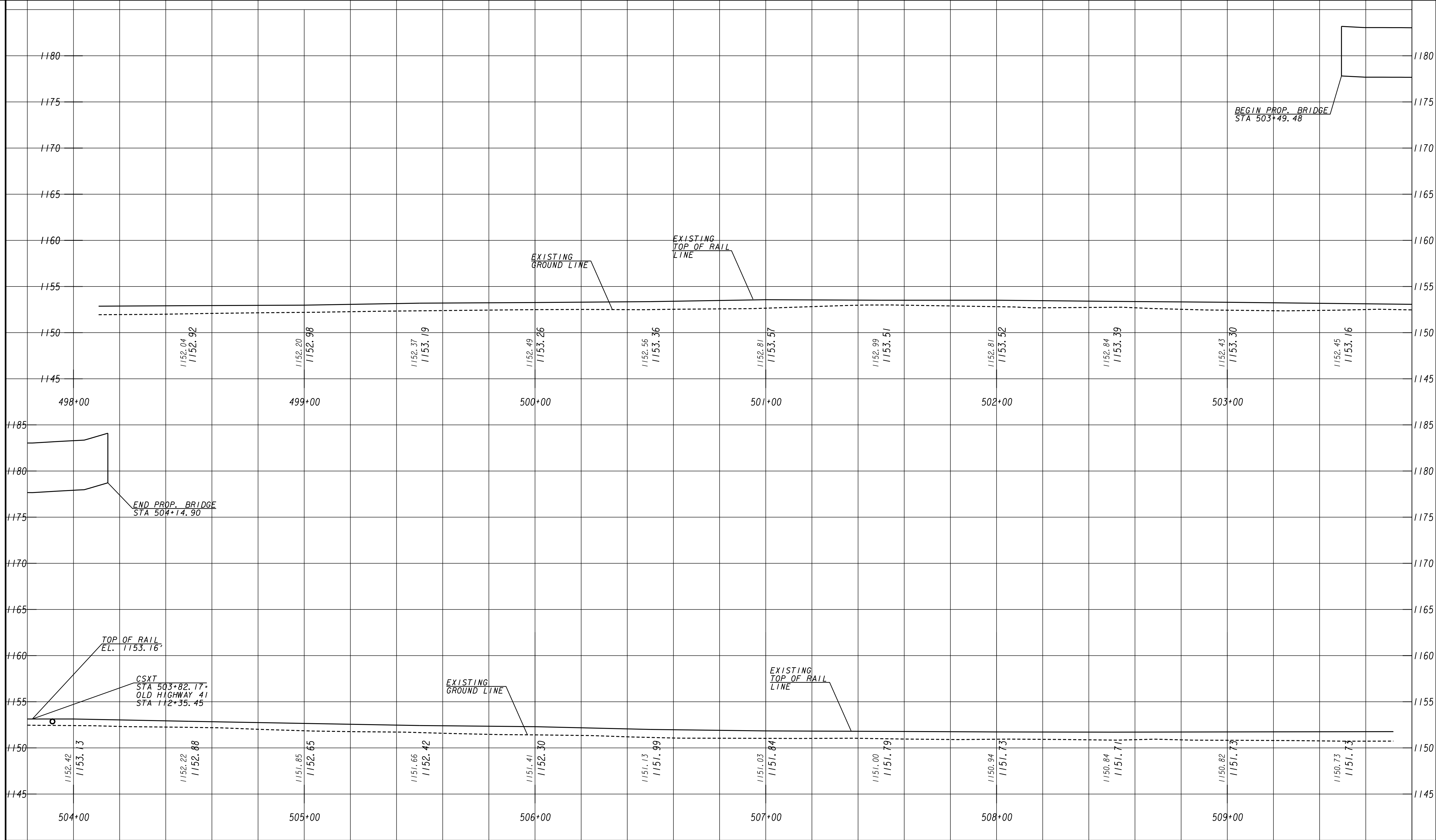
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T= 120.97  
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e= 3.00%

NORTH CHEMICAL, INC.  
TAX ID# 16094100210  
DB/PG\*: 11277/266

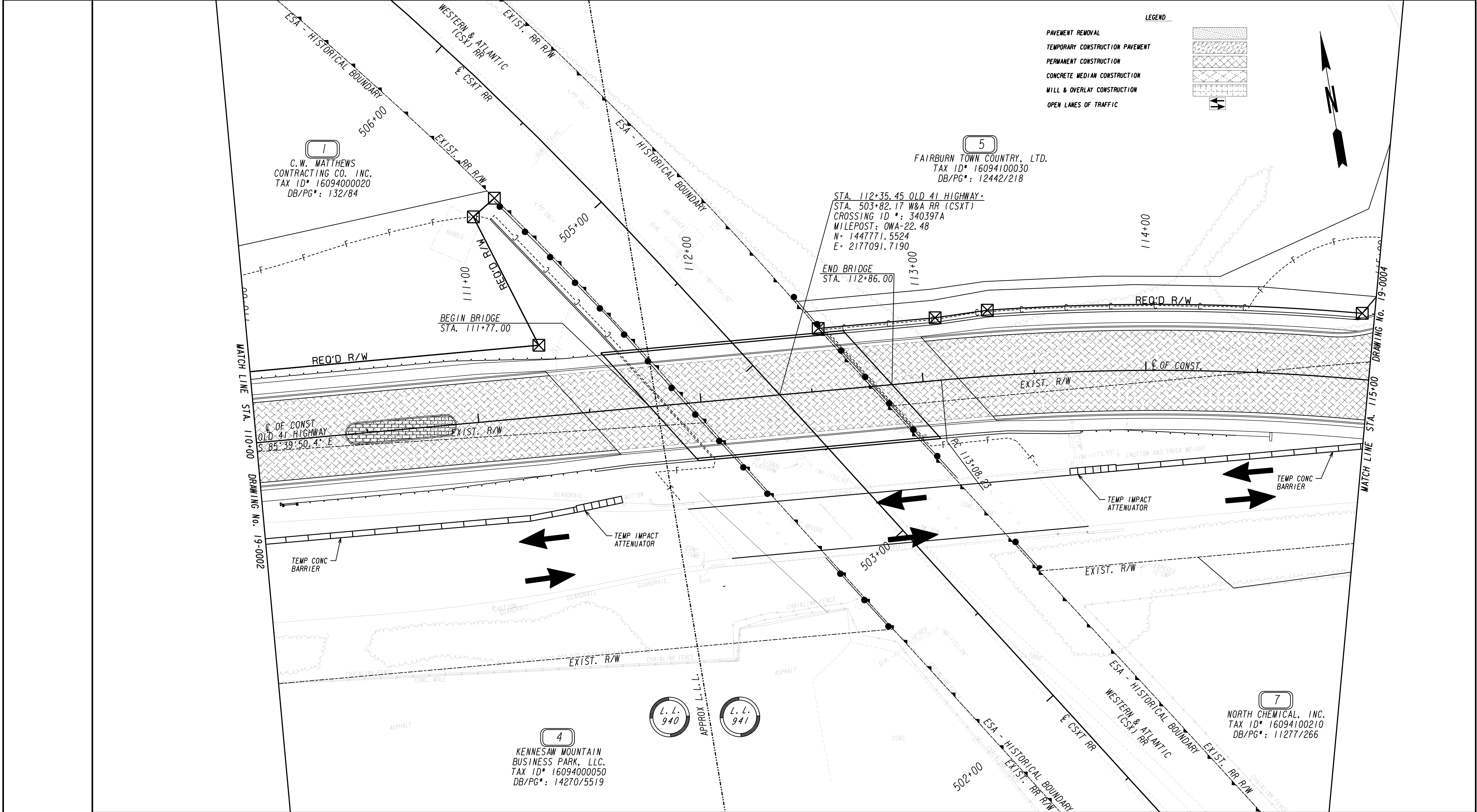
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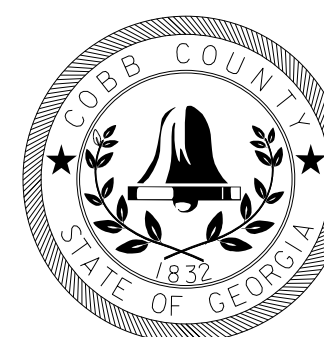
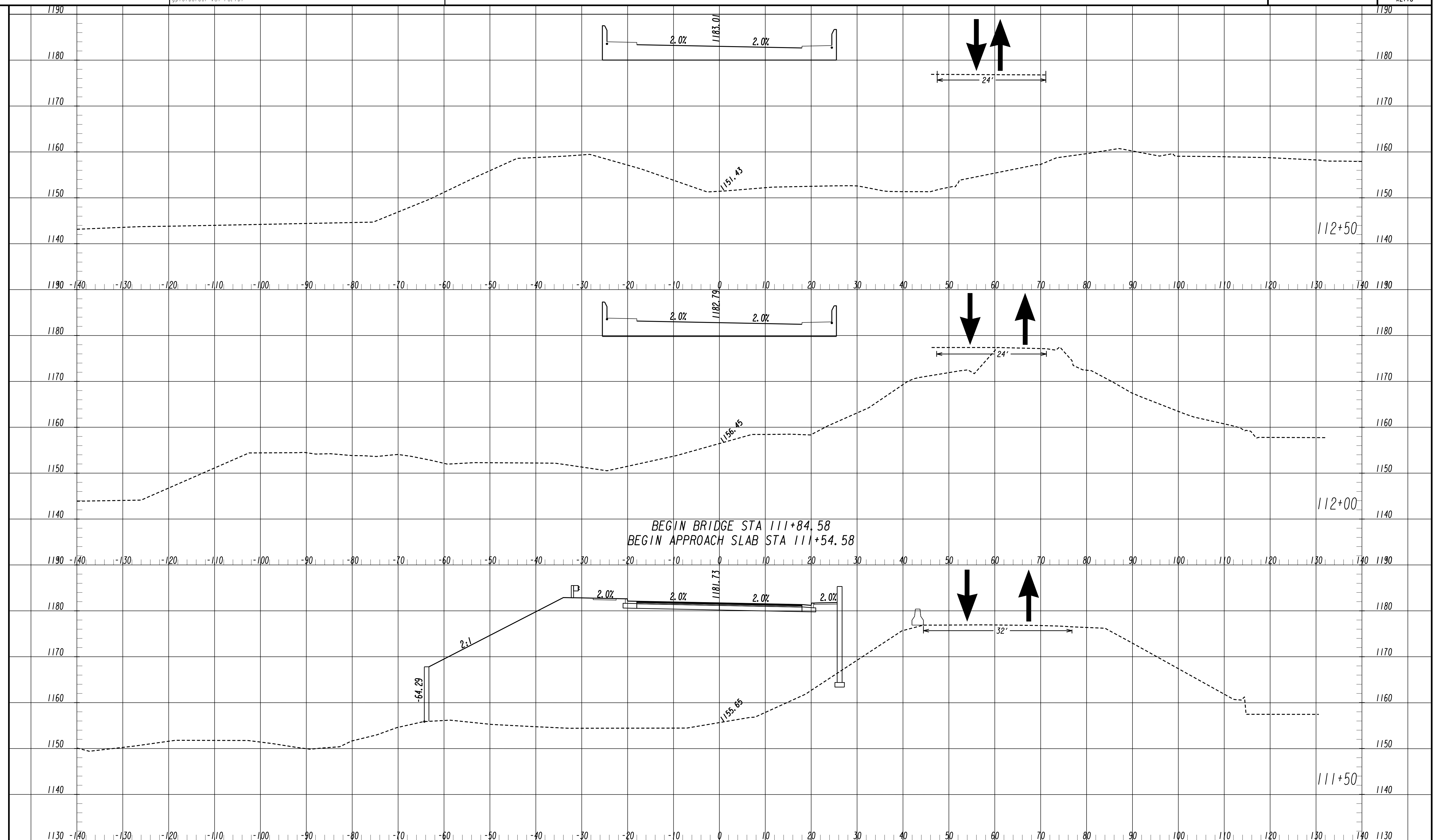










**AECOM**

ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

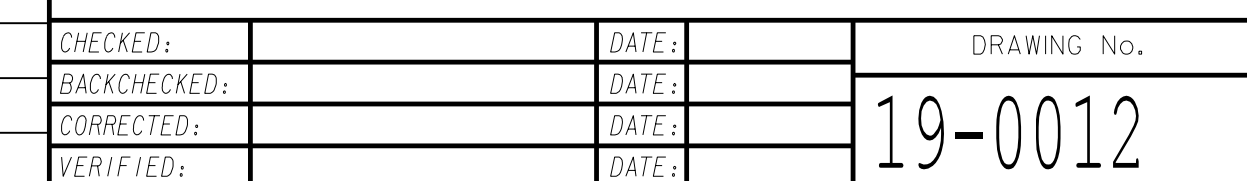
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<b>REVISION DATES</b>			

**STAGING CROSS SECTIONS**  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
STAGE 1

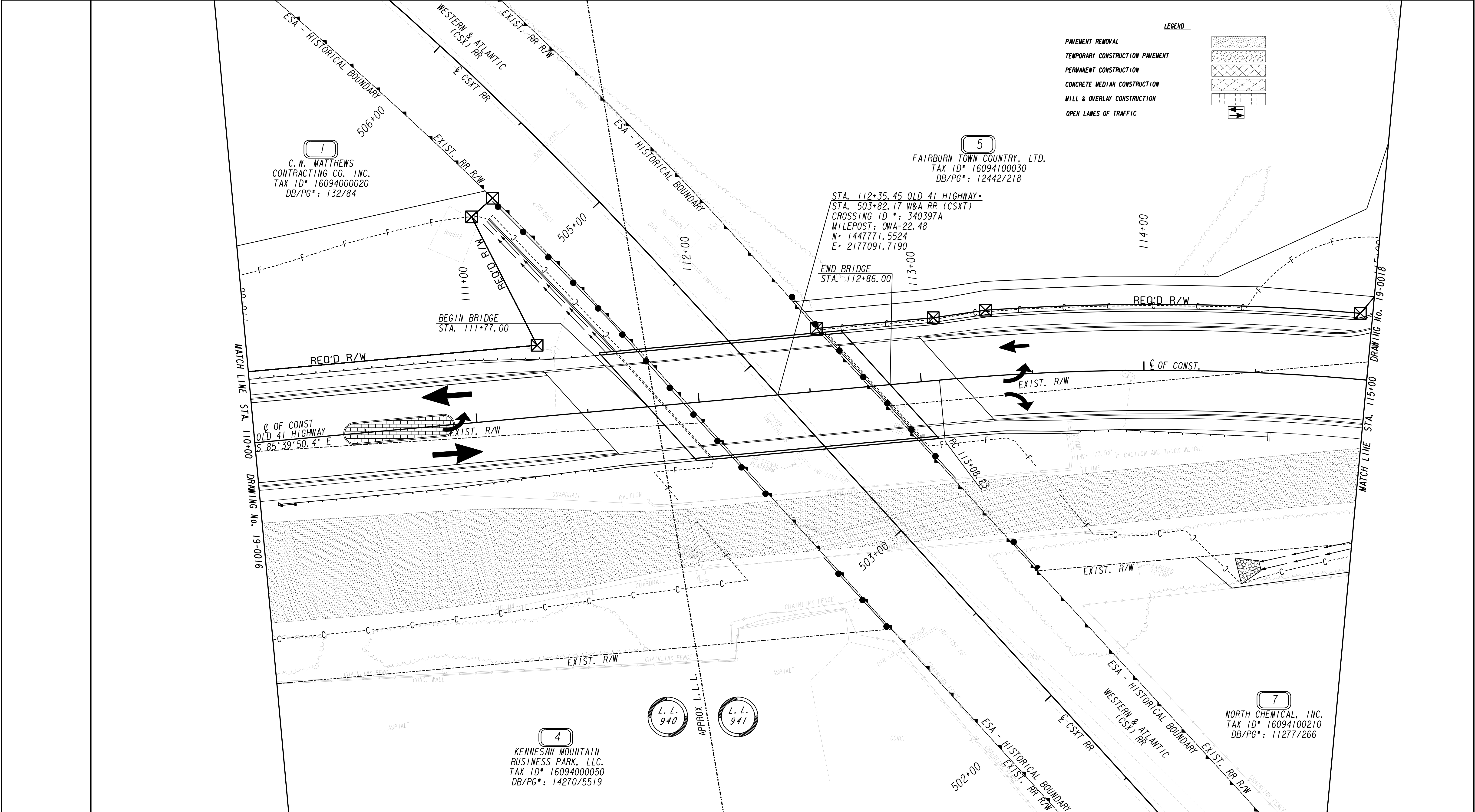
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VERIFIED:		DATE:		



<b>STAGING CROSS SECTIONS</b> OLD HIGHWAY 41 BRIDGE REPLACEMENT STAGE I			
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VERIFIED:		DATE:	

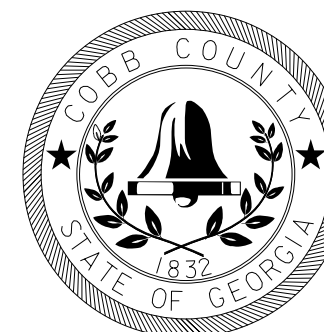
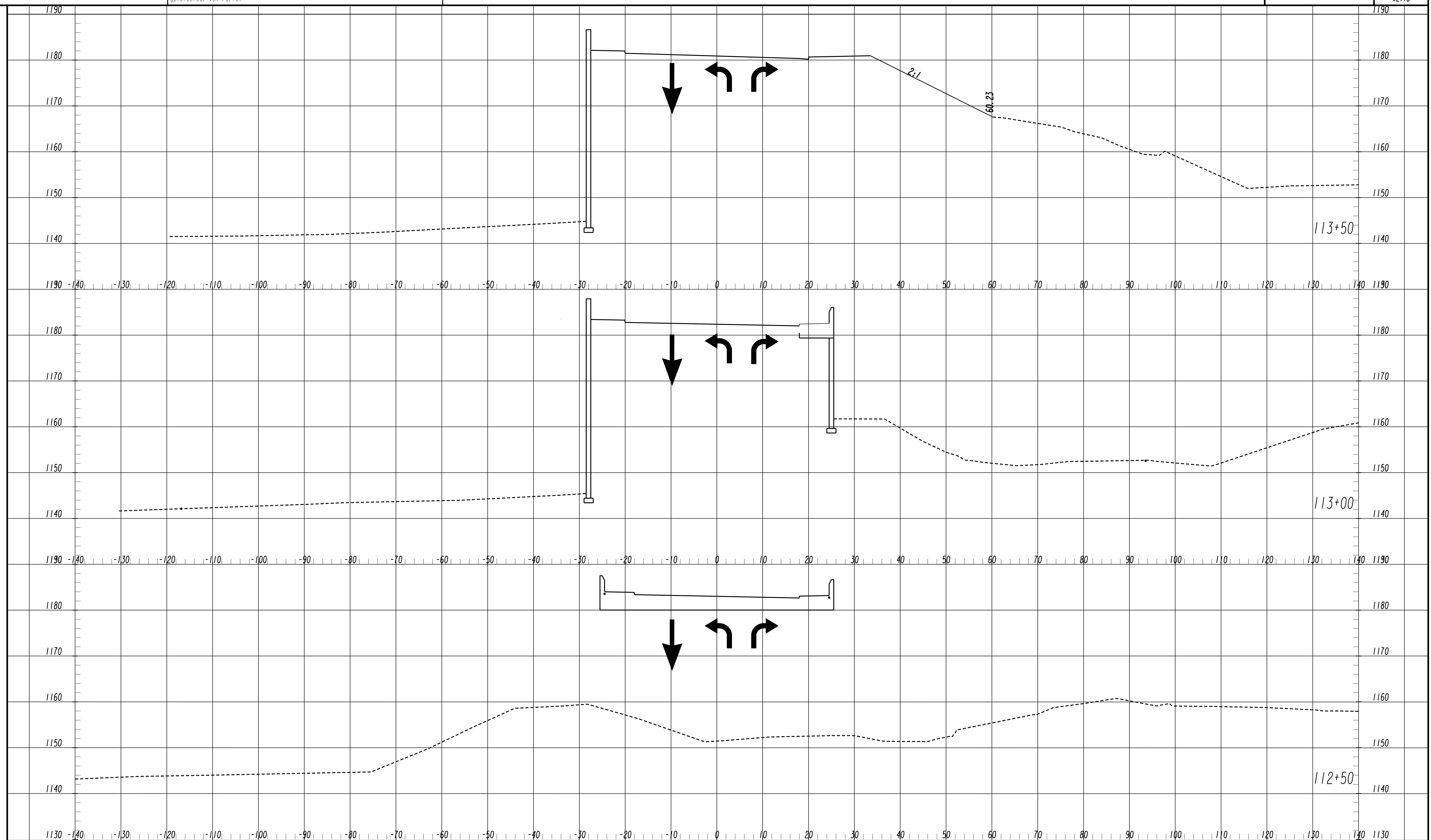








		REVISION DATES		STAGING CROSS SECTIONS									
				OLD HIGHWAY 41 BRIDGE REPLACEMENT									
				STAGE 2									
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				BACKCHECKED:		DATE:		19-0022					
				CORRECTED:		DATE:							
				VERIFIED:		DATE:							



**AECOM** ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

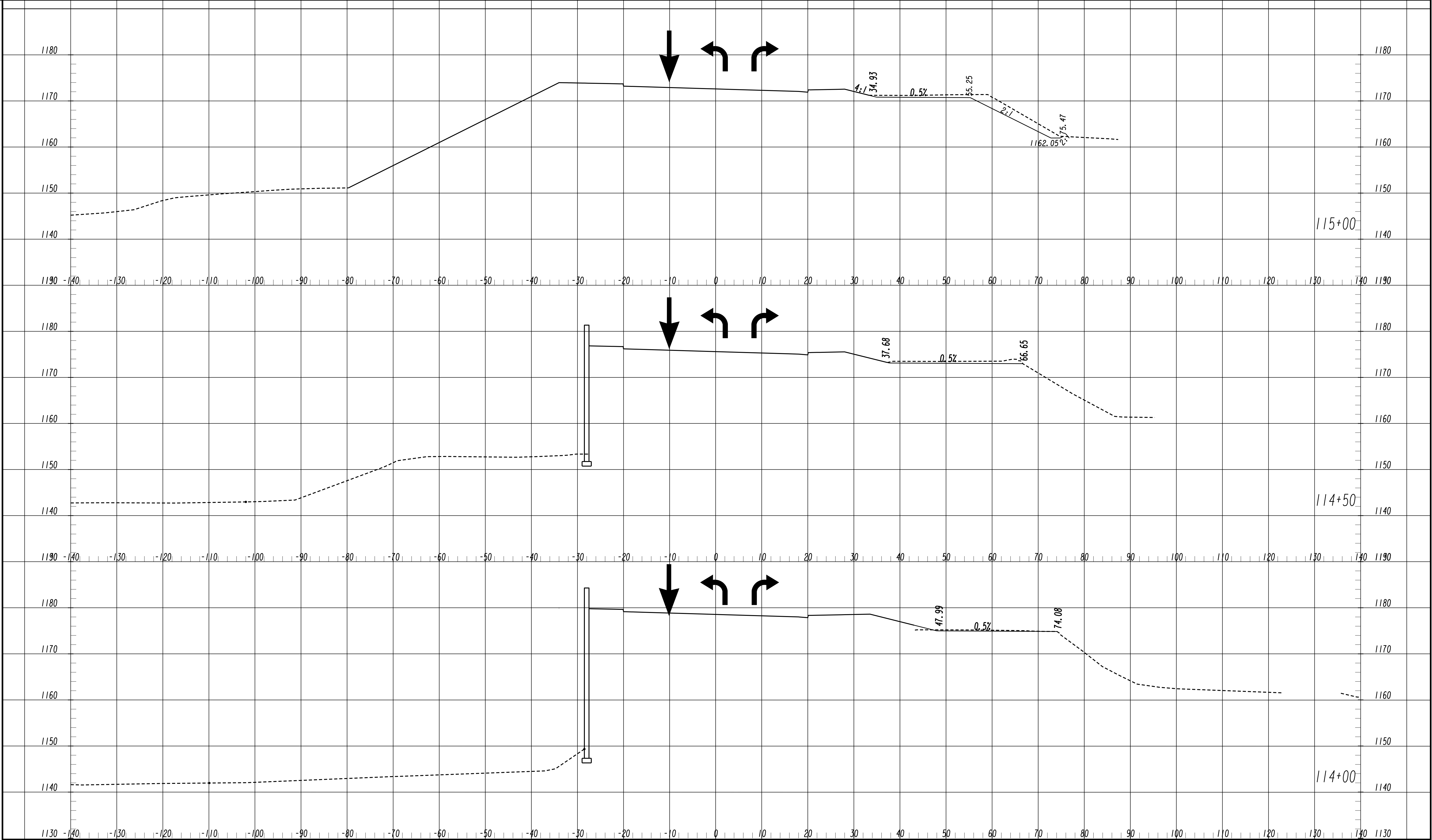
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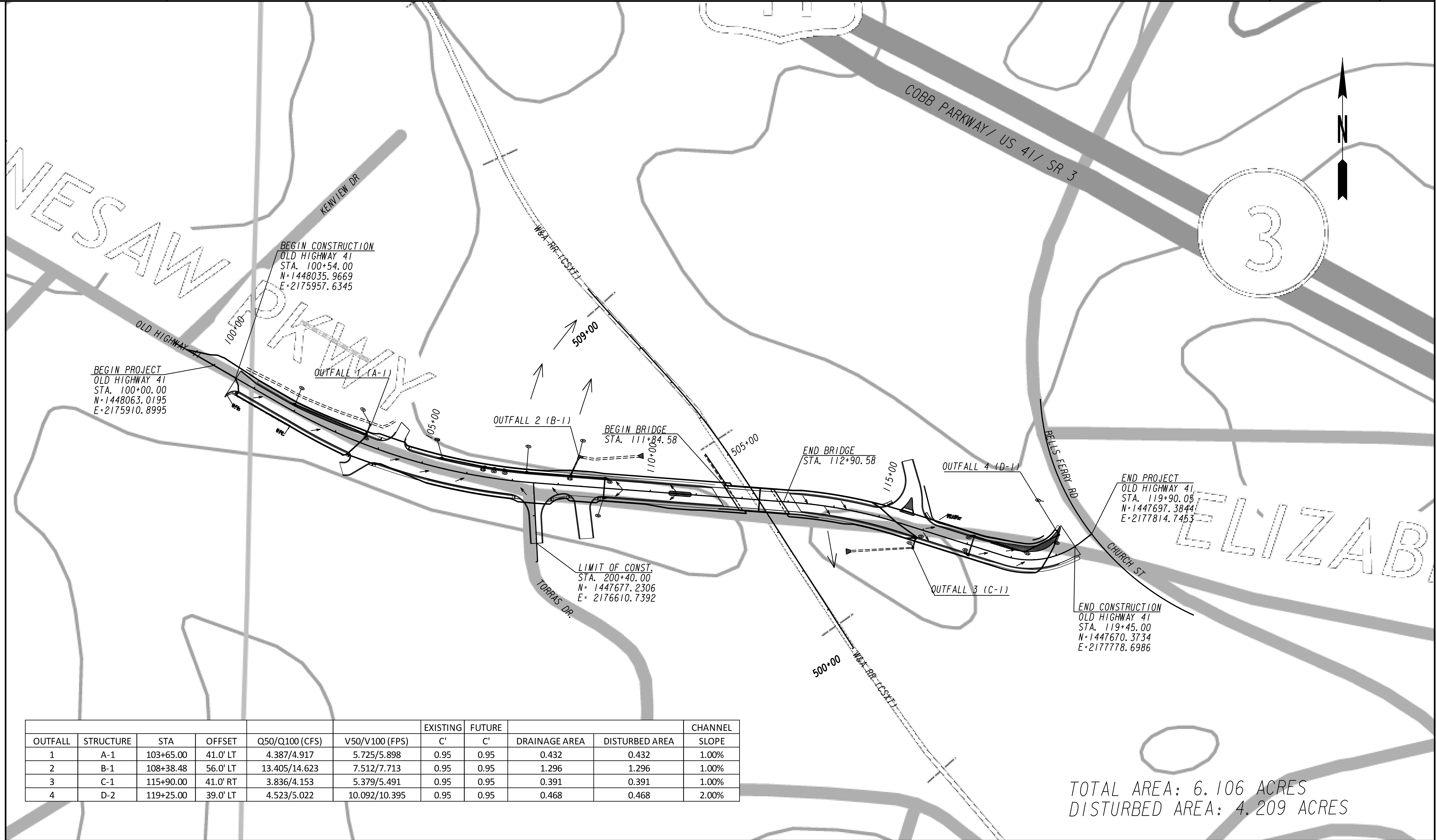
70	80	90	100
REVISION DATES			

**STAGING CROSS SECTIONS**  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
STAGE 2

CHECKED:		DATE:		DRAWING No.  19-0023
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		
VERIFIED:		DATE:		

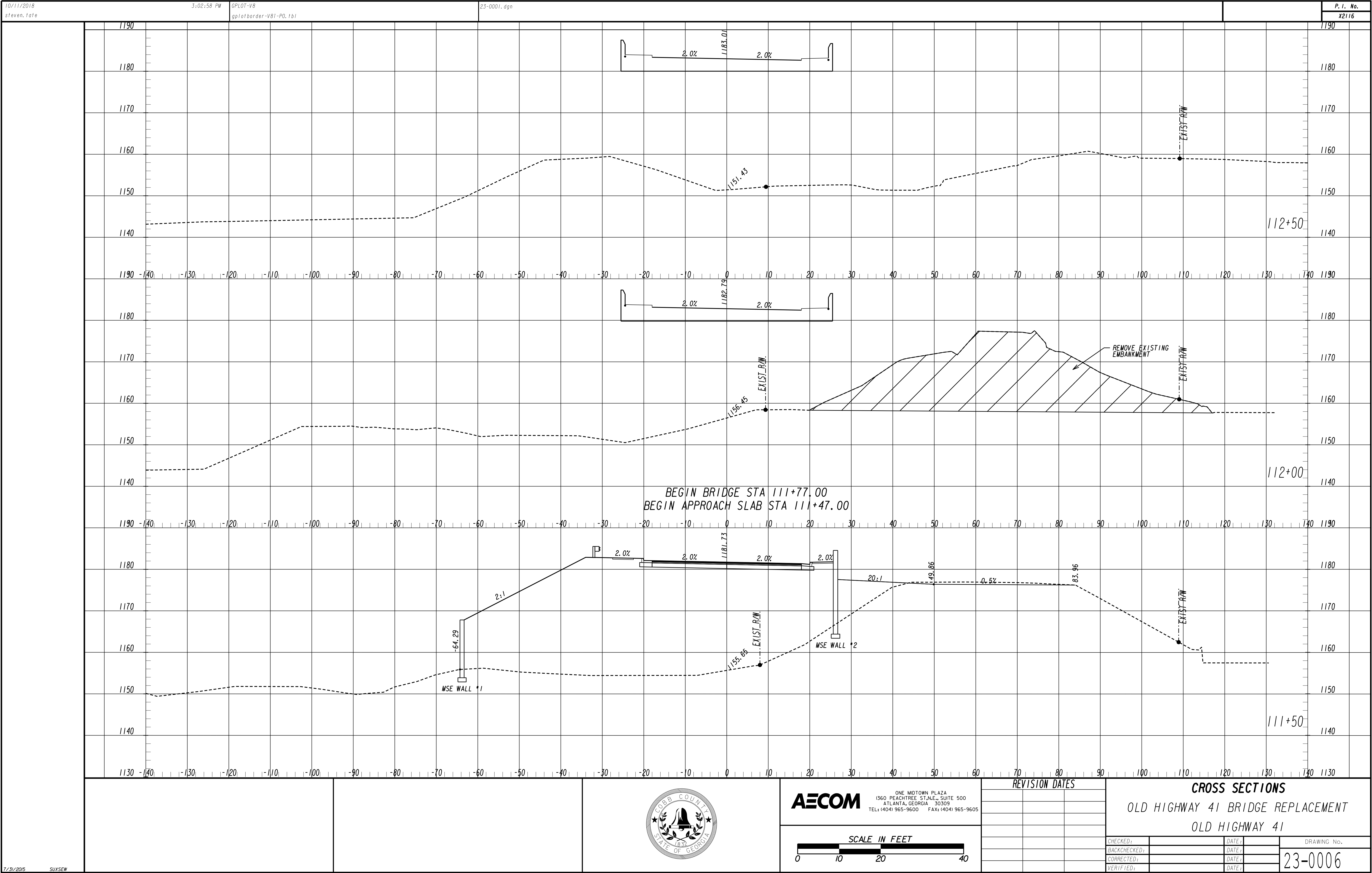






OUTFALL	STRUCTURE	STA	OFFSET	Q50/Q100 (CFS)	V50/V100 (FPS)	EXISTING C'	FUTURE C'	DRAINAGE AREA	DISTURBED AREA	CHANNEL SLOPE
1	A-1	103+65.00	41.0' LT	4.387/4.917	5.725/5.898	0.95	0.95	0.432	0.432	1.00%
2	B-1	108+38.48	56.0' LT	13.405/14.623	7.512/7.713	0.95	0.95	1.296	1.296	1.00%
3	C-1	115+90.00	41.0' RT	3.836/4.153	5.379/5.491	0.95	0.95	0.391	0.391	1.00%
4	D-2	119+25.00	39.0' LT	4.523/5.022	10.092/10.395	0.95	0.95	0.468	0.468	2.00%

TOTAL AREA: 6.106 ACRES  
DISTURBED AREA: 4.209 ACRES



**AECOM**  
ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

SCALE IN FEET  
0 10 20 40

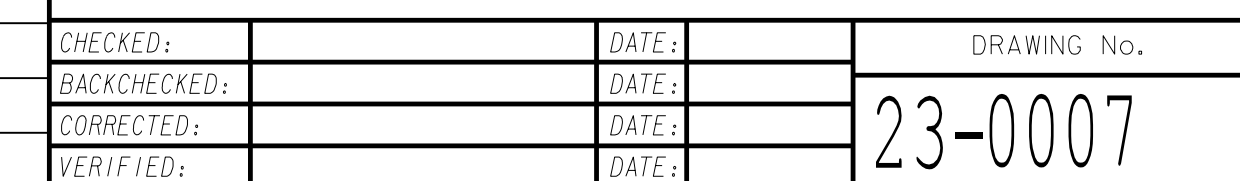
REVISION DATES

**CROSS SECTIONS**  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OLD HIGHWAY 41

CHECKED: DATE: DRAWING No.  
BACKCHECKED: DATE:  
CORRECTED: DATE:  
VERIFIED: DATE:

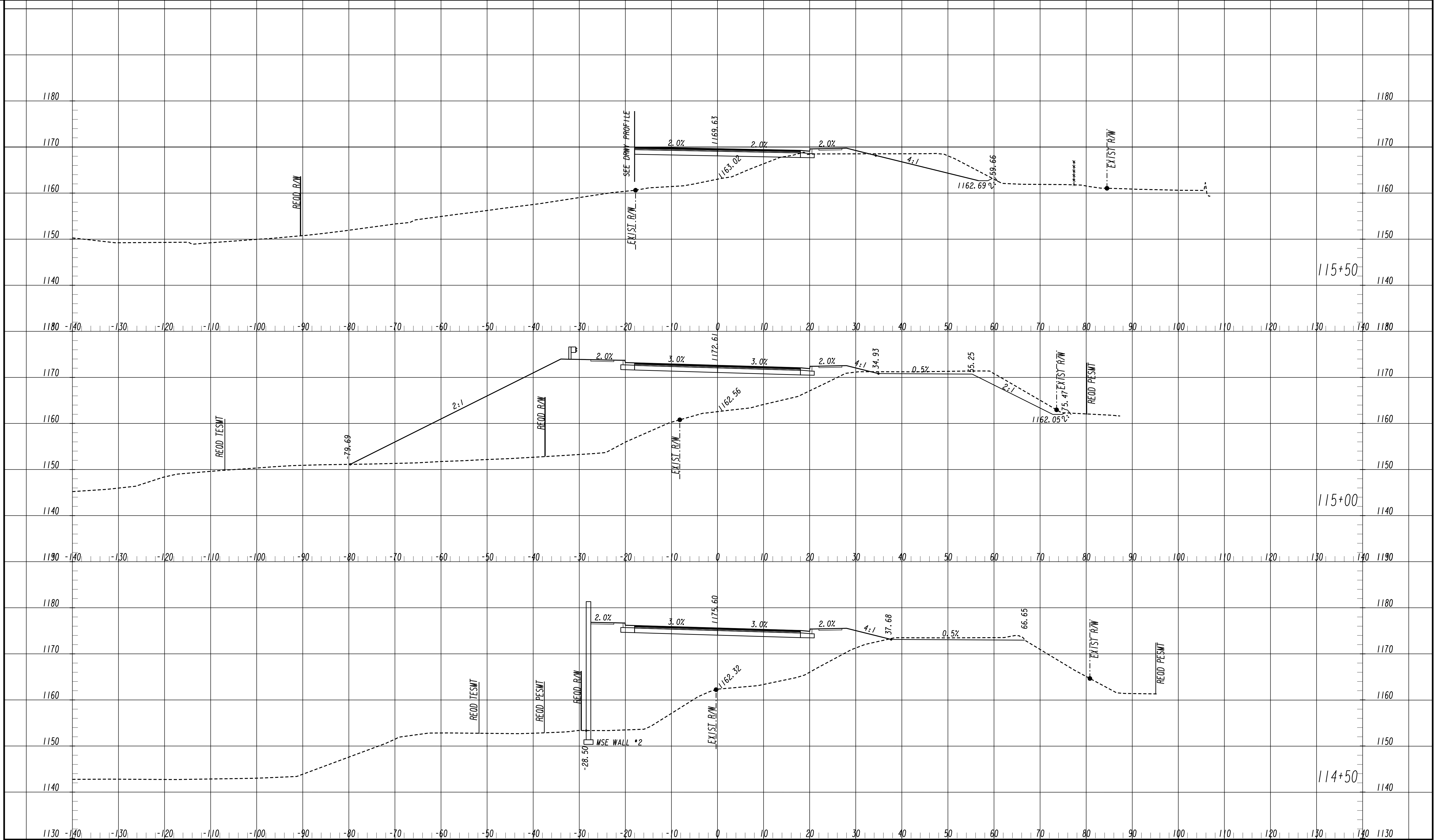
23-0006

7/31/2015 SUXSEW



SCALE IN FEET

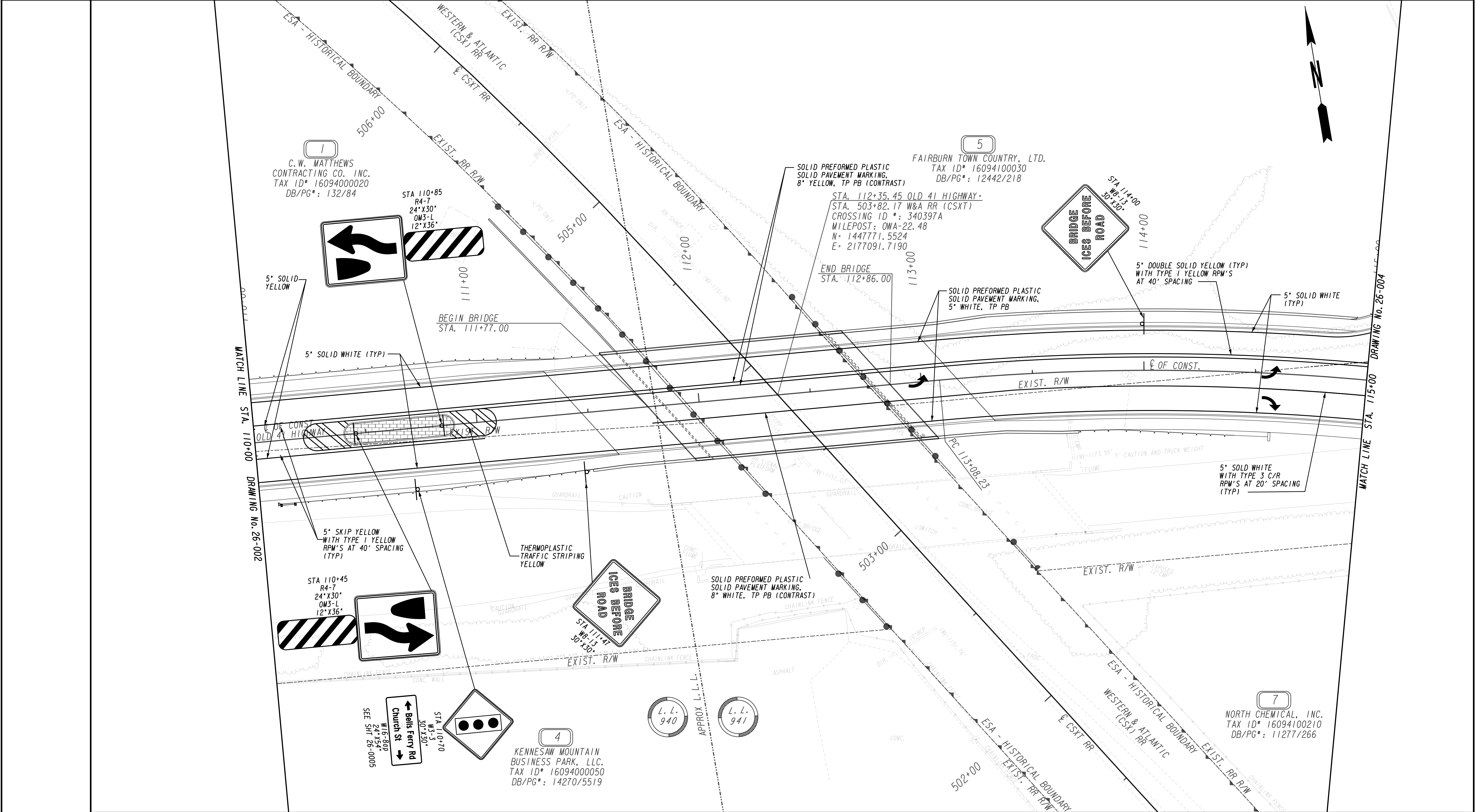
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CHECKED:		DATE:		DRAWING No.  24-0003
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		
VERIFIED:		DATE:		





4/28/2016  
GPLN

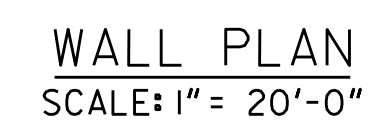
**AECOM**  
ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

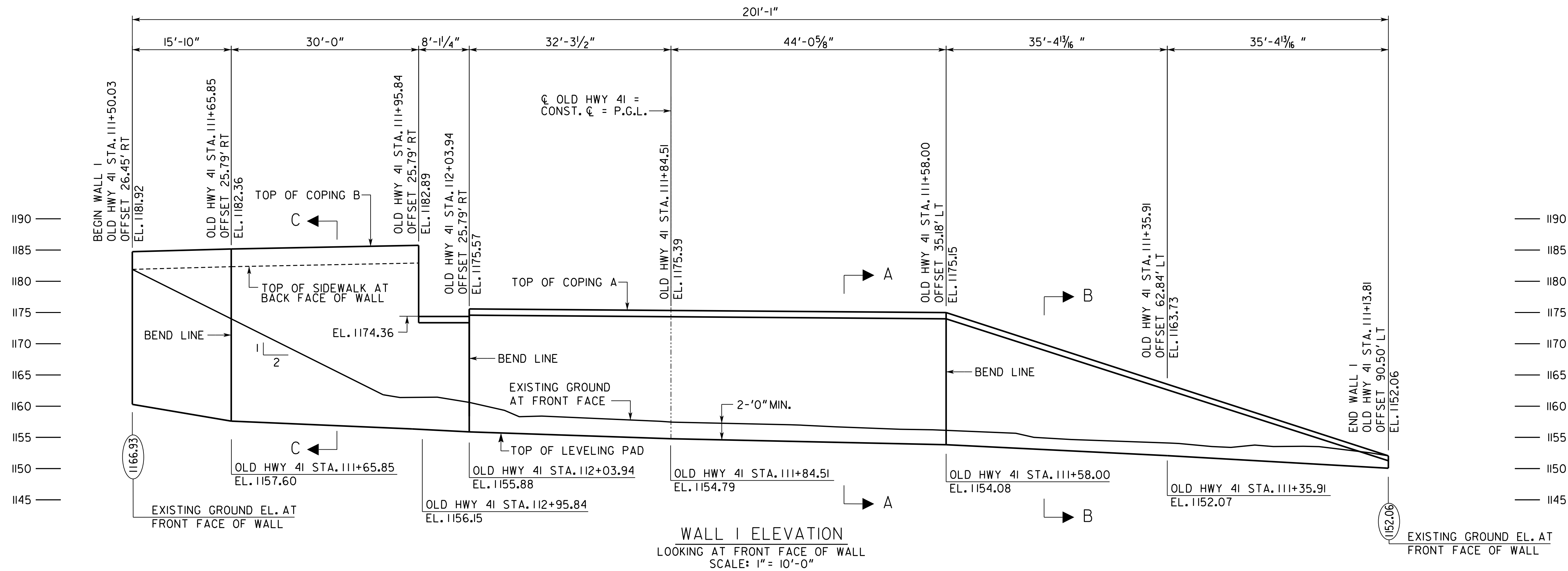
SCALE IN FEET  
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REVISION DATES	

SIGNING AND MARKING PLANS			
OLD 41 HIGHWAY BRIDGE REPLACEMENT			
CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

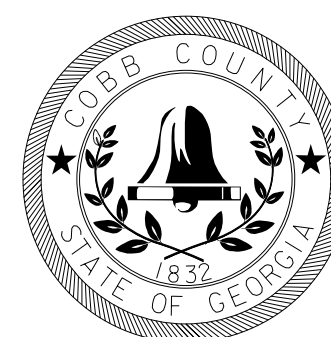
DRAWING No.  
**26-0003**





NOTES:

1. SEE DRAWING NO. 32-0006 FOR WALL SECTIONS.
2. STATIONS ARE MEASURED ALONG  $\mathcal{Q}$  CONST. OLD HIGHWAY 41.
3. ELEVATIONS SHOWN ARE AT THE TOP OF SIDEWALK AT THE BACK FACE OF WALL.
4. ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD.



**AECOM**  
ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605



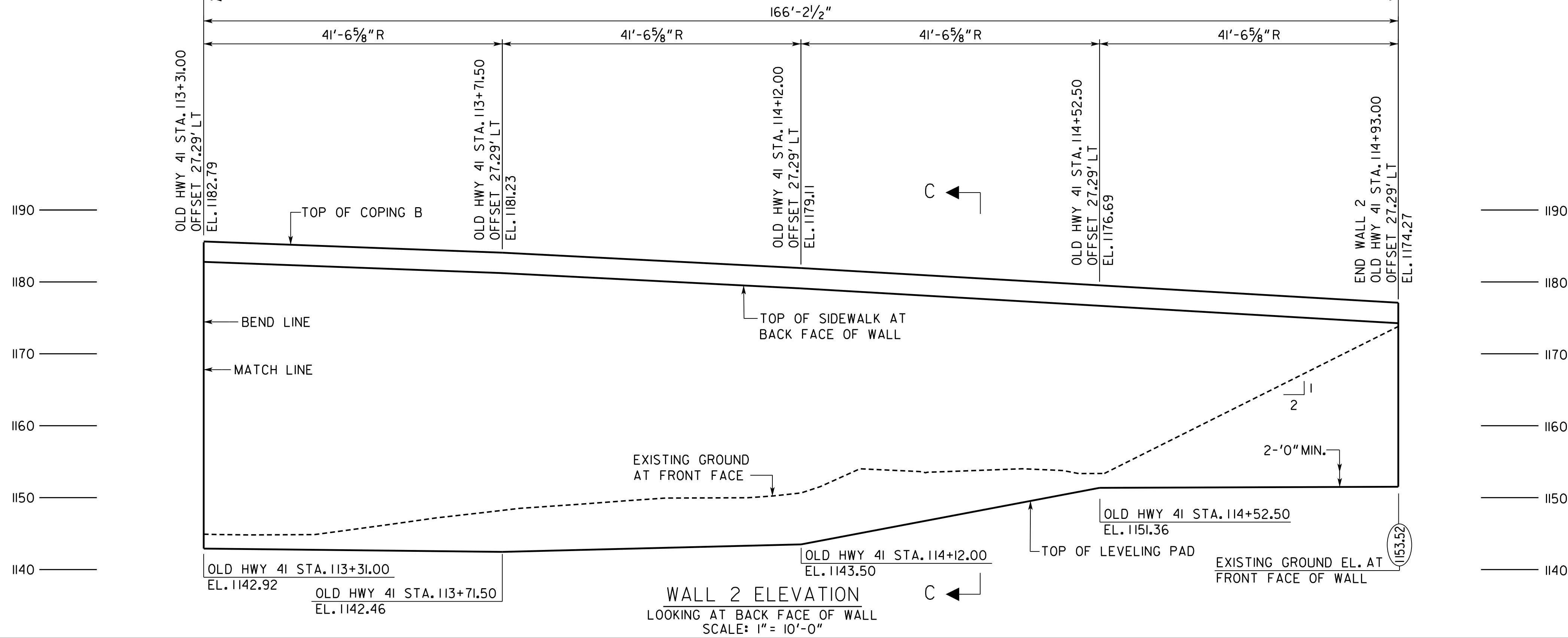
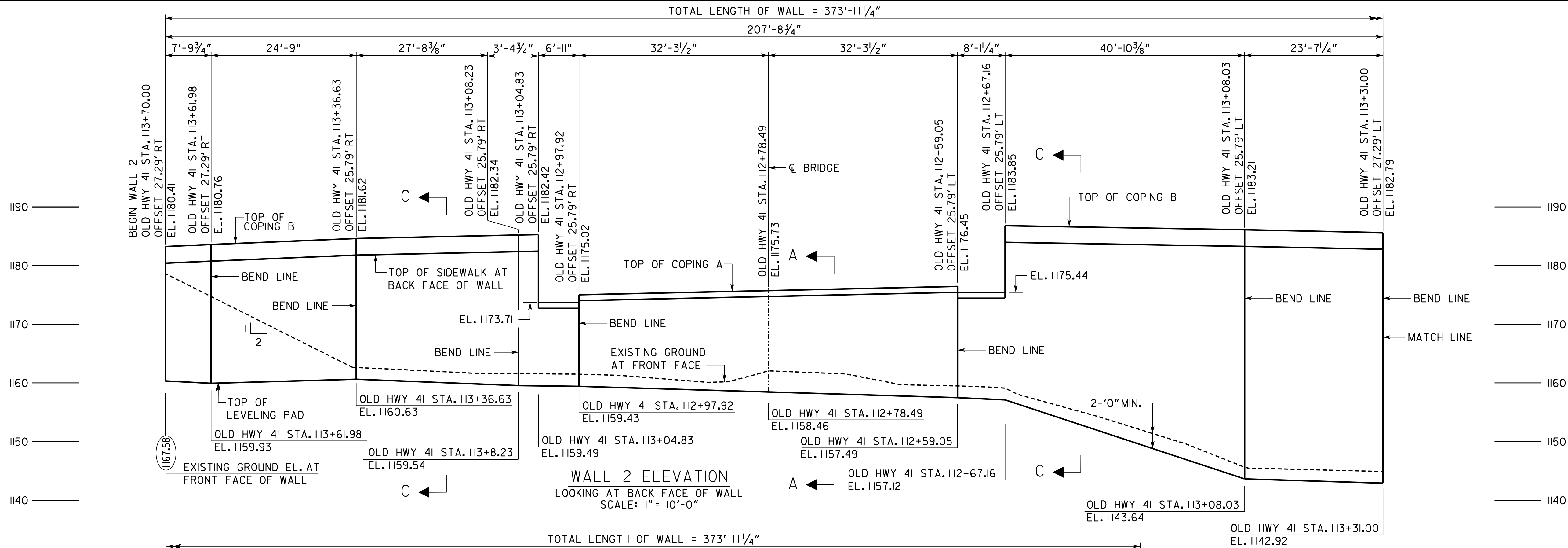
REVISION DATES


RETAINING WALL PLANS  
WALL NO. 1  
OLD HIGHWAY 41 BRIDGE REPLACEMENT

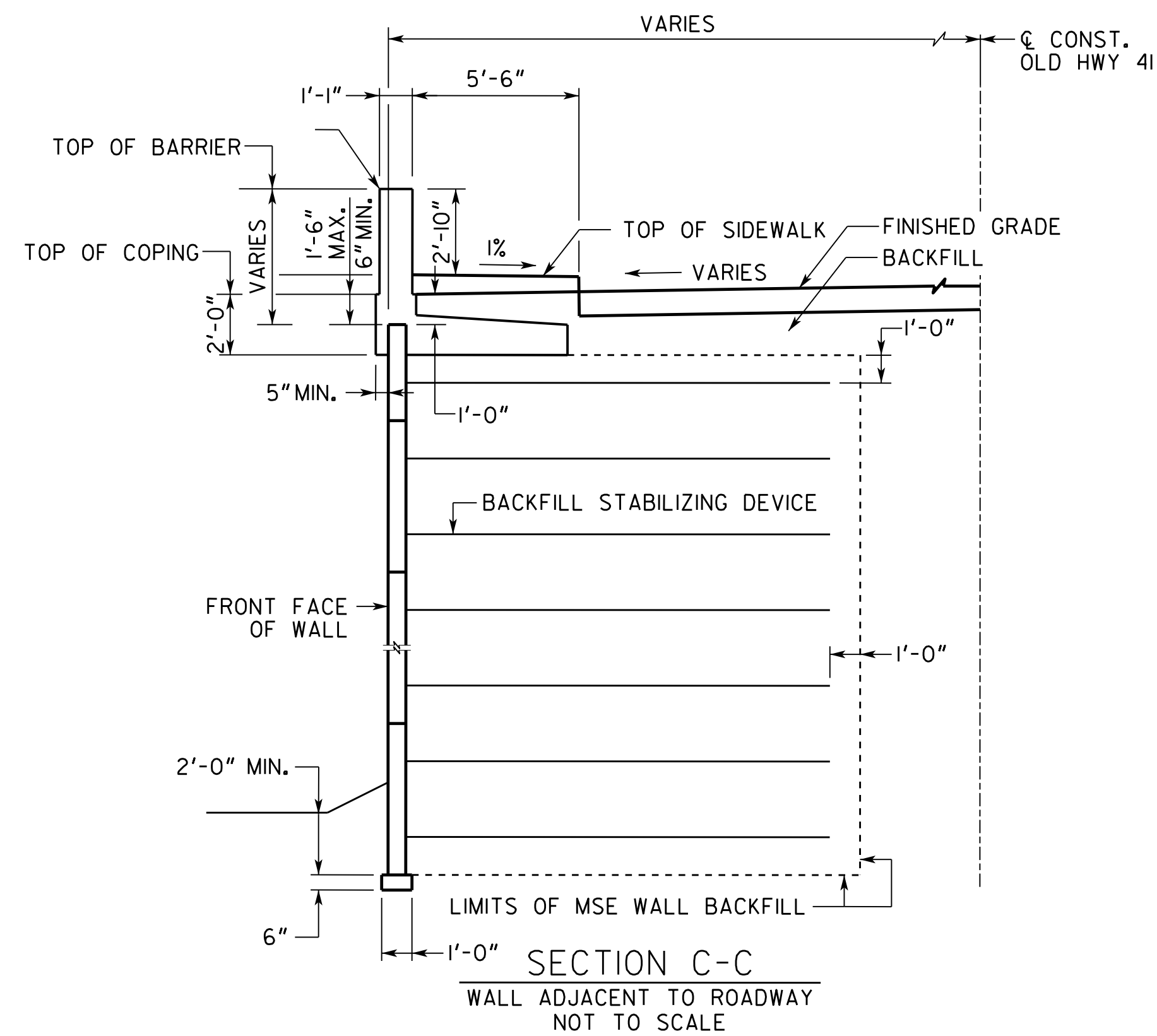
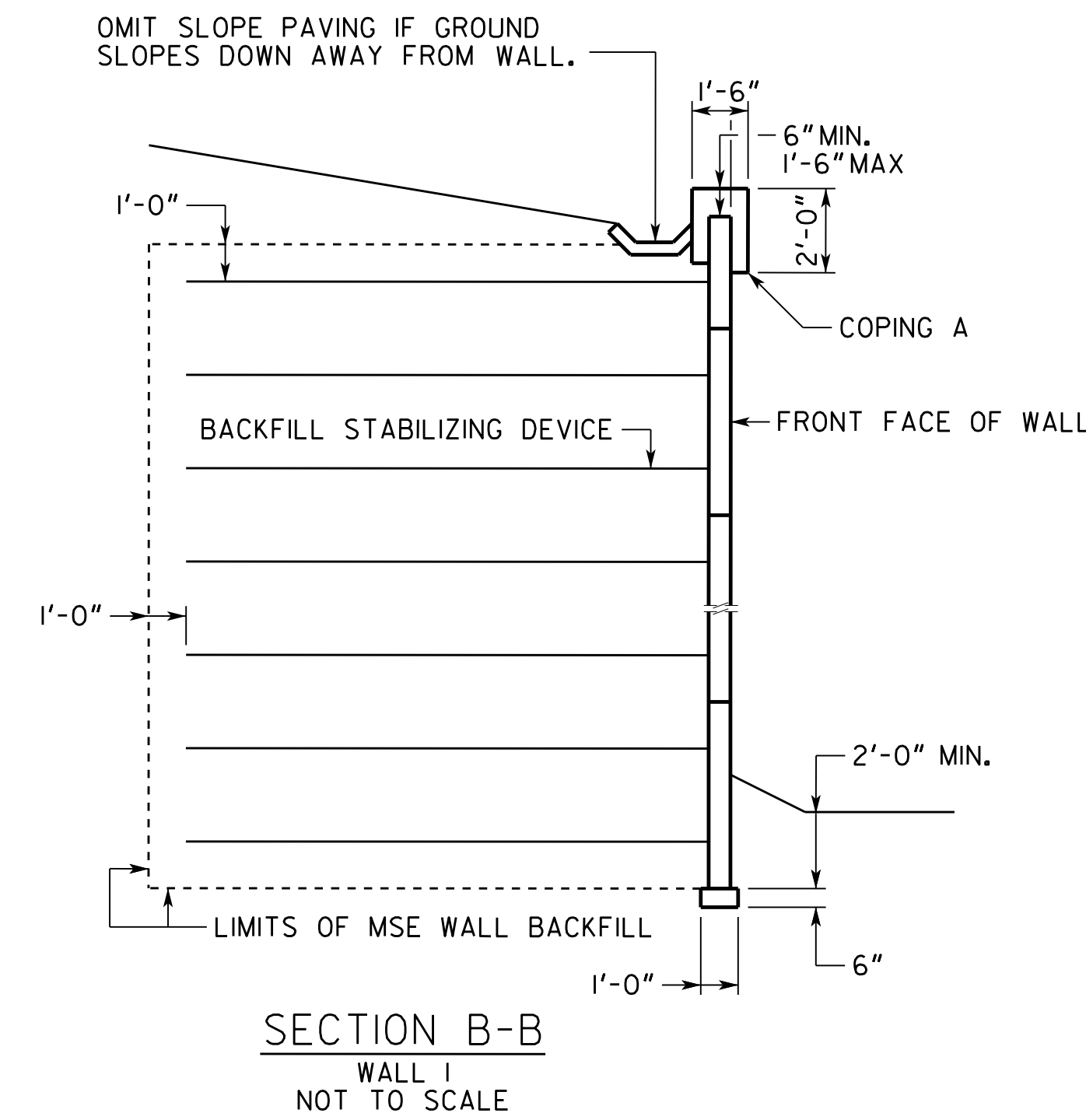
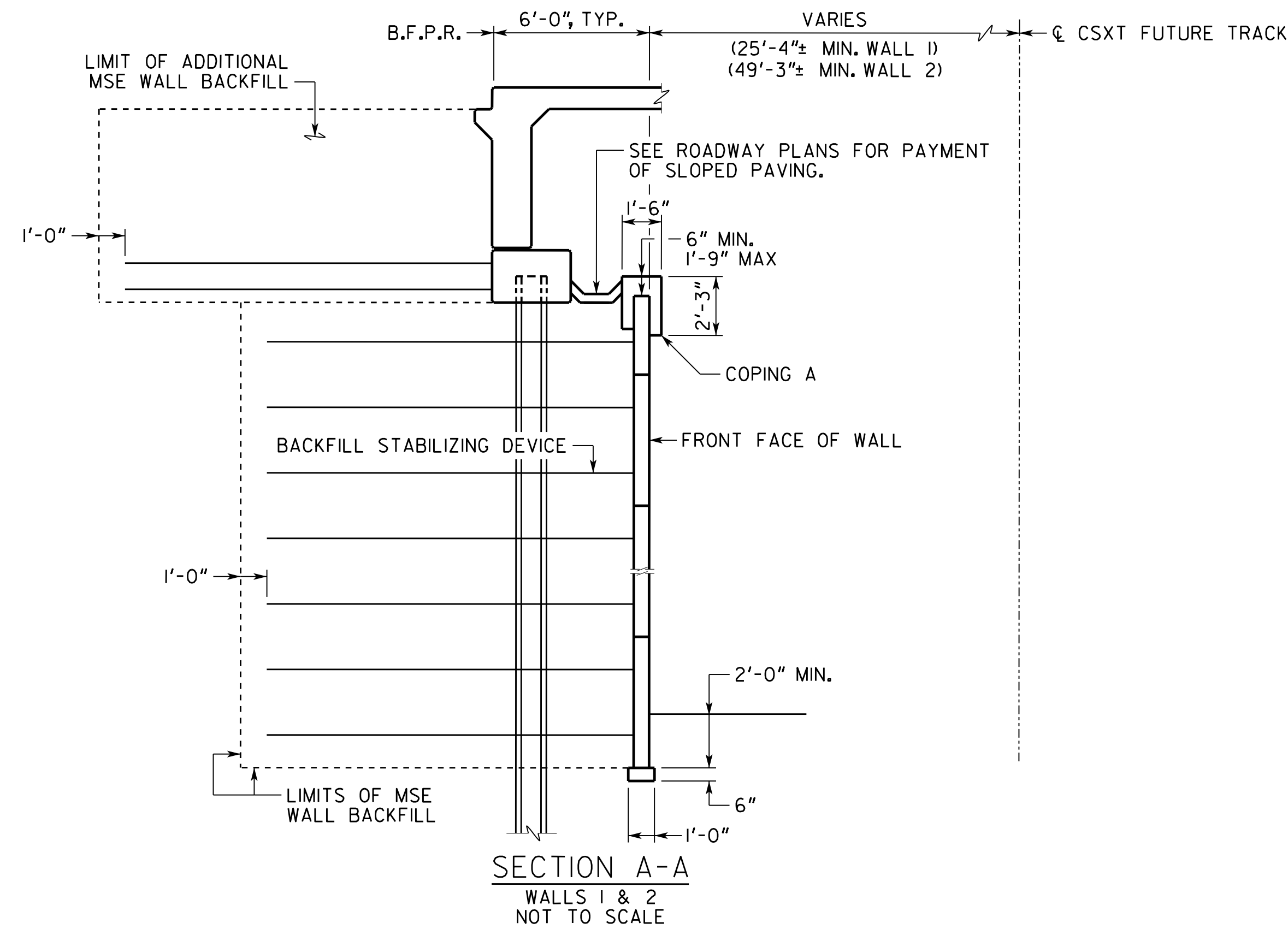
CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		
VERIFIED:		DATE:		

32-0003

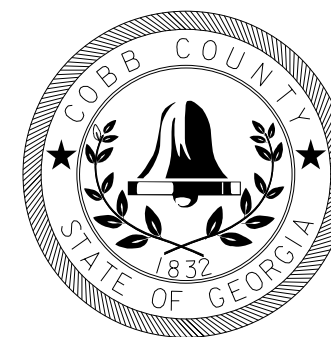




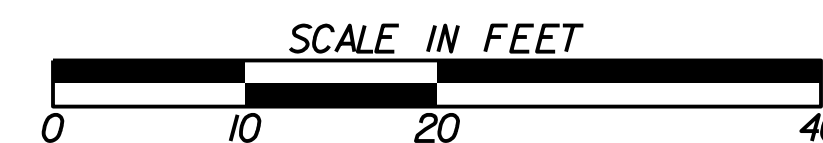
- NOTES:
- SEE DRAWING NO. 32-0006 FOR WALL SECTIONS.
  - R = RADIAL
  - STATIONS ARE MEASURED ALONG C CONST. OLD HIGHWAY 41.
  - ELEVATIONS ARE MEASURED TO TOP OF SIDEWALK AT THE BACK FACE OF WALL.
  - ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD.



- NOTES:
1. STATIONS AND OFFSETS ARE MEASURED ALONG  $\phi$  CONSTR. OLD 41 HIGHWAY.
  2. ELEVATIONS SHOWN ARE AT THE TOP OF COPING AT THE FRONT FACE OF WALL.
  3. ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD.



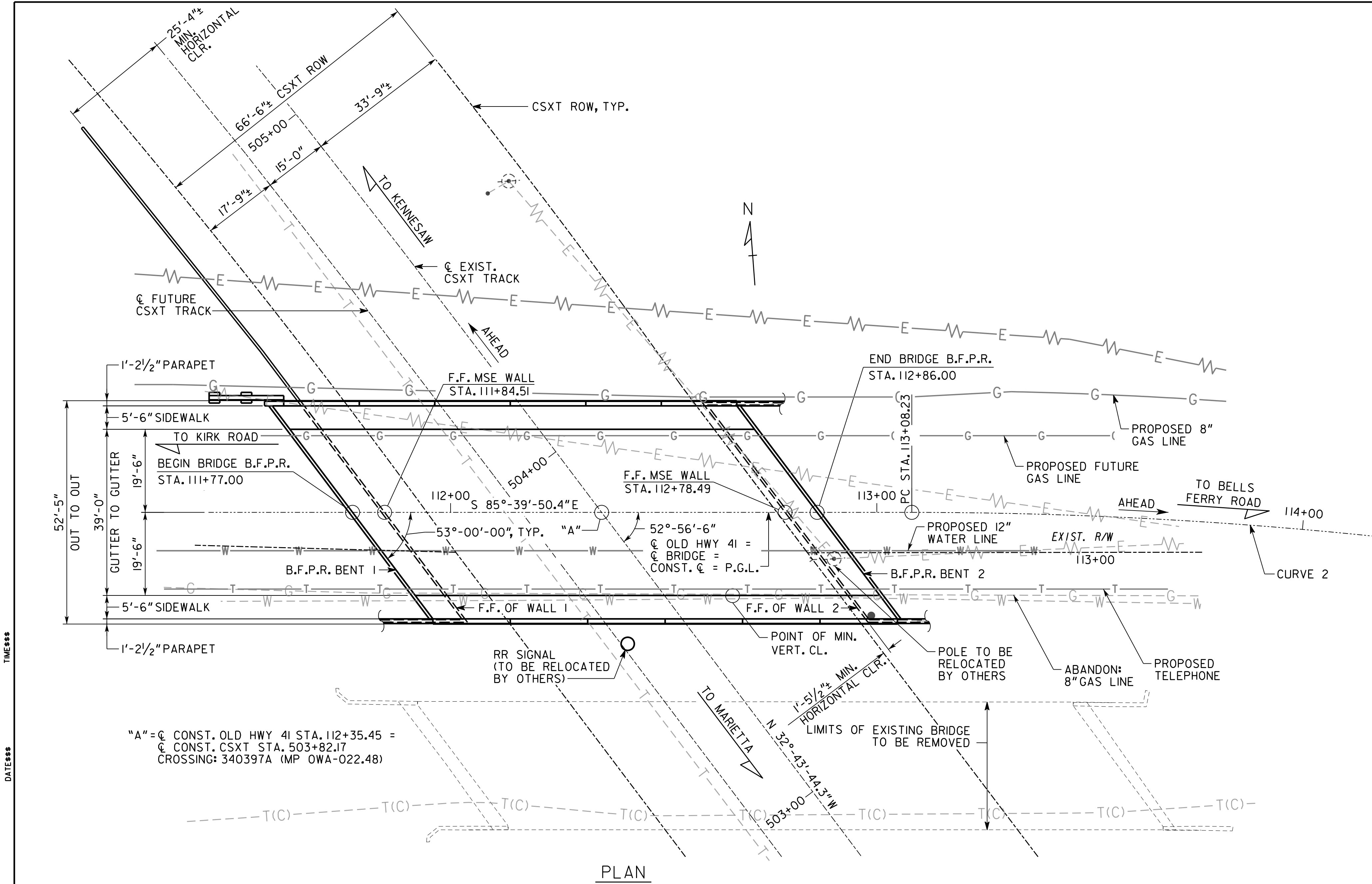
**AECOM**  
ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605



REVISION DATES

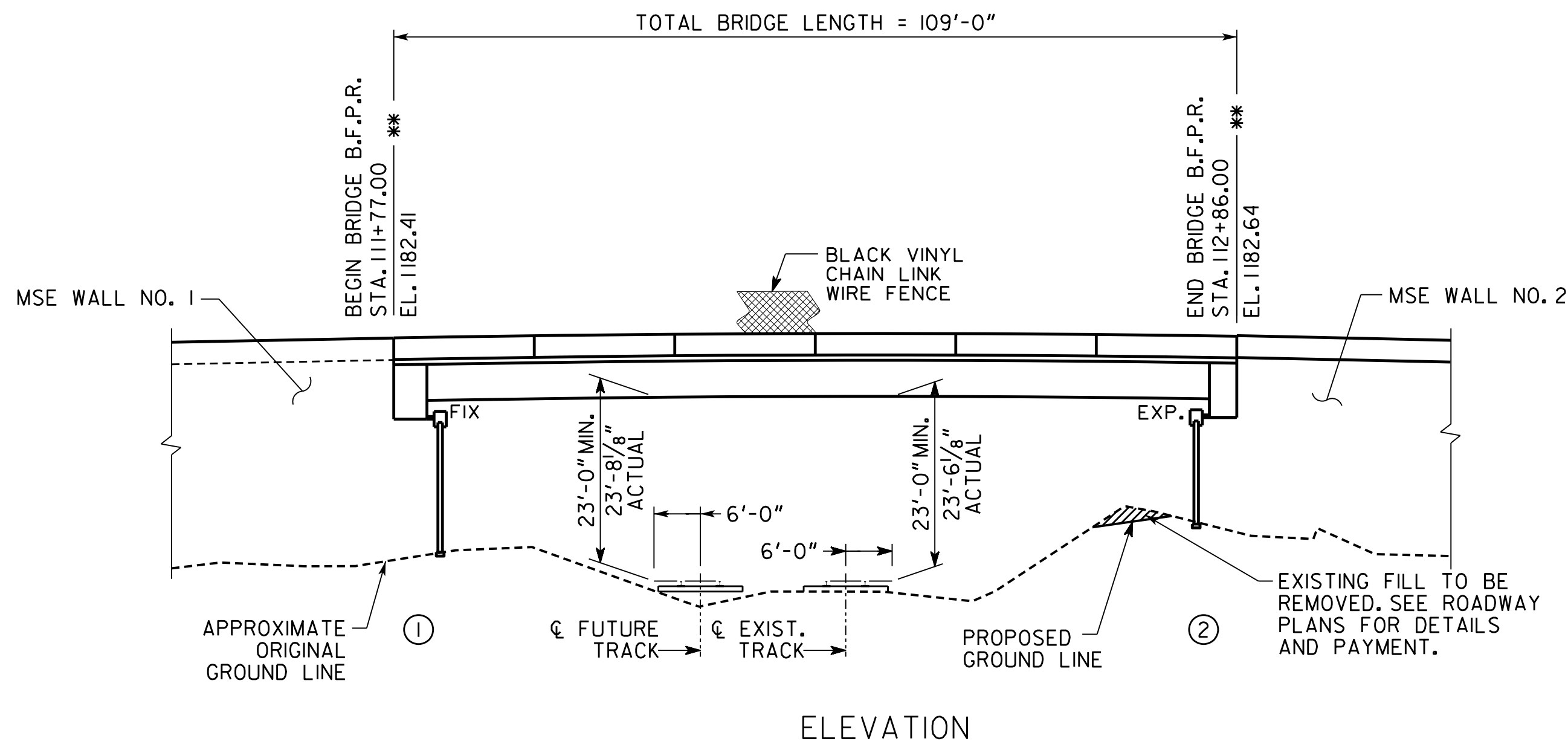

**RETAINING WALL PLANS**  
**MSE WALL DETAILS**  
OLD HIGHWAY 41 BRIDGE REPLACEMENT

CHECKED:	DATE:	DRAWING No.
BACKCHECKED:	DATE:	32-0006
CORRECTED:	DATE:	
VERIFIED:	DATE:	

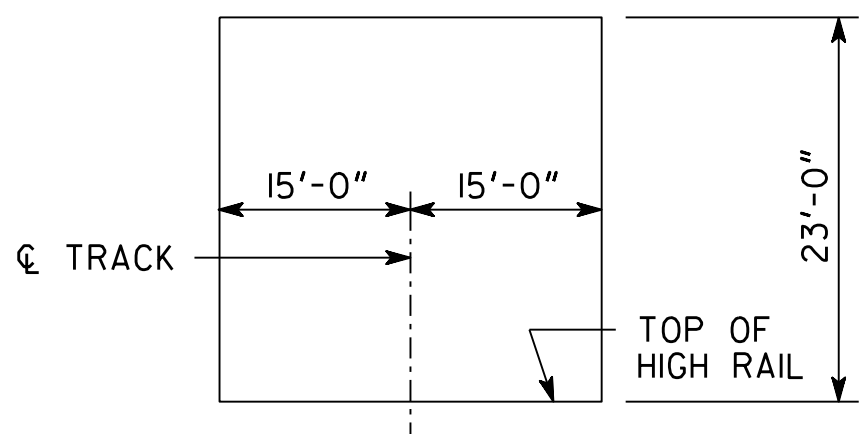


"A" =  $\phi$  CONST. OLD HWY 41 STA. 112+35.45 =  
 $\phi$  CONST. CSXT STA. 503+82.17  
CROSSING: 340397A (MP OWA-022.48)

PLAN



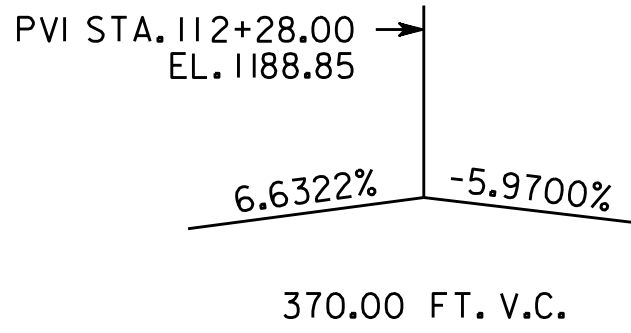
ELEVATION



CONSTRUCTION CLEARANCE DIAGRAM

P.I. STA. = 114+29.20  
 $\Delta$  = 13°-08'-37.1" RT  
D = 5°-27'-24.3"  
T = 120.97 FT.  
L = 240.87 FT.  
R = 1050.00 FT.  
S.E. = 3.0%

HORIZONTAL CURVE DATA  
OLD HWY 41  
CURVE 2



VERTICAL CURVE DATA  
OLD HWY 41

STATION	EXIST. TRACK	
	LT RAIL	RT RAIL
503+00	1153.30	1153.29
503+50	1153.15	1153.16
504+00	1153.13	1153.12
504+50	1152.88	1152.87
505+00	1152.65	1152.64

EXISTING TOP OF RAIL ELEVATIONS  
(AS SURVEYED)

- NOTES:
1. ALL BENTS ARE PARALLEL.
  2. END BENT PILES NOT SHOWN.
  3. \*\* STATIONS AND ELEVATIONS ARE AT INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R.

EXISTING BRIDGE SERIAL NO. 067-0161-0  
EXISTING BRIDGE I.D. NO. 067-09028M-000.04N  
PROJECT NO. X2116

BRIDGE NO. 1

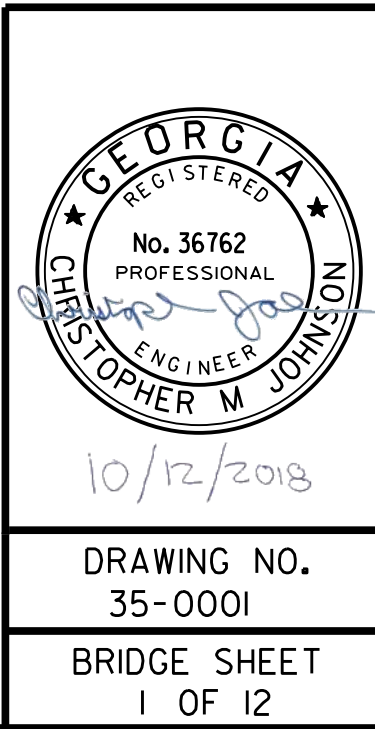
**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

PLAN AND ELEVATION  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY X2116

SCALE: 1" = 15'-0" SEPTEMBER 2018



DATE  
REVISIONS  
BY

DRAWING NO.  
35-0001

BRIDGE SHEET  
1 OF 12

DESIGNED  
AJB

CHECKED  
KEY/CMJ

REVIEWED  
COBB

APPROVED  
COBB

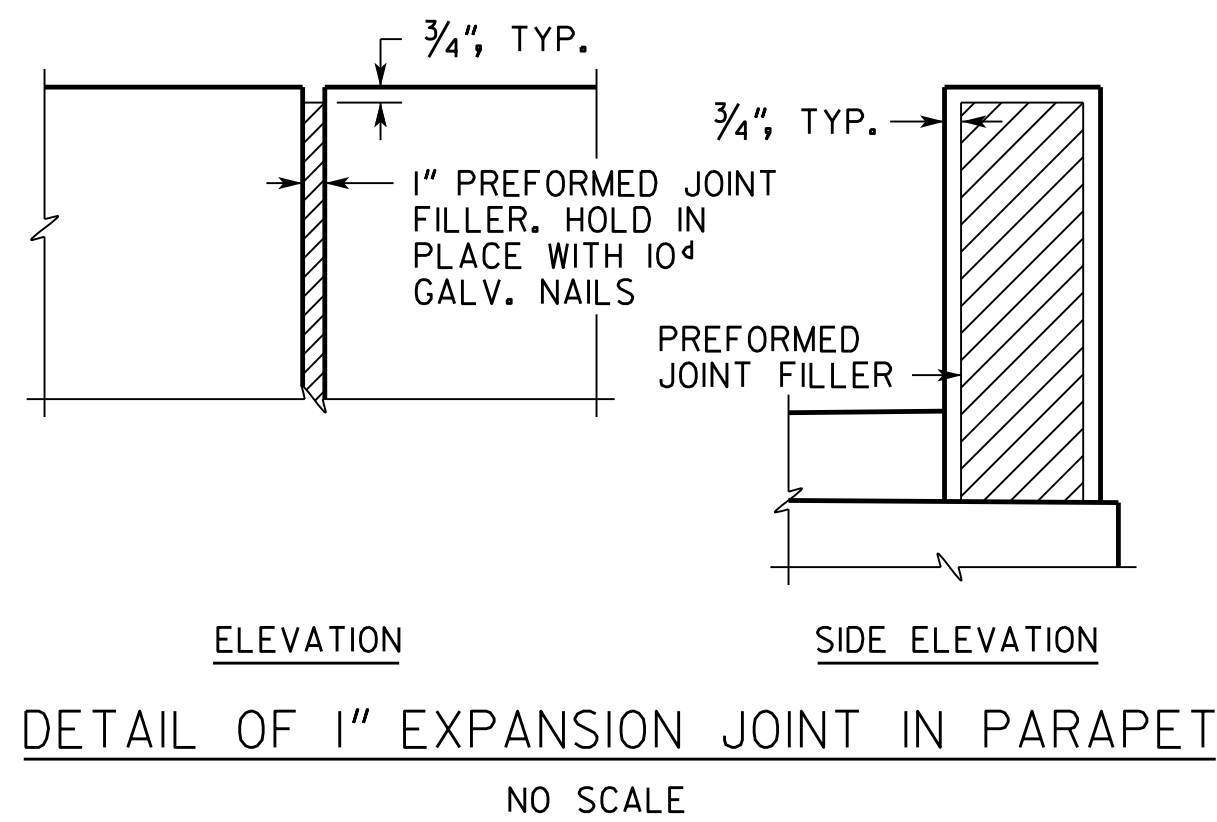
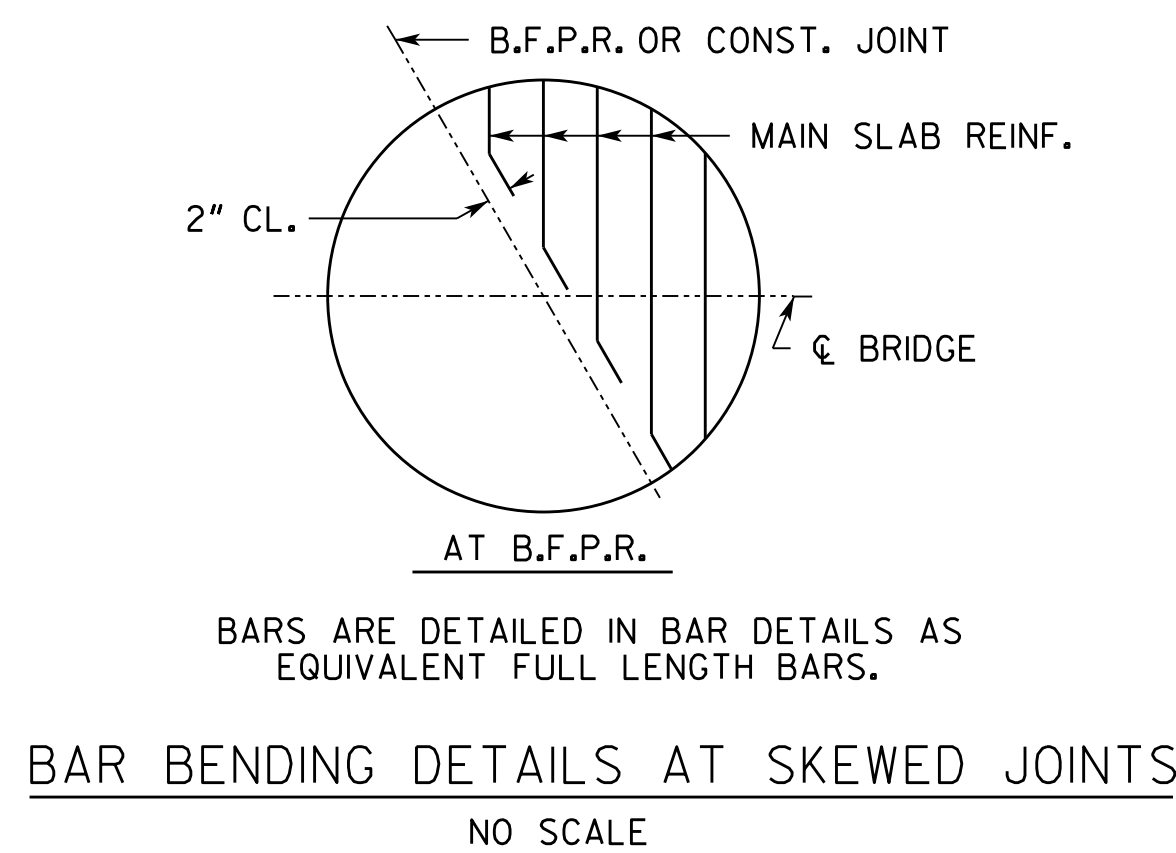
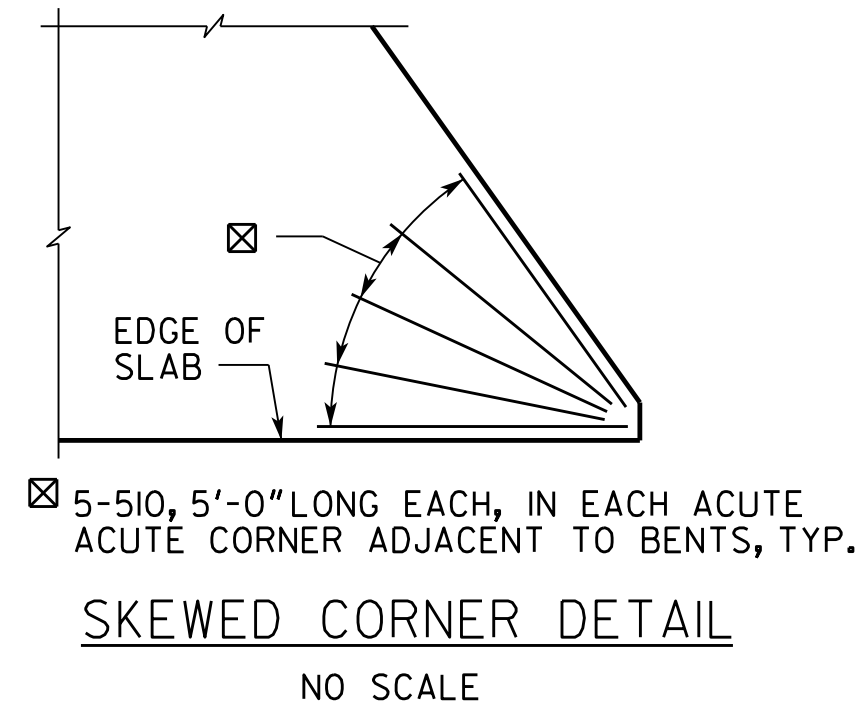
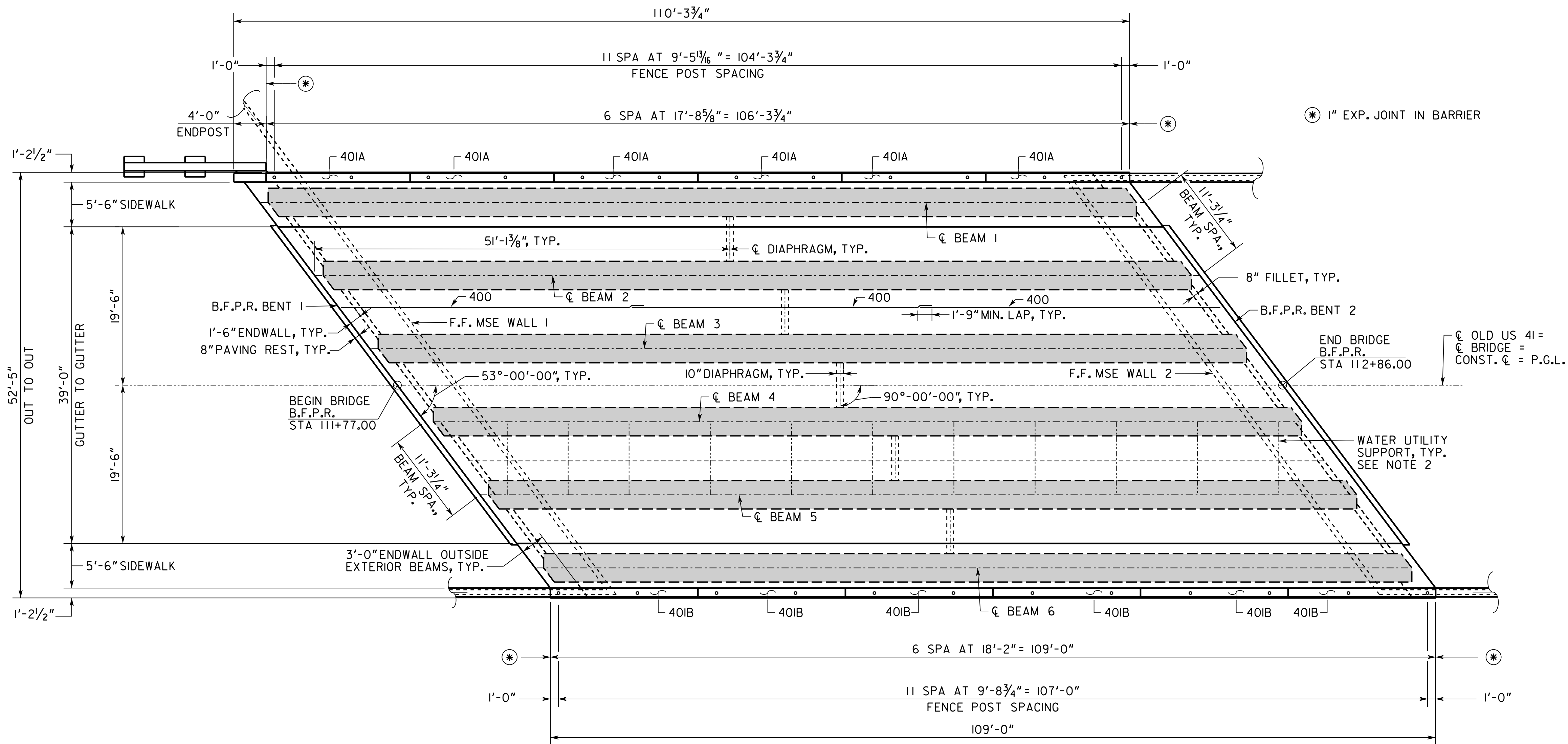
1 INCH WHEN PRINTED FULL SIZE

X.DGN

TIME

DATE

SUBS



SUPERSTRUCTURE QUANTITIES	
ITEMS	TOTAL
CU YD SUPERSTR CONCRETE, CLASS D	249
LB BAR SUPERSTR REINFORCEMENT STEEL	47,823

NOTE: END POST CONCRETE AND BAR REINFORCEMENT STEEL INCLUDED IN SUPERSTRUCTURE QUANTITIES.

- NOTES:
- SEE GA STANDARD 9017K FOR DETAILS OF JOINT AT APPROACH SLAB.
  - SEE PSC BEAMS SHEET SHEET FOR THE SPACING OF WATER HANGERS.

BRIDGE NO. 1

**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

DECK PLAN  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY X2116

SCALE: 3/8" = 1'-0" (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

DRAWING NO.  
35-0003

BRIDGE SHEET  
3 OF 12

DESIGNED  
AJB

DRAWN  
AJB

CHECKED  
KEY/CMJ

DESIGN GROUP  
BRIDGE

REVIEWED  
COBB

APPROVED  
COBB

1 INCH WHEN PRINTED FULL SIZE

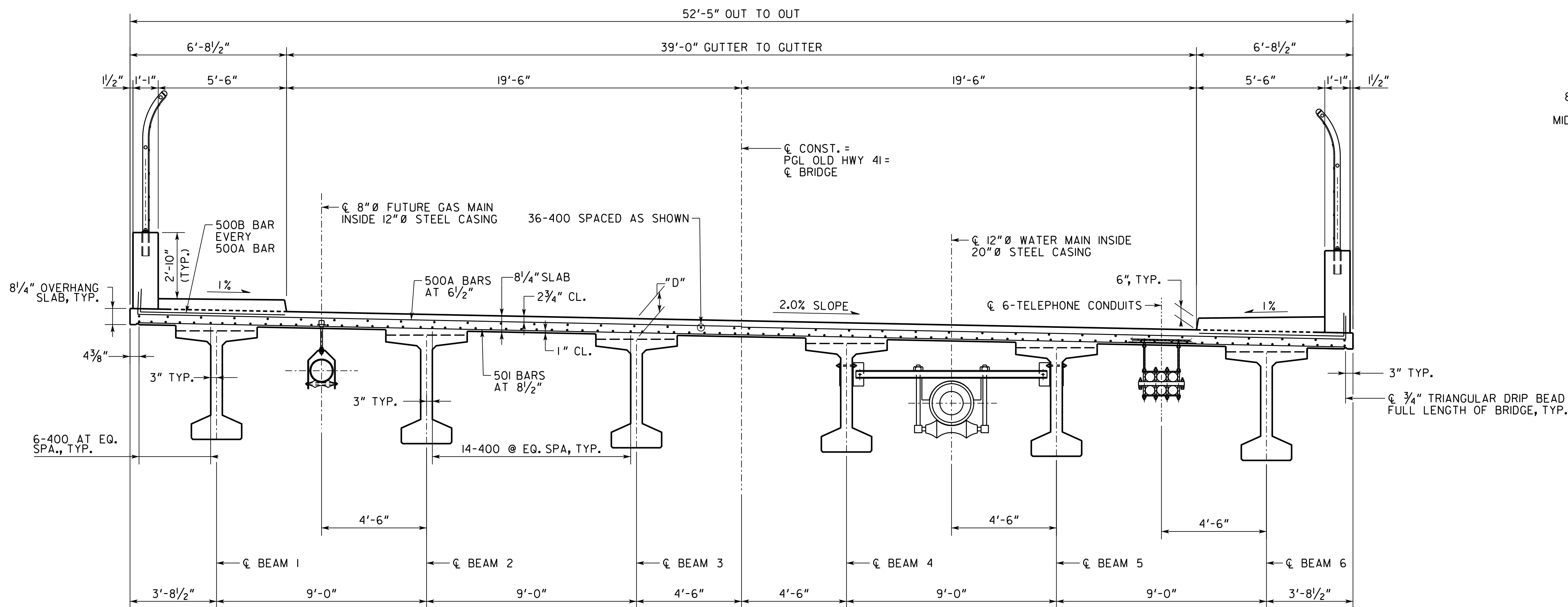
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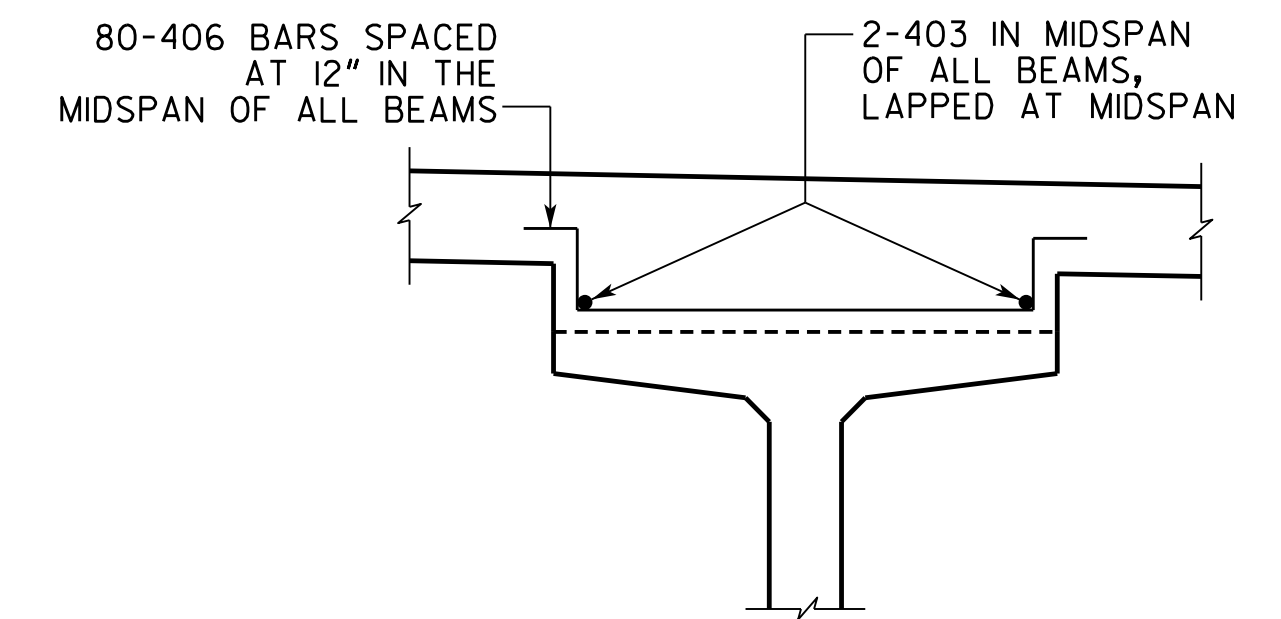
TIME

DATE

SUBS

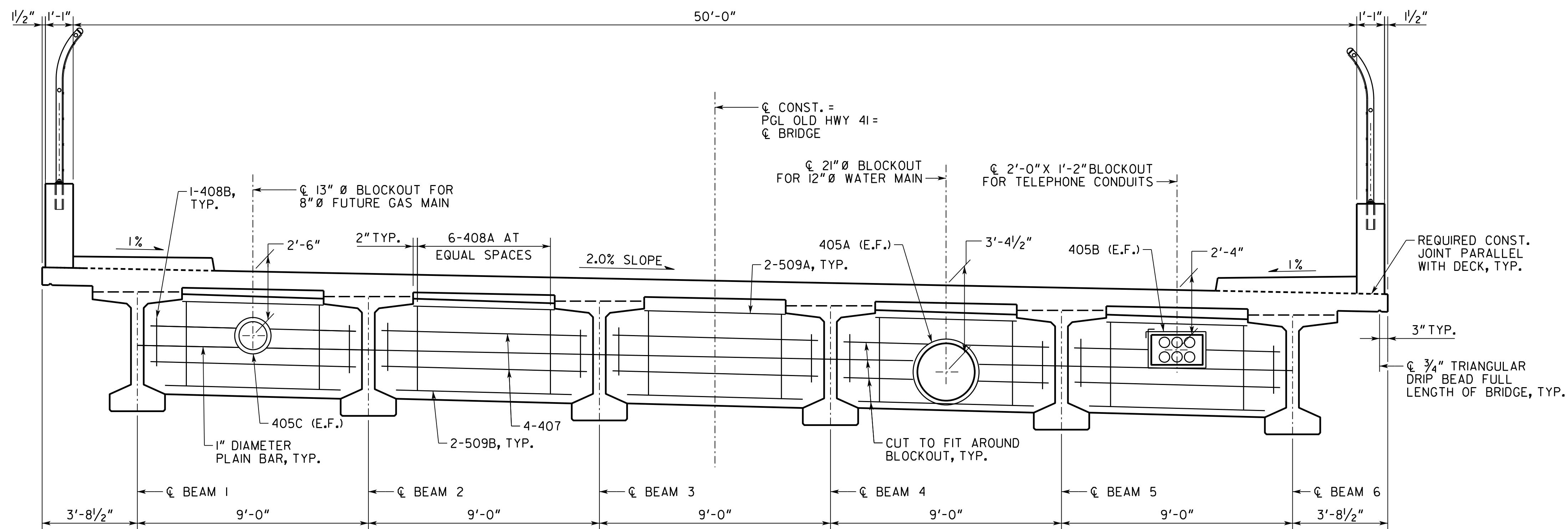


SECTION THRU SLAB  
LOOKING AHEAD



REBAR DETAIL IN COPING  
NO SCALE

MIN. LAP	
#4 BAR	= 1'-9"
#5 BAR	= 2'-2"
#8 BAR	= 4'-6"



SECTION THRU DIAPHRAGM  
LOOKING AHEAD

#### NOTES:

- DIMENSION "D" IS MEASURED FROM TOP OF SLAB TO TOP OF BEAMS AT CENTERLINE OF BEARING. VARY "D" BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE. MAINTAIN A CONSTANT SLAB THICKNESS 8 1/4" BETWEEN BEAMS AND AT OVERHANGS.  
"D" = 10 5/8" ALL BEAMS
- MAINTAIN 2" CL. ON ALL REINFORCEMENT UNLESS OTHERWISE NOTED.
- SEE MISCELLANEOUS DETAILS SHEET FOR DETAILS NOT FOUND ON THIS SHEET.

BRIDGE NO. 1

# AECOM

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

DECK SECTIONS  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY

X2116

SCALE: 3/8" = 1'-0" (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

DRAWING NO.  
35-0004

BRIDGE SHEET  
4 OF 12

DATE

REVISIONS

BY

DESIGNED  
AJB

CHECKED  
KEY/CMJ

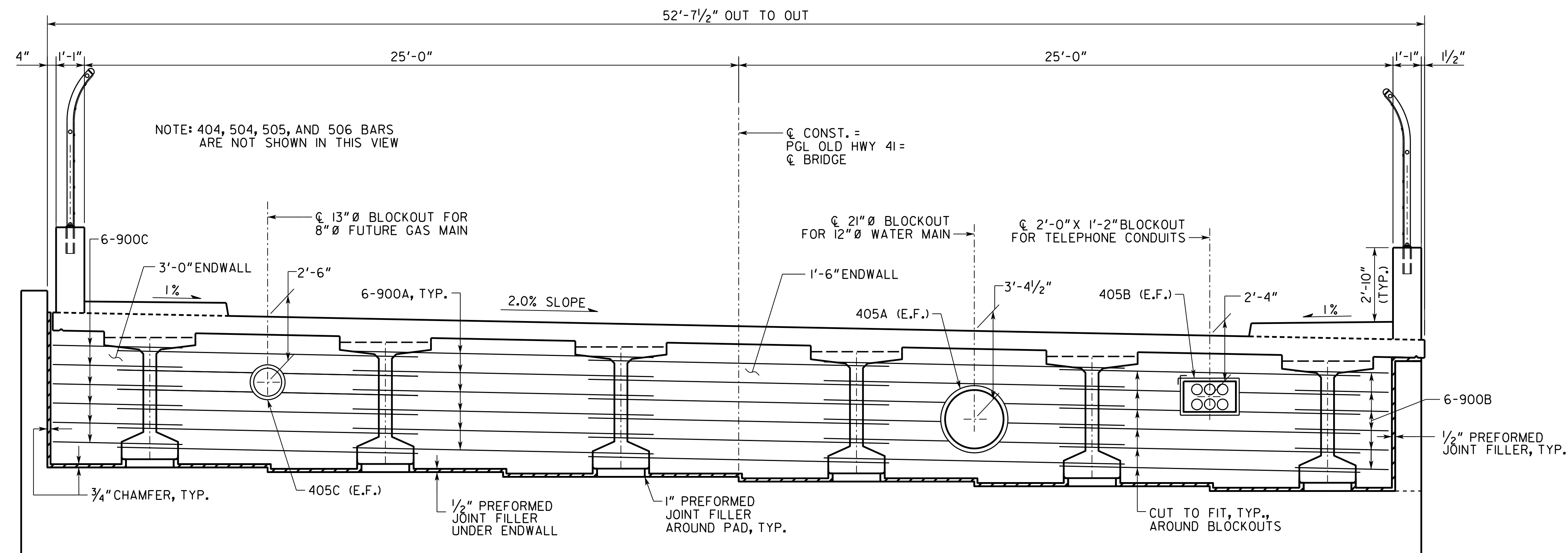
DESIGN GROUP  
BRIDGE

REVIEWED  
COBB

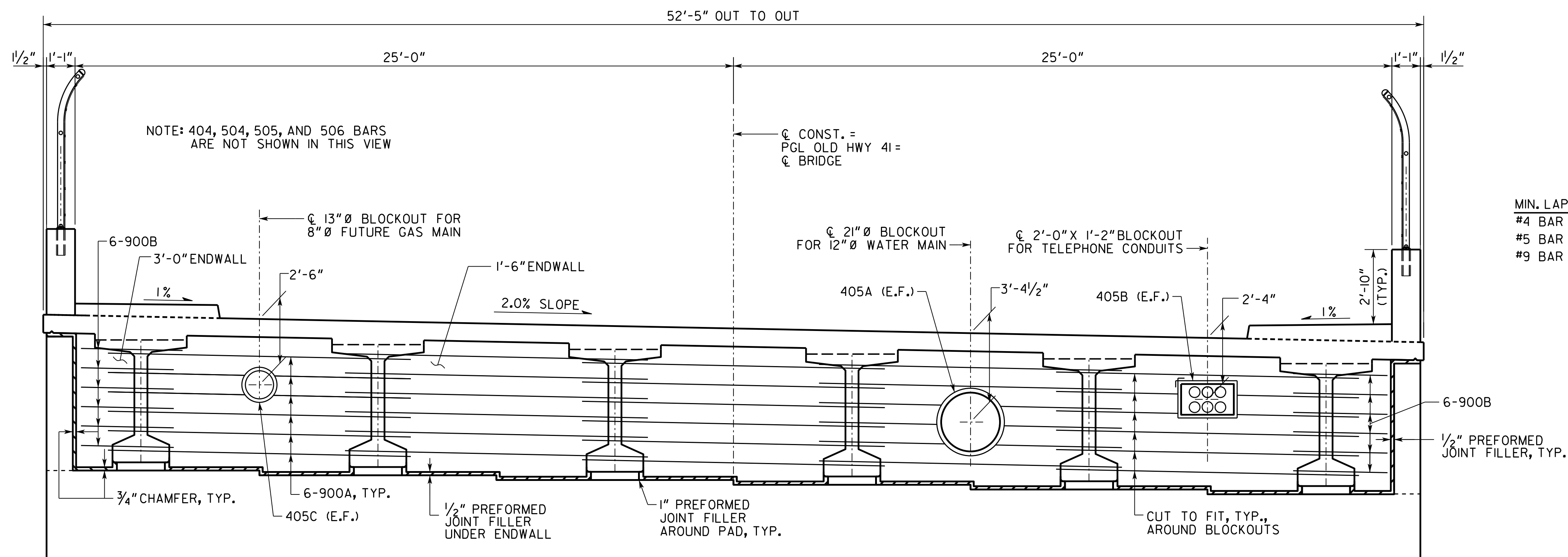
APPROVED  
COBB

1 INCH WHEN PRINTED FULL SIZE

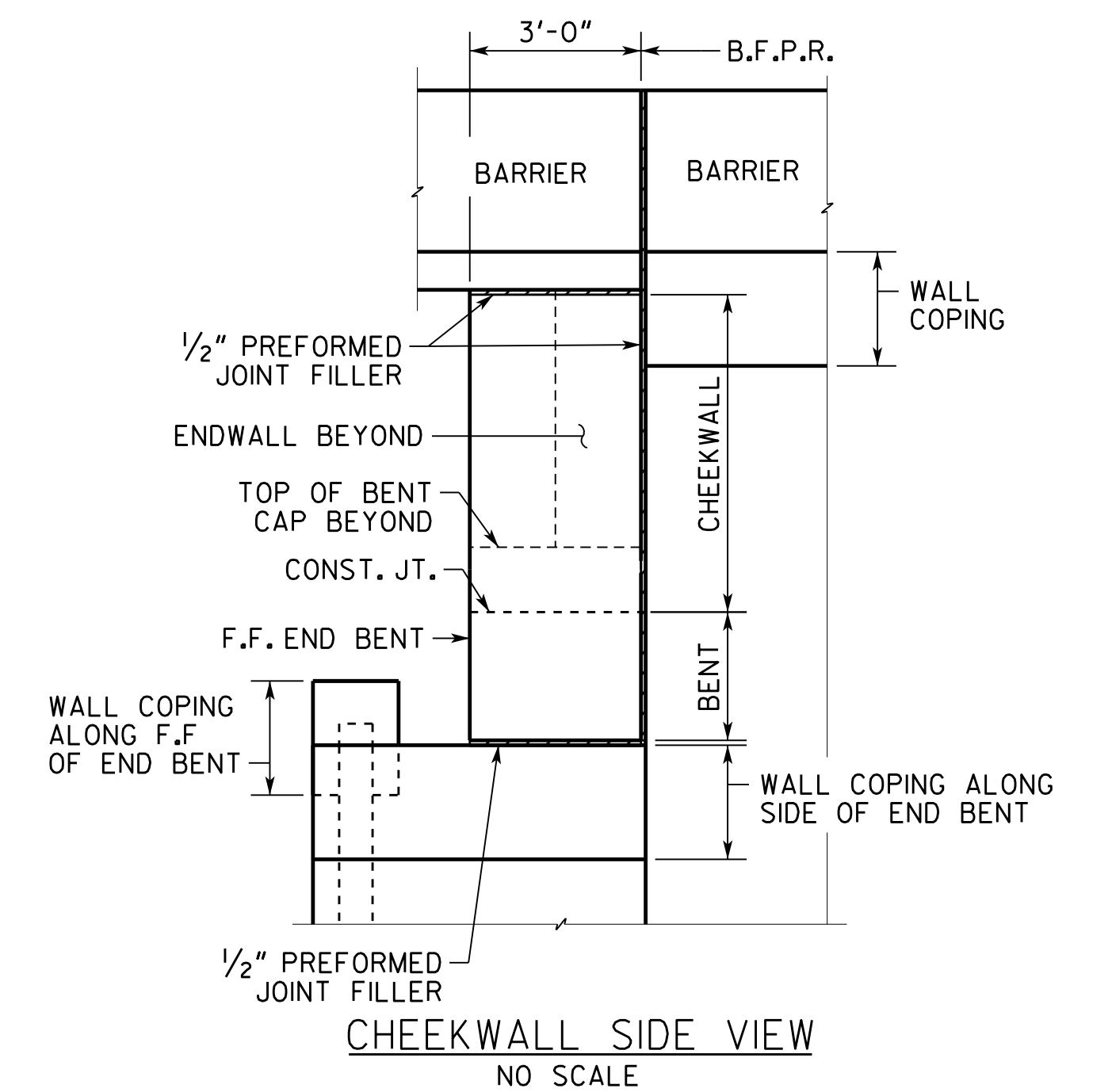
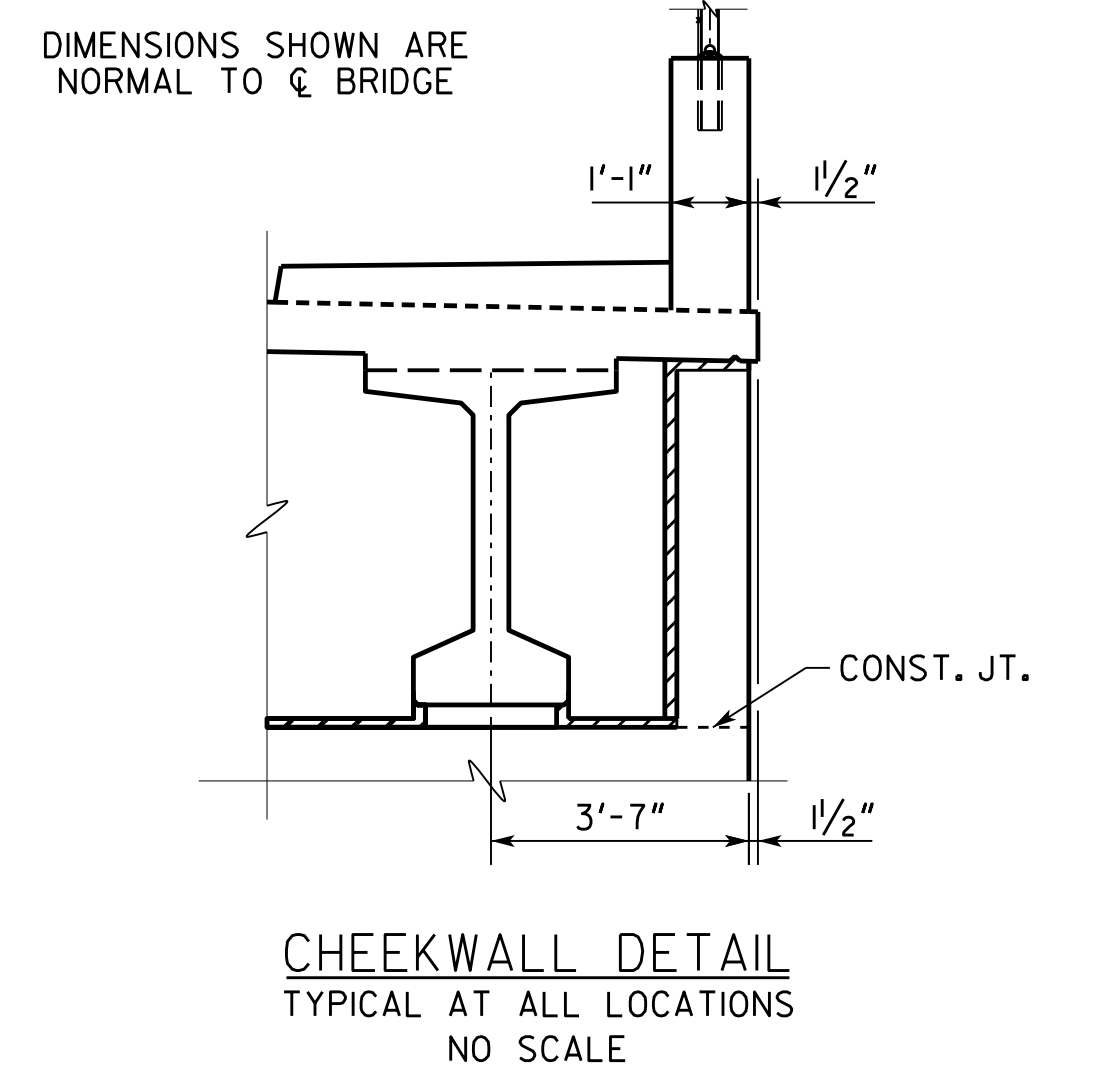
X.DGN



SECTION THRU ENDWALL  
BENT 1 SHOWN, LOOKING AHEAD



SECTION THRU ENDWALL  
BENT 2 SHOWN, LOOKING AHEAD



MIN. LAP	
#4 BAR	= 1'-9"
#5 BAR	= 2'-2"
#9 BAR	= 5'-4"

- NOTES:
1. MAINTAIN 2" CL. ON ALL REINFORCEMENT UNLESS OTHERWISE NOTED.
  2. SEE MISCELLANEOUS DETAILS SHEET FOR DETAILS NOT FOUND ON THIS SHEET.

BRIDGE NO. 1

**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

DECK SECTIONS  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY X2116

SCALE: 3/8" = 1'-0" (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

DRAWING NO.  
35-0005

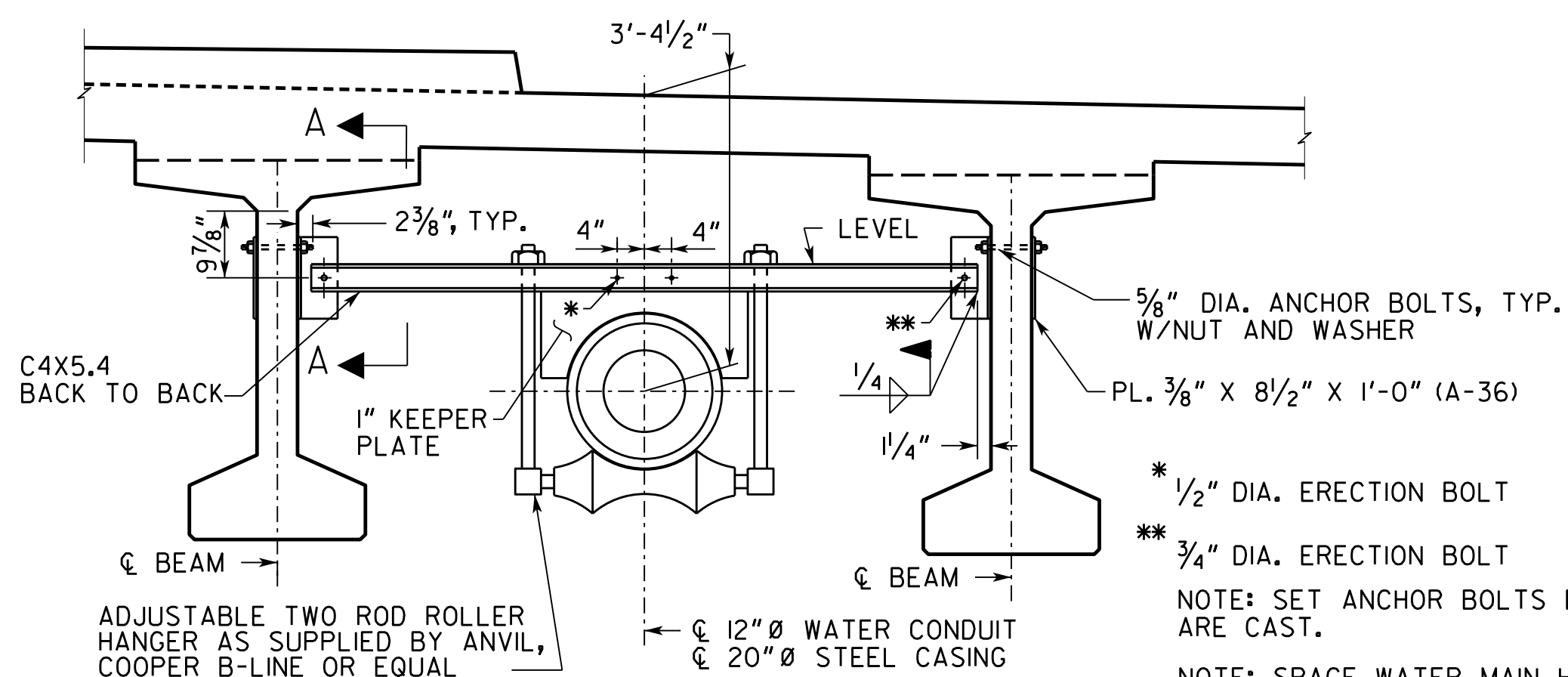
BRIDGE SHEET  
5 OF 12

DATE	REVISIONS	BY

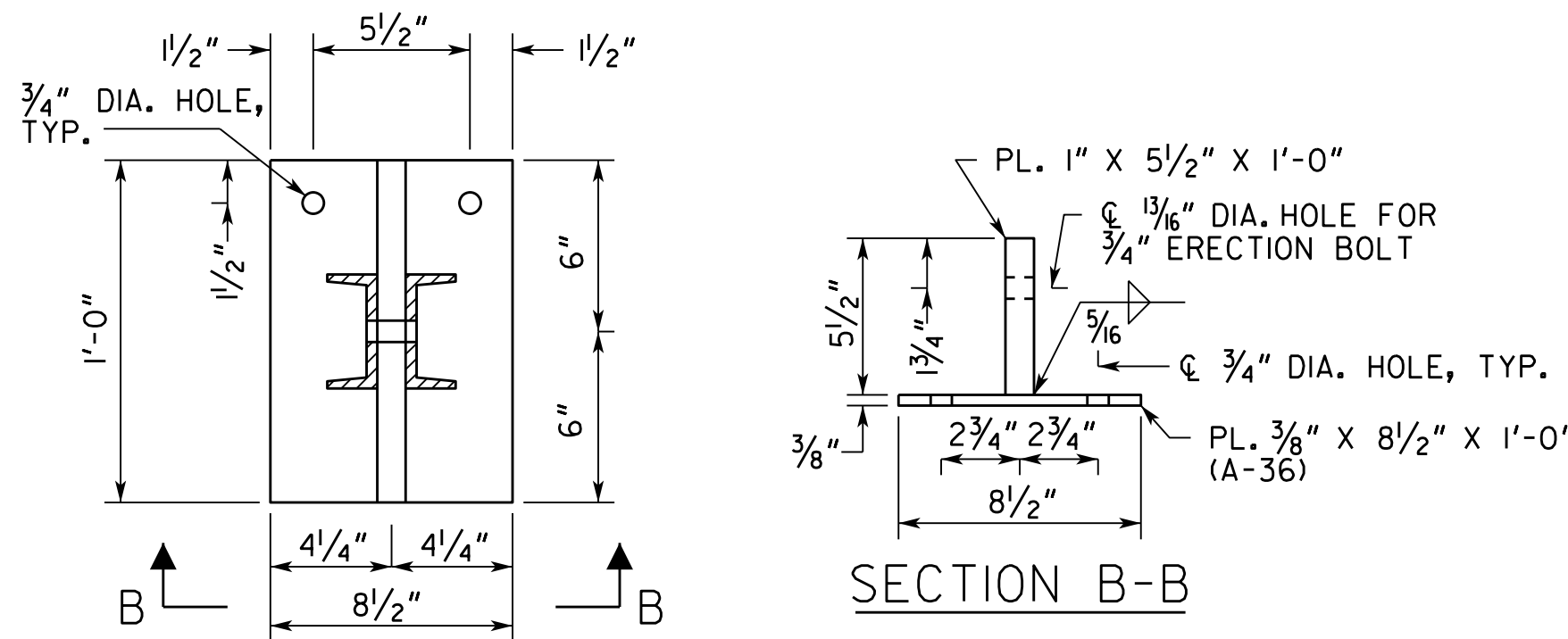
DESIGNED	AJB	CHECKED	KEY/CMJ	REVIEWED	COBB
DRAWN	AJB	DESIGN GROUP	BRIDGE	APPROVED	COBB

1 INCH WHEN PRINTED FULL SIZE

X.DGN

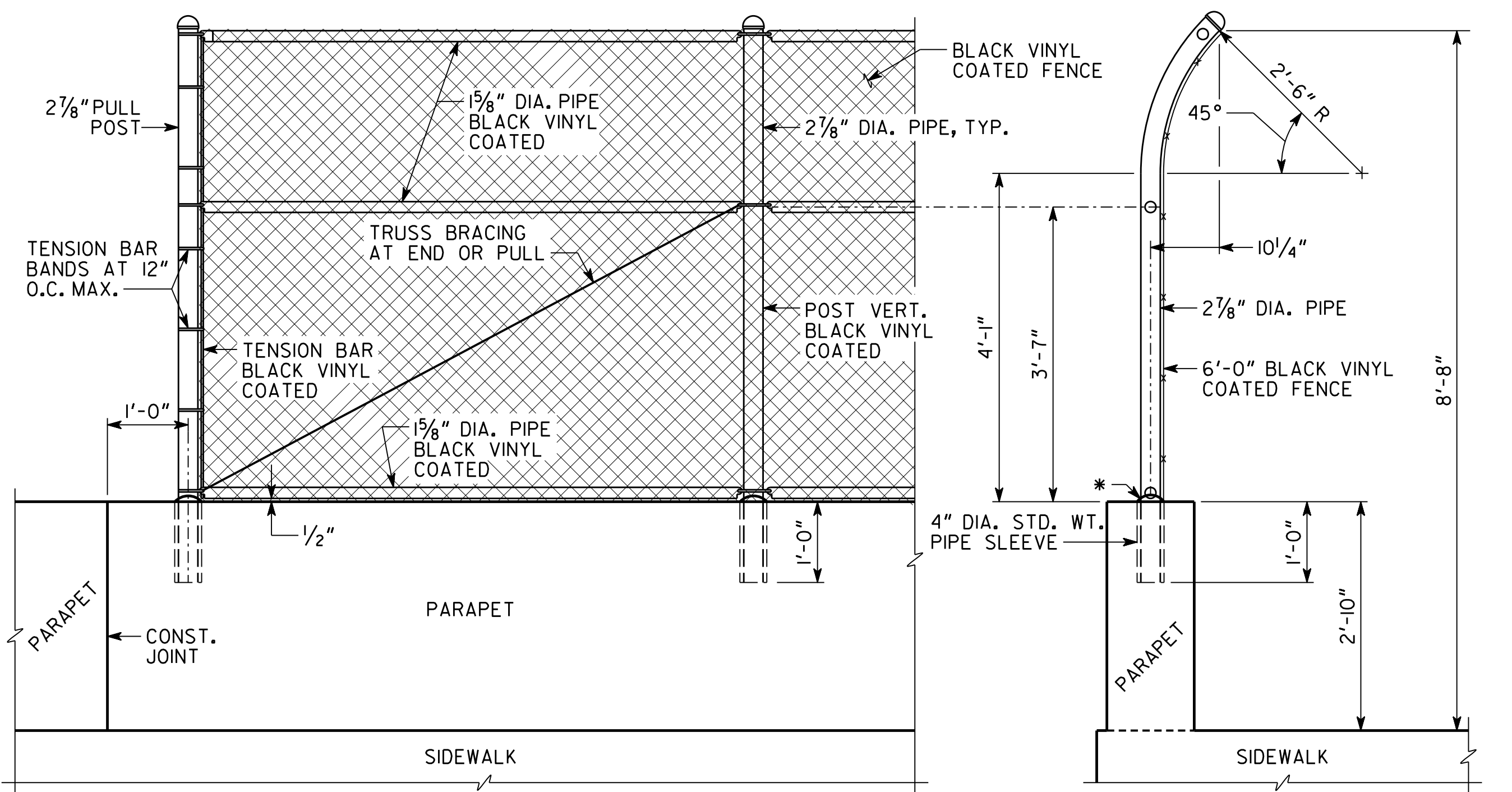


WATER MAIN HANGER DETAIL  
NOT TO SCALE

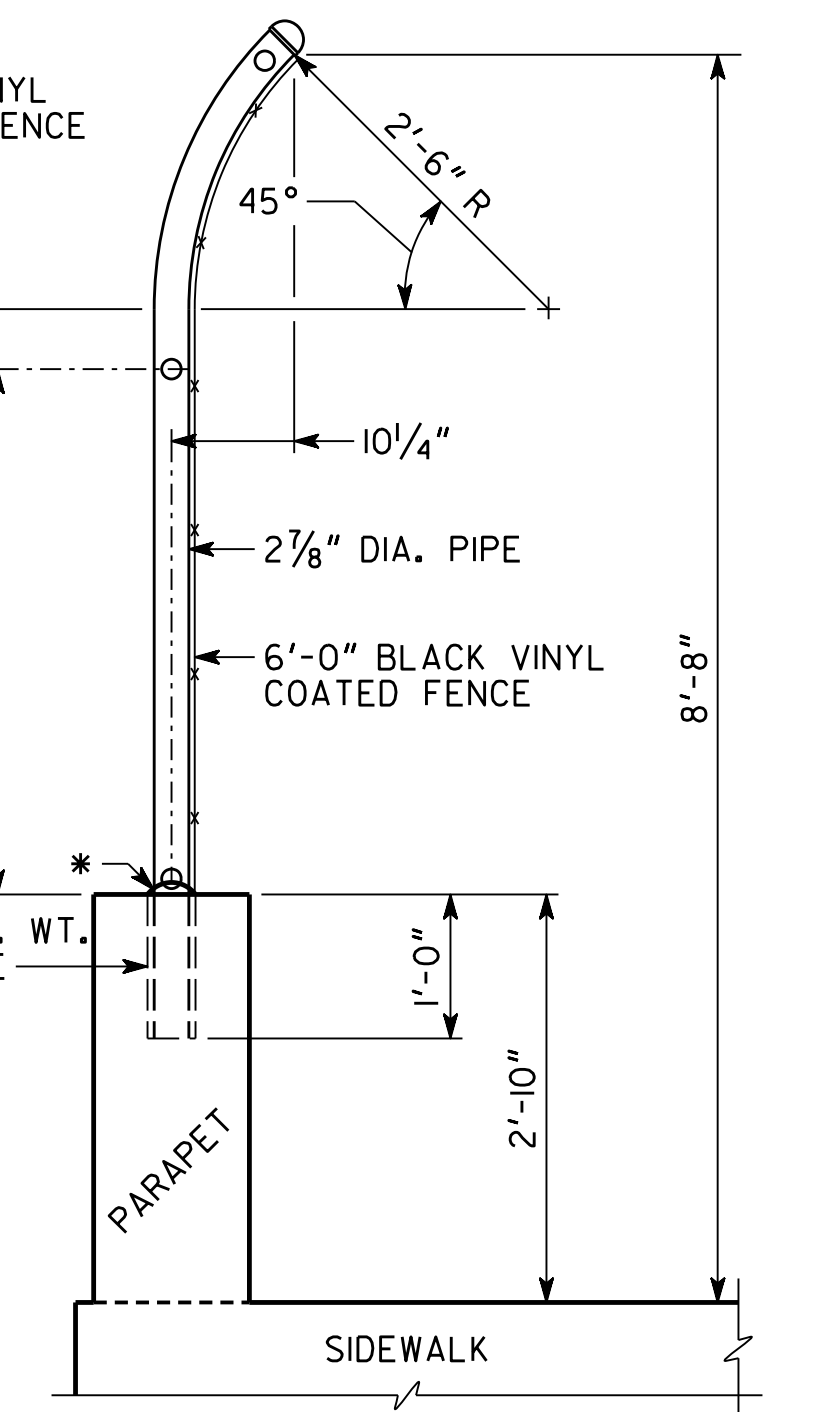


SECTION A-A

SECTION B-B

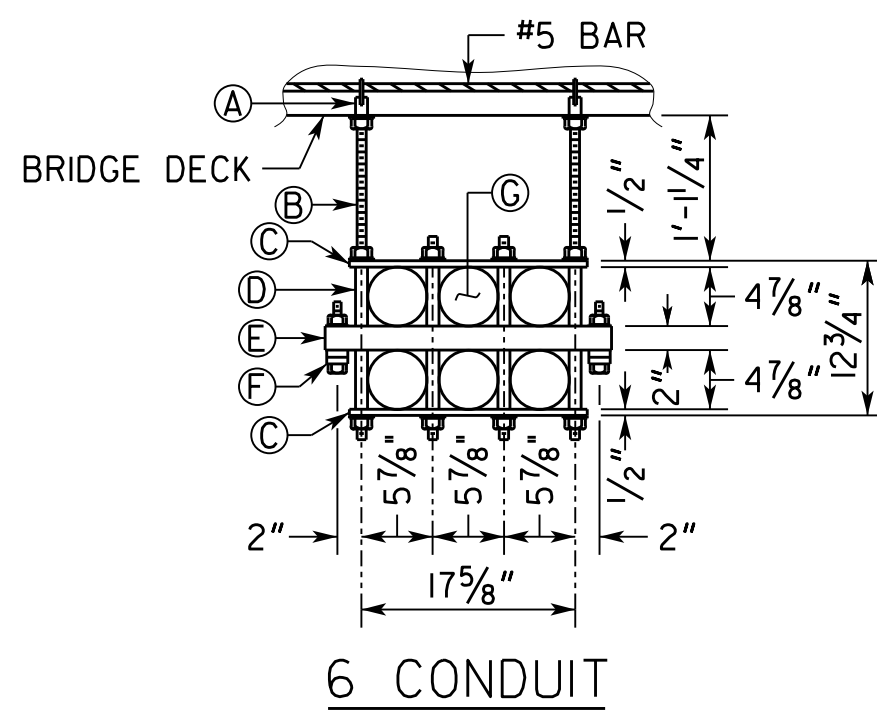


FENCE ELEVATION



FENCE POST DETAIL

\* NON-SHRINK PORTLAND CEMENT GROUT, TROWEL TO PROVIDE POSITIVE DRAINAGE.



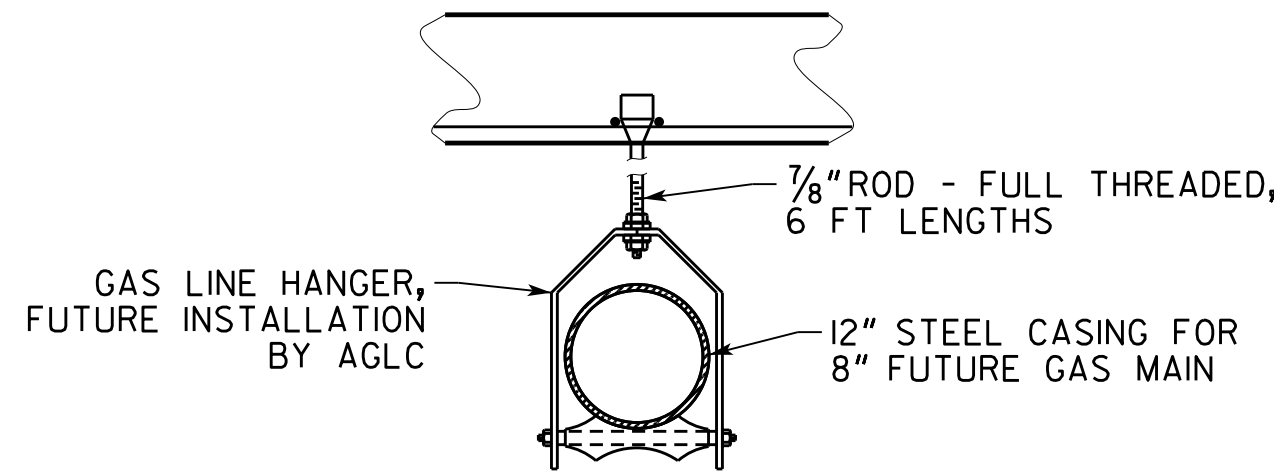
- Ⓐ 3/4" LOOP INSERT FOR 3/4"- 10 ROD.
- Ⓑ 3/4"- 10 GALVANIZED MACHINE ROD.
- Ⓒ 1/2" X 2" X 19 5/8" P.V.C. FLAT BAR.
- Ⓓ 1" X 4 7/8" P.V.C. SPACER TUBE.
- Ⓔ 1/4" X 2" X 2" X 23 5/8" FIBERGLASS TUBE.
- Ⓕ STRAND CLAMP.
- Ⓖ 4" DIA. FIBERGLASS CONDUIT.

DETAIL OF HANGER  
FOR TELEPHONE CONDUIT

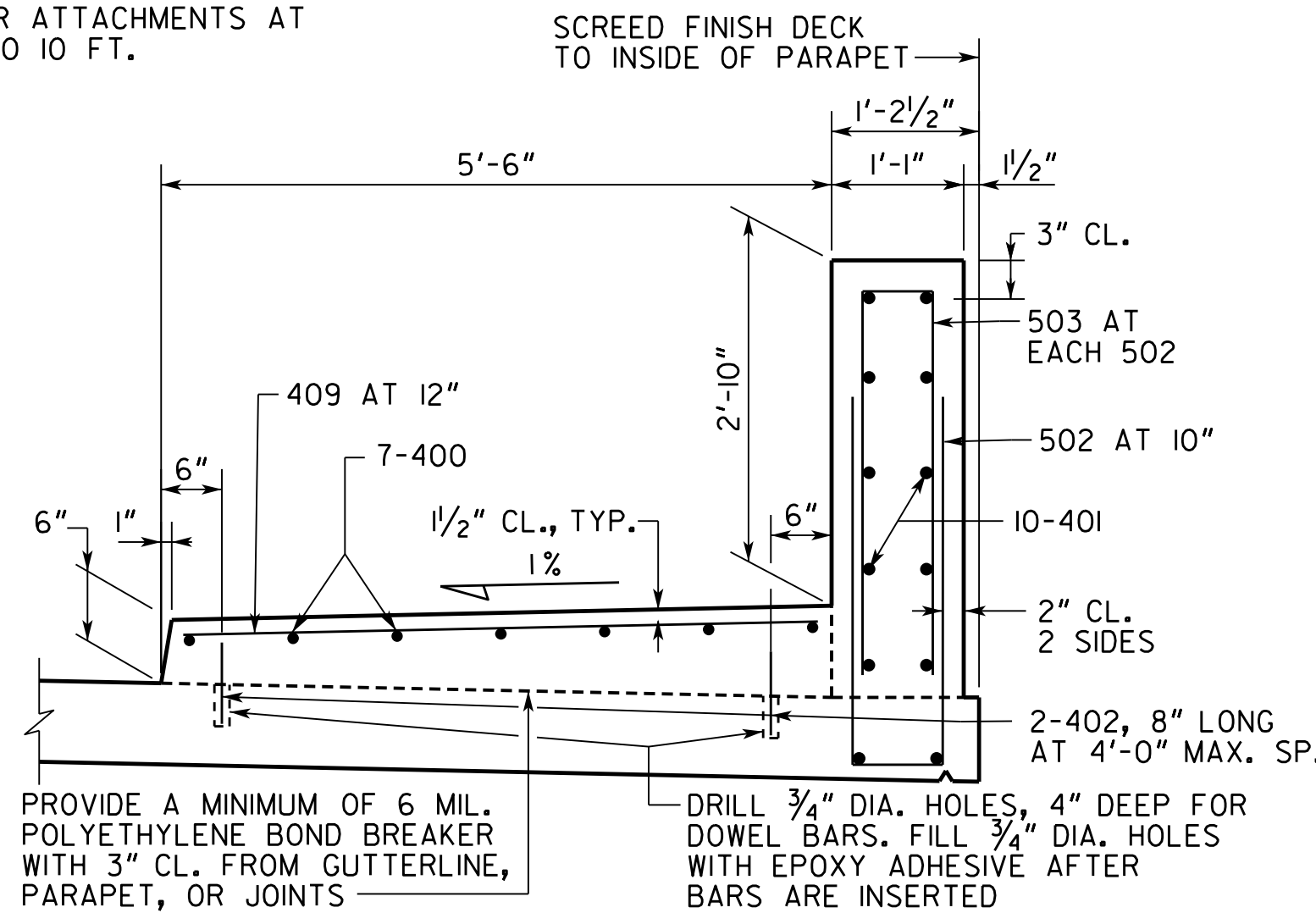
NOTE: PLACE HANGER ATTACHMENTS AT  
INTERVALS OF UP TO 10 FT.

USE ANVIL UNIVERSAL CONCRETE INSERT FIG. 282,  
COOPER B-LINE CONCRETE INSERT FIG. B3014 OR  
EQUAL. FURNISH AND INSTALL INSERTS.  
HANGER ASSEMBLIES WILL BE FURNISHED AND  
INSTALLED BY ATLANTA GAS LIGHT COMPANY (AGLC)  
AT A FUTURE TIME.

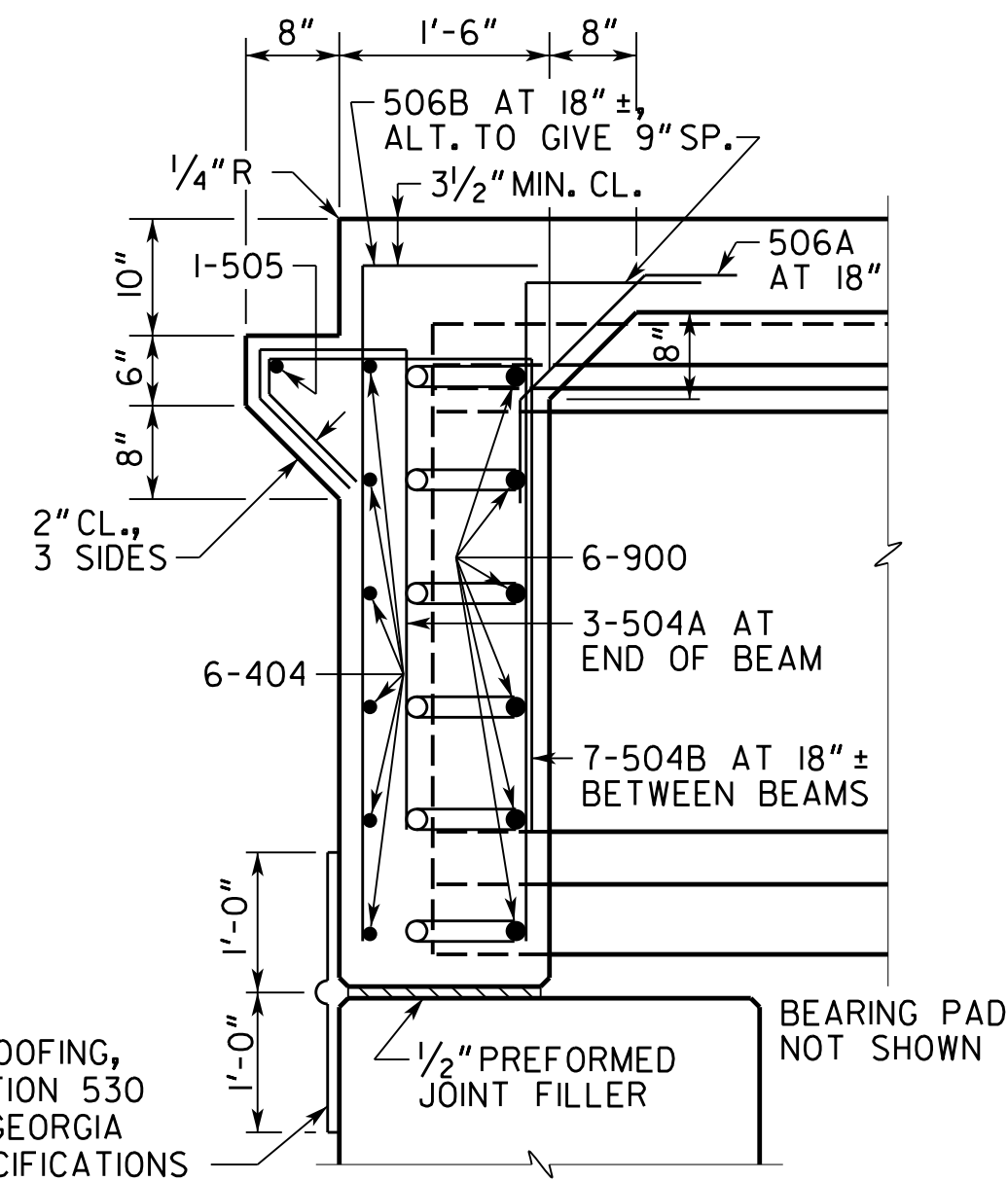
SPACE INSERTS AT MAXIMUM OF 15'-0" O.C.



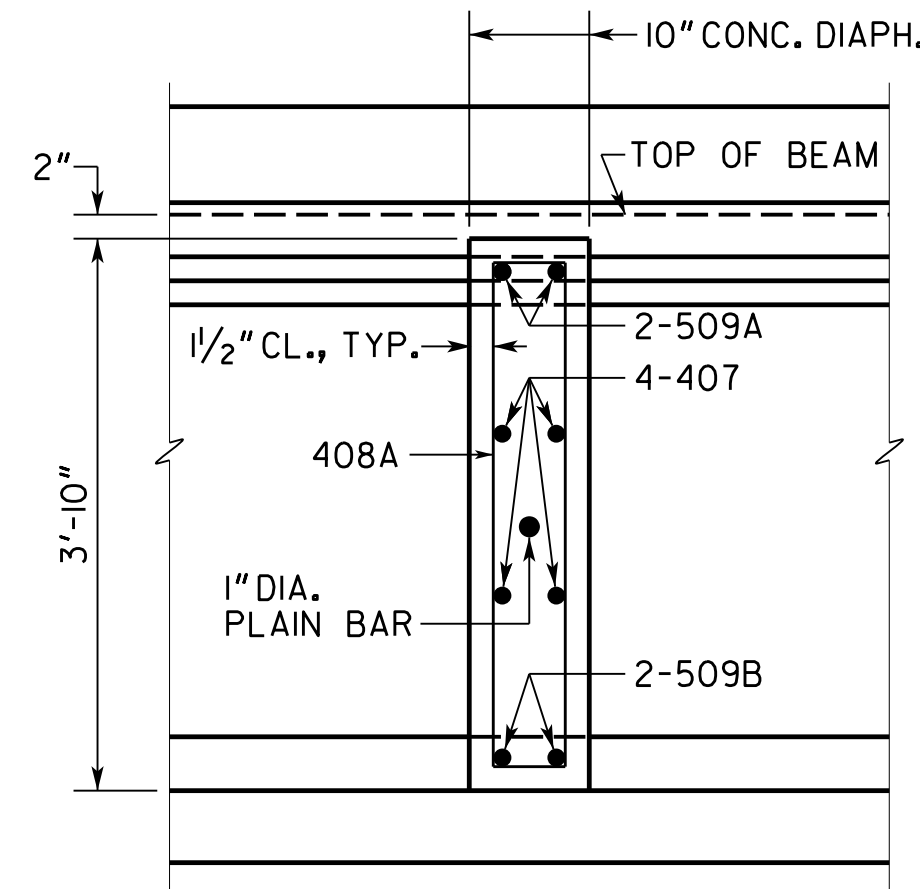
GAS MAIN SUPPORT DETAILS  
NOT TO SCALE



SIDEWALK AND PARAPET DETAILS  
RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR



SECTION AT ENDWALL



SECTION THRU DIAPHRAGM

#### FENCE NOTES:

- FENCE SHALL BE 9 GAGE CHAIN LINK BLACK VINYL TWO INCH SECURITY FENCE.
- CAST 4" DIA. GALVANIZED SLEEVE IN THE PARAPET. ALLOW NON-SHRINK GROUT TO CURE FOR THREE DAYS BEFORE FENCE FABRIC IS INSTALLED.
- APPLY GALVANIZING REPAIR COMPOUND, IN ACCORDANCE WITH GEORGIA DOT SPECIFICATION 645, TO ENDS OF 4" DIA. GALVANIZED SLEEVES.
- PROVIDE EXPANSION SLEEVE FOR ALL RAILS TO MATCH SUPERSTRUCTURE JOINTS.
- FASTEN FABRIC TO POSTS AT INTERVALS NOT GREATER THAN 14'.
- SPACE POSTS AT A MINIMUM OF 7'-0" AND A MAXIMUM OF 10'-0". PLACE POSTS 1'-0" MINIMUM FROM JOINTS IN PARAPET. SEE DECK PLAN FOR POST SPACING.
- FOR FURTHER DETAILS, SEE GEORGIA DOT SPECIFICATIONS SECTIONS 643 AND 894.

DRAWING NO.  
35-0006

BRIDGE SHEET  
6 OF 12

DATE					
REVISIONS					
BY					

**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY

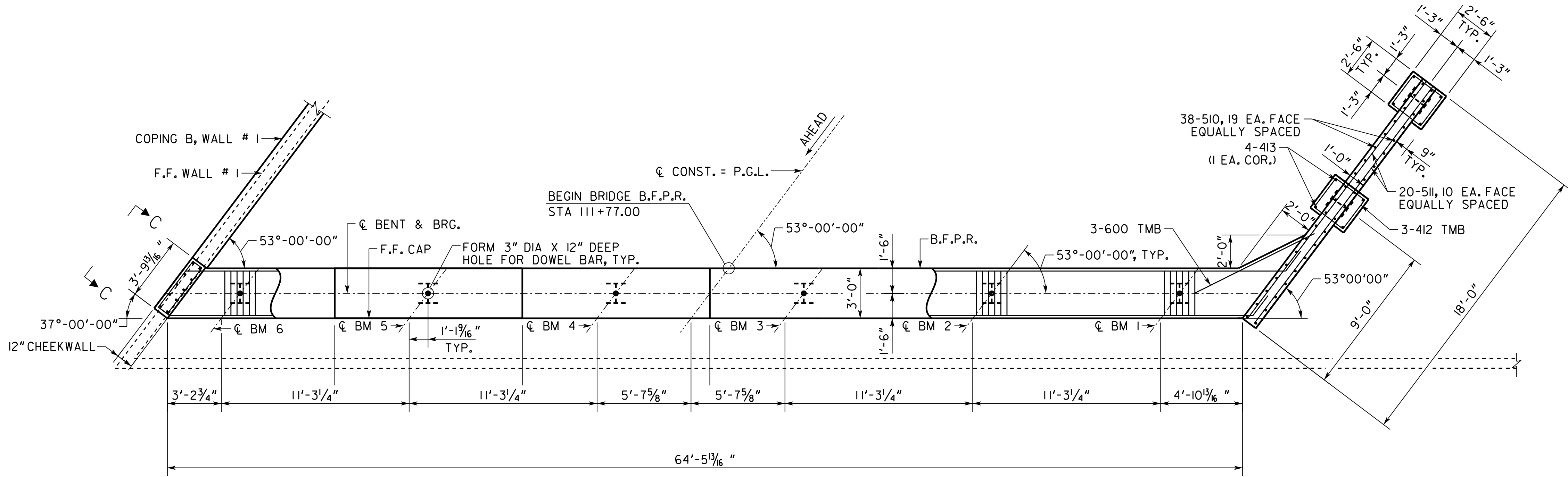
X2116

SCALE: 3/4" = 1'-0" (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

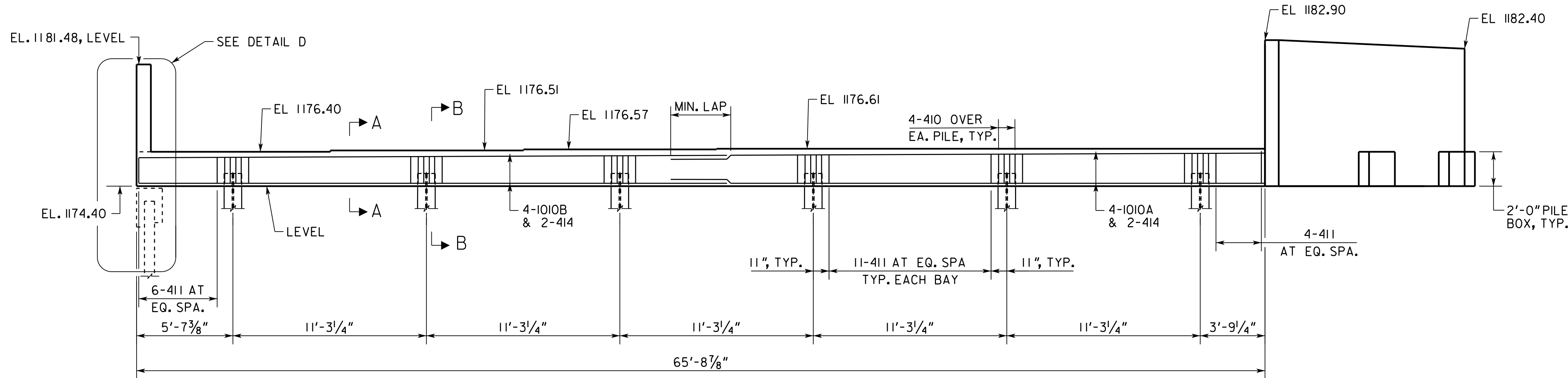
DESIGNED AJB	CHECKED KEY/CMJ	REVIEWED COBB
DRAWN AJB	DESIGN GROUP BRIDGE	APPROVED COBB

1 INCH WHEN PRINTED FULL SIZE

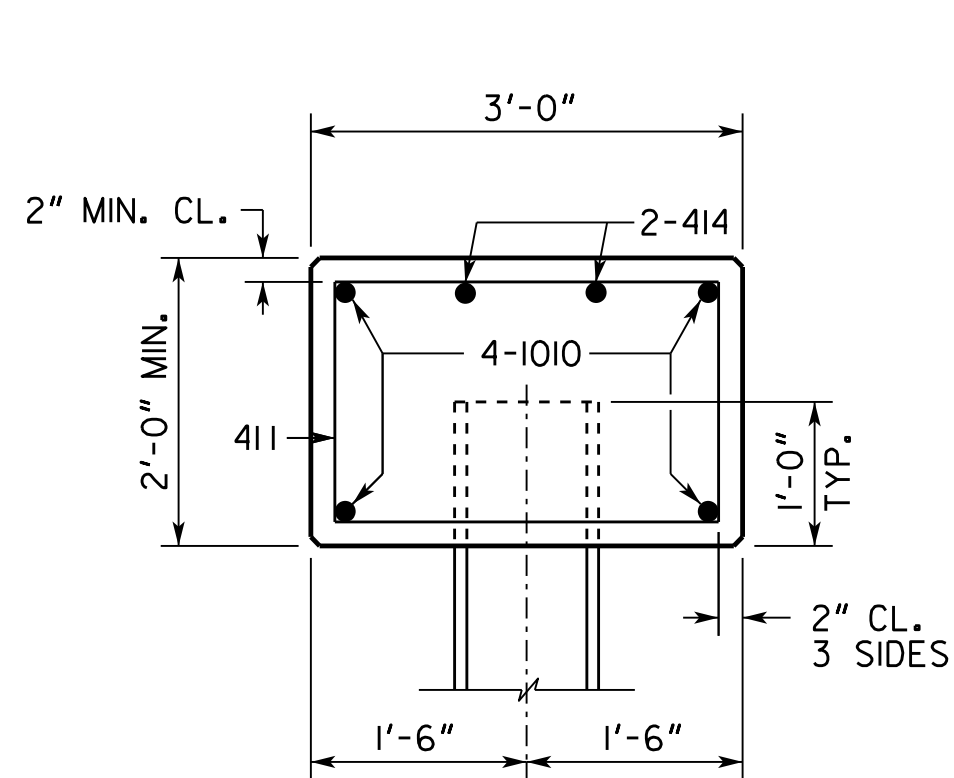
X.DGN



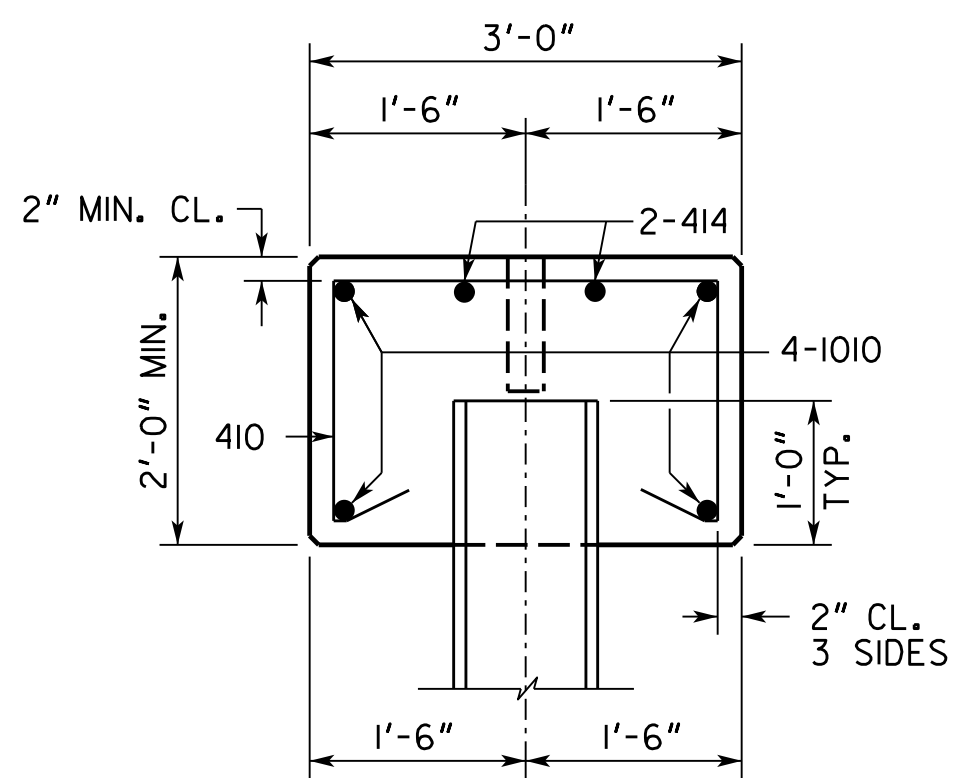
PLAN



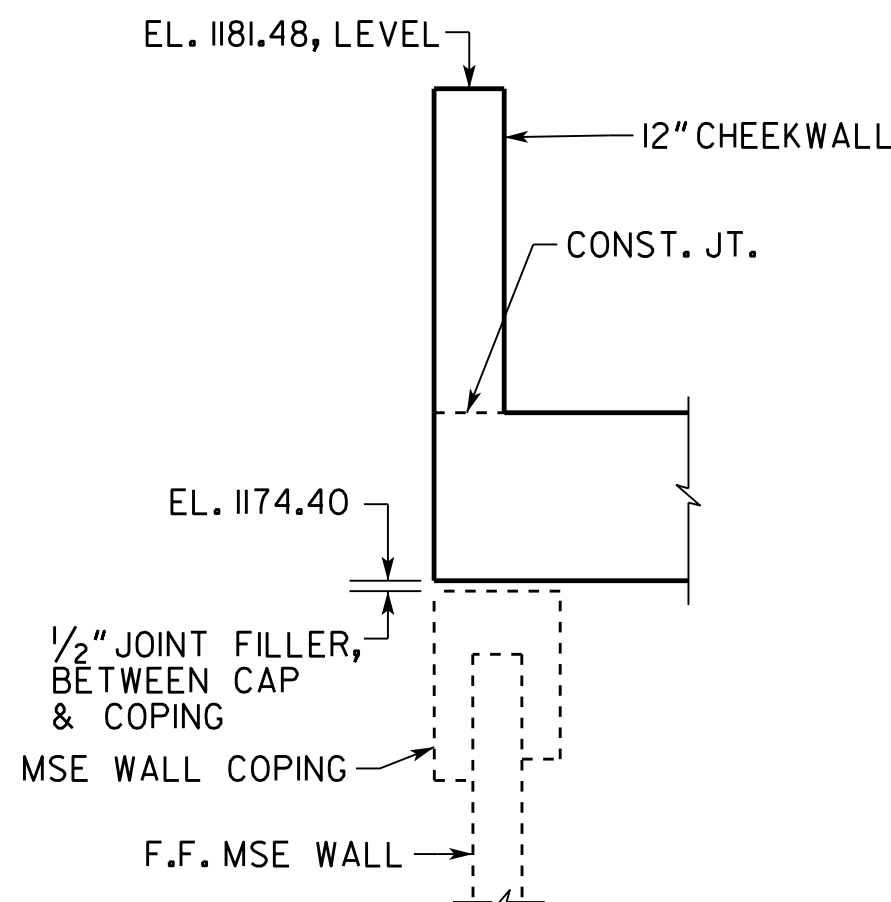
ELEVATION  
(LOOKING BACK)



SECTION A-A  
SCALE: 3/4" = 1'-0"



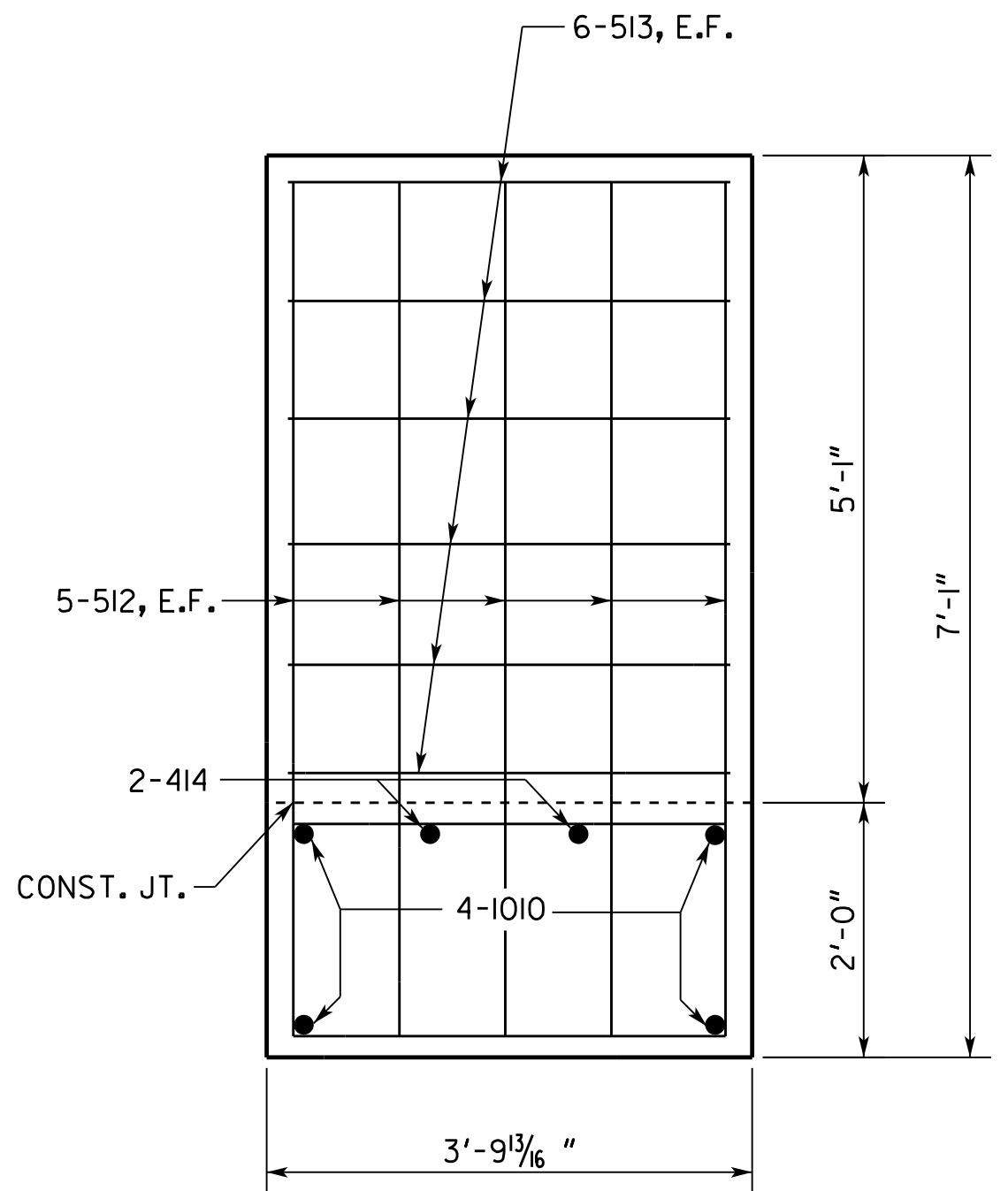
SECTION B-B  
SCALE: 3/4" = 1'-0"



DETAIL D  
NOT TO SCALE

MIN. LAP	
#4 BAR	= 1'-8"
#9 BAR	= 6'-5"

SUBSTRUCTURE QUANTITIES	
ITEMS	BENT 1
CU YD CLASS A CONCRETE	23.8
LB BAR REINFORCEMENT STEEL	2,750



SECTION C-C  
SCALE: 3/4" = 1'-0"

THE PILES ARE DESIGNED FOR A MAXIMUM  
FACTORED AXIAL LOAD OF 432 KIPS.

PLAN DRIVING OBJECTIVE:

ALL PILES SHALL BE DRIVEN TO A DRIVING  
RESISTANCE OF 665 KIPS AFTER MINIMUM  
TIP ELEVATION OF 1122 IS ACHIEVED.

ALL PILES SHALL BE STEEL HP 14X117

NOTES:

1. MAINTAIN A 2" CLEARANCE ON ALL REINFORCEMENT UNLESS OTHERWISE NOTED.
2. POUR WINGWALLS MONOLITHICALLY WITH CAP.
3. SEE GEORGIA STANDARD 9037 FOR DRAINAGE DETAILS AT END BENT.
4. WINGWALL PILES ARE NOT SHOWN IN ELEVATION.
5. SEE MSE WALL SHOP DRAWINGS FOR INSERT LOCATIONS REGARDING MSE STRAPS ATTACHED TO BENT.

BRIDGE NO. 1

**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

END BENT 1  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY

X2116

SCALE: 1/4" = 1'-0" (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

DRAWING NO.  
35-0009

BRIDGE SHEET  
9 OF 12

DESIGNED: **AJB**  
DRAWN: **AJB**

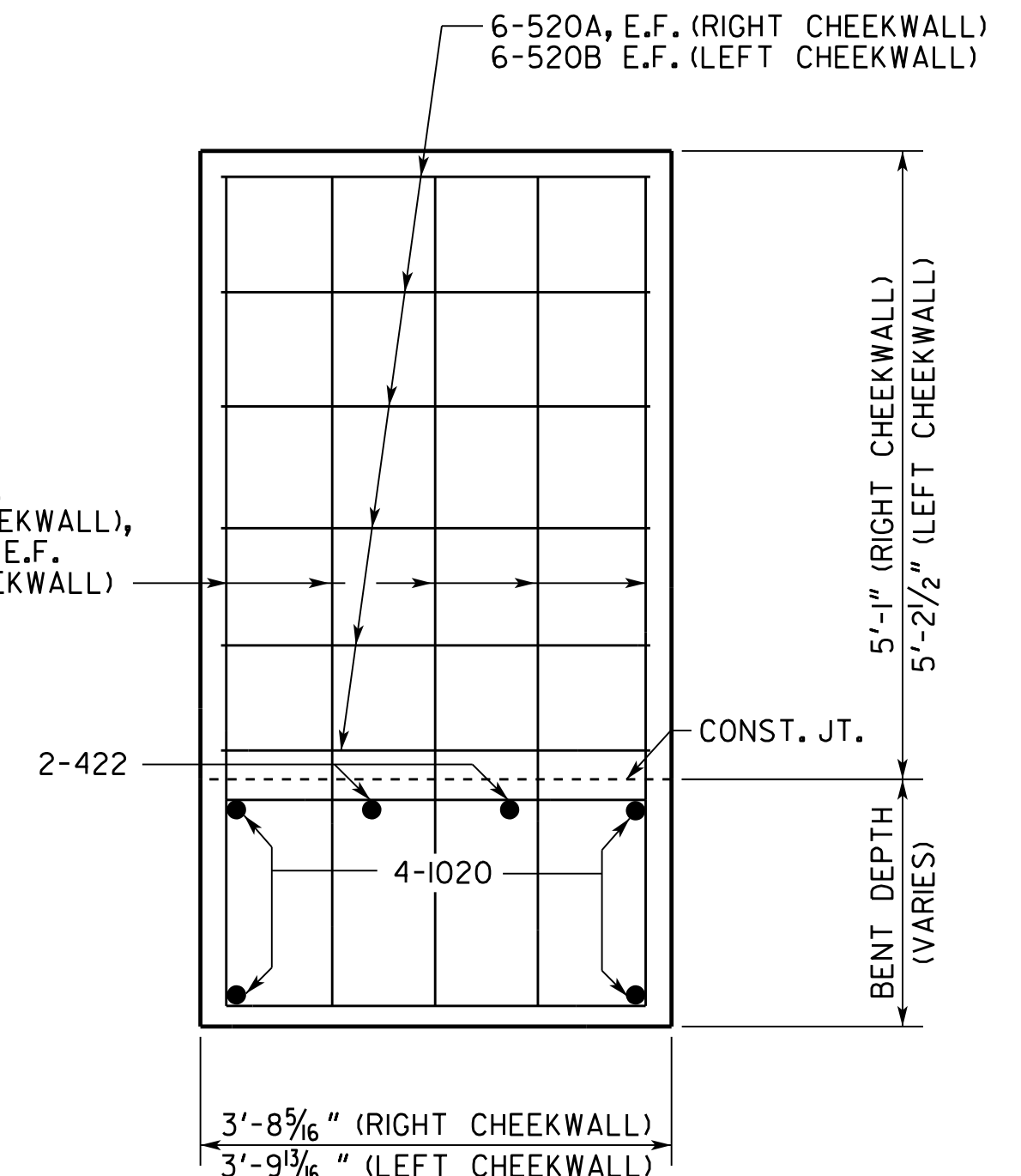
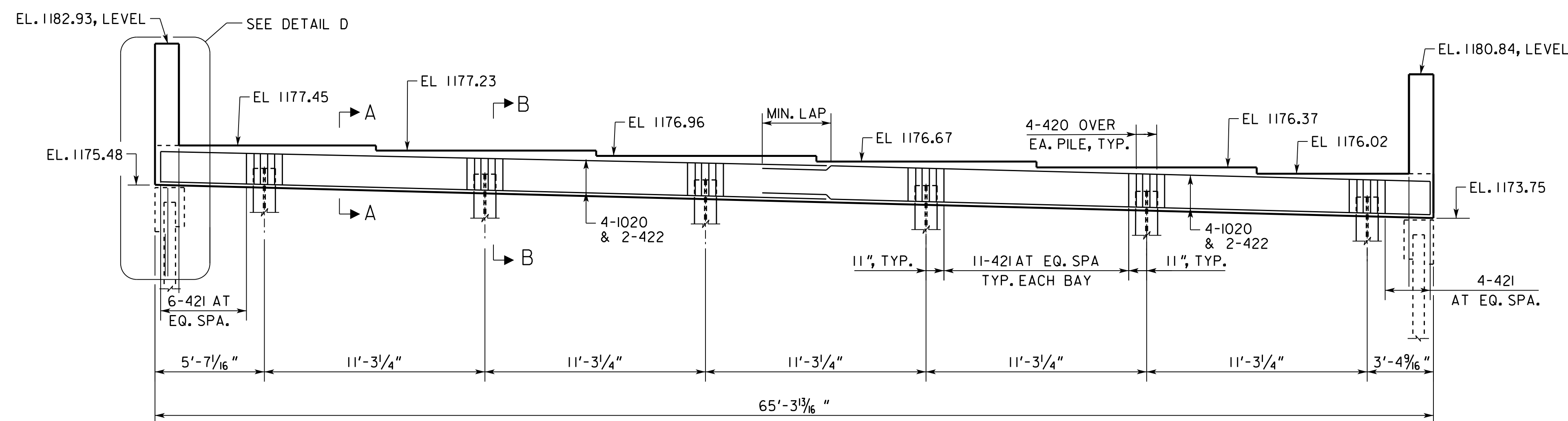
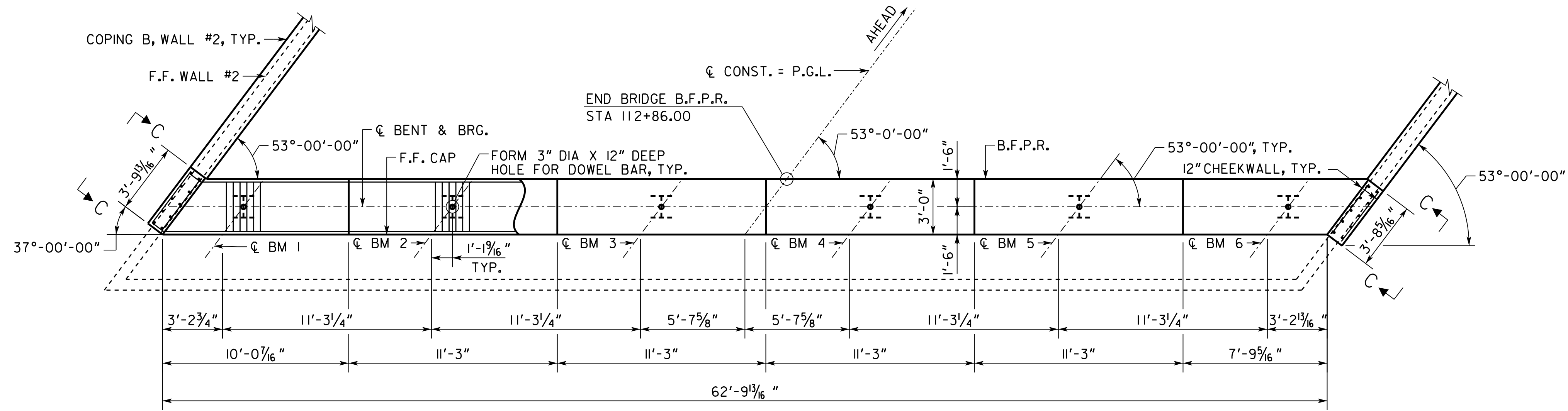
CHECKED: **KEY/CMJ**  
DESIGN GROUP: **BRIDGE**

REVIEWED: **COBB**  
APPROVED: **COBB**

1 INCH WHEN PRINTED FULL SIZE

X.DGN





SECTION C-C  
LEFT CHEEKWALL SHOWN, RIGHT CHEEKWALL SIMILAR  
SCALE:  $\frac{3}{4}" = 1'-0"$

THE PILES ARE DESIGNED FOR A MAXIMUM  
FACTORED AXIAL LOAD OF 432 KIPS.

PLAN DRIVING OBJECTIVE:

ALL PILES SHALL BE DRIVEN TO A DRIVING  
RESISTANCE OF 665 KIPS AFTER MINIMUM  
TIP ELEVATION OF 1137 IS ACHIEVED.

ALL PILES SHALL BE STEEL HP 14X17

NOTES:

1. MAINTAIN A 2" CLEARANCE ON ALL REINFORCEMENT UNLESS OTHERWISE NOTED.
2. POUR WINGWALLS MONOLITHICALLY WITH CAP.
3. SEE GEORGIA STANDARD 9037 FOR DRAINAGE DETAILS AT END BENT.
4. WINGWALL PILES ARE NOT SHOWN IN ELEVATION.
5. SEE MSE WALL SHOP DRAWINGS FOR INSERT LOCATIONS REGARDING MSE STRAPS ATTACHED TO BENT.

BRIDGE NO. 1

**AECOM**

COBB COUNTY  
DEPARTMENT OF TRANSPORTATION

END BENT 2  
OLD HIGHWAY 41 BRIDGE REPLACEMENT  
OVER CSX RAILROAD

COBB COUNTY	X2116
-------------	-------

SCALE:  $\frac{1}{4}" = 1'-0"$ , (UNLESS NOTED OTHERWISE) SEPTEMBER 2018

DESIGNED	AJB	CHECKED	KEY/CMJ	REVIEWED	COBB
DRAWN	AJB	DESIGN GROUP	BRIDGE	APPROVED	COBB

SUBSTRUCTURE QUANTITIES	
ITEMS	BENT 2
CU YD CLASS A CONCRETE	17.5
LB BAR REINFORCEMENT STEEL	2,054

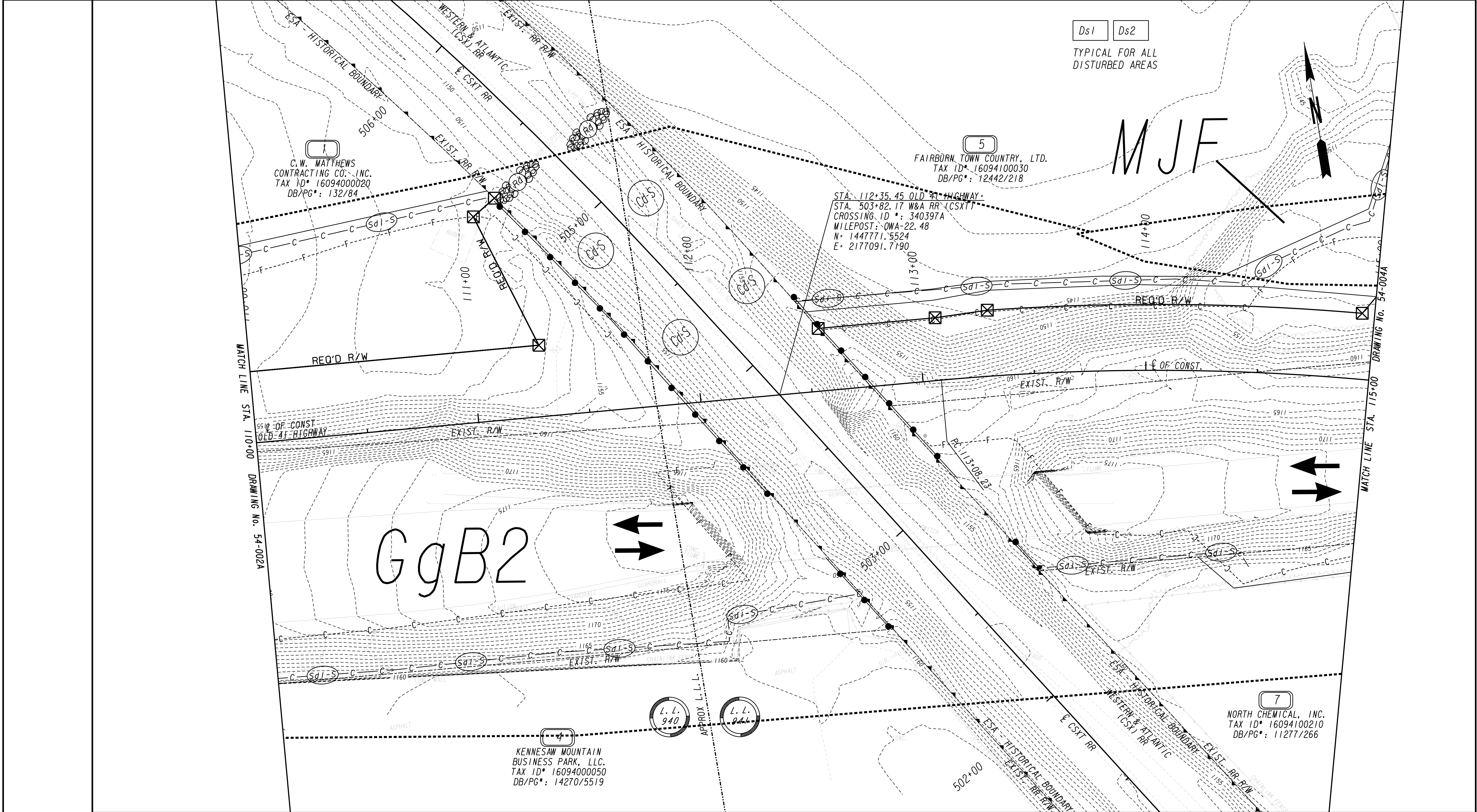
DRAWING NO.  
35-0010

BRIDGE SHEET  
10 OF 12

BY	REVISIONS	DATE

1 INCH WHEN PRINTED FULL SIZE

DGN



PAVEMENT REMOVAL

TEMPORARY CONSTRUCTION PAVEMENT

PERMANENT CONSTRUCTION

CONCRETE MEDIAN CONSTRUCTION

WILL & OVERLAY CONSTRUCTION

OPEN LANES OF TRAFFIC

LEGEND

GEORGIA  
REGISTERED  
PE # 041018  
PROFESSIONAL  
ENGINEER  
STEVEN TATE

FAIRBURN TOWN COUNTRY  
STATE OF GEORGIA

AECOM

ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

SCALE IN FEET

0

20

40

80

REVISION DATES


BMP LOCATION DETAILS

STAGE 1 - PHASE 1A

OLD HIGHWAY 41 BRIDGE REPLACEMENT

CHECKED:

BACKCHECKED:

CORRECTED:

VERIFIED:

DATE:

DATE:

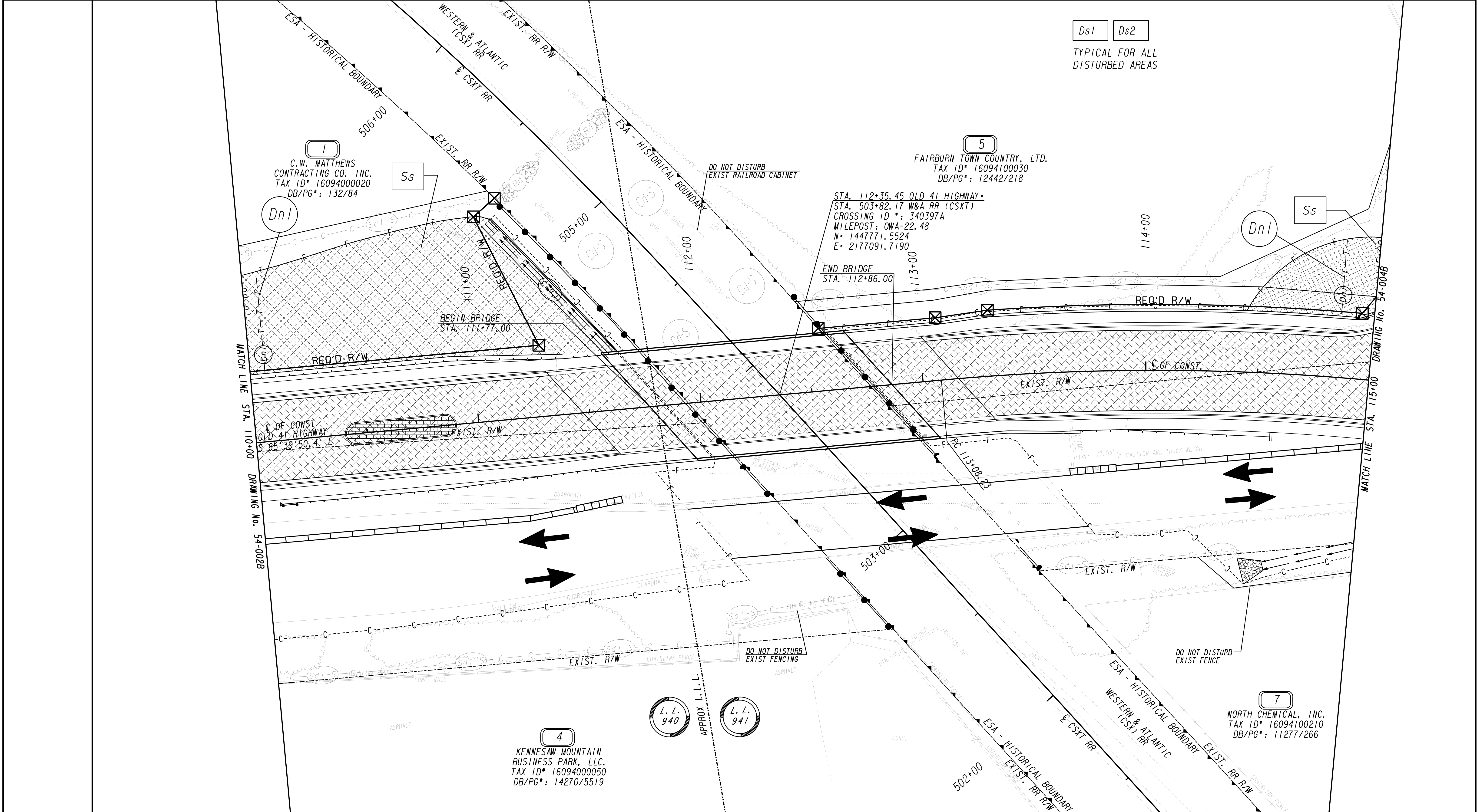
DATE:

DATE:

DRAWING No.

54-0003A





PAVEMENT REMOVAL

TEMPORARY CONSTRUCTION PAVEMENT

PERMANENT CONSTRUCTION

CONCRETE MEDIAN CONSTRUCTION

WILL & OVERLAY CONSTRUCTION

OPEN LANES OF TRAFFIC

LEGEND

GEORGIA REGISTERED PROFESSIONAL ENGINEER STEVEN TATE

FORB COUNTRY STATE OF GEORGIA

AECOM

ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

SCALE IN FEET  
0 20 40 80

REVISION DATES


BMP LOCATION DETAILS  
STAGE 2 - PHASE I  
OLD HIGHWAY 41 BRIDGE REPLACEMENT

CHECKED: DATE: DRAWING No.

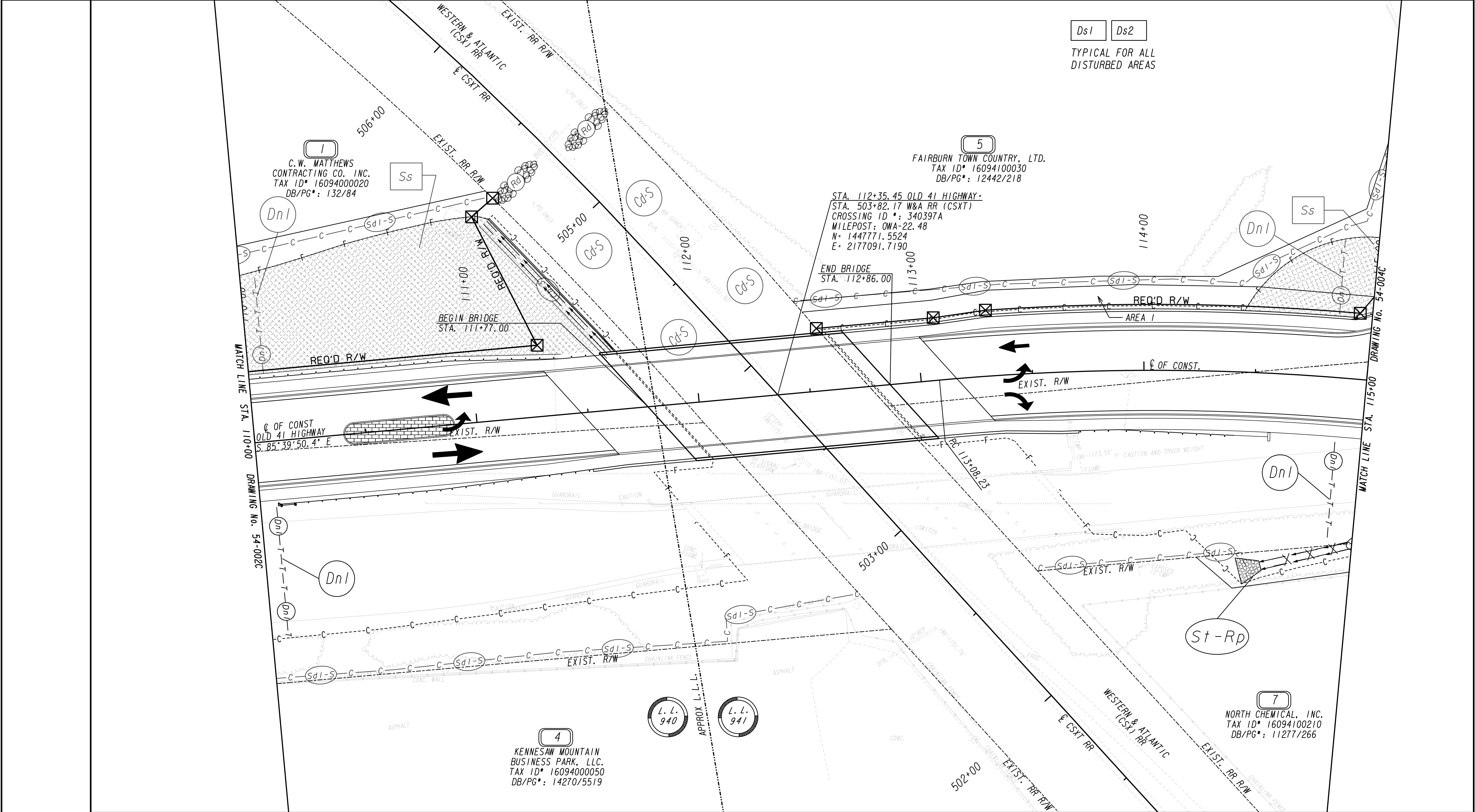
BACKCHECKED: DATE:

CORRECTED: DATE:

VERIFIED: DATE:

54-0003B

4/28/2016 GPLN



PAVEMENT REMOVAL

TEMPORARY CONSTRUCTION PAVEMENT

PERMANENT CONSTRUCTION

CONCRETE MEDIAN CONSTRUCTION

WILL & OVERLAY CONSTRUCTION

OPEN LANES OF TRAFFIC

GEORGIA  
REGISTERED  
PE #041018  
PROFESSIONAL  
ENGINEER  
STEVEN TATE

FORB COUNTRY  
STATE OF GEORGIA

AECOM

ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

SCALE IN FEET

0

20

40

80

REVISION DATES


BMP LOCATION DETAILS

PHASE 2 - STAGE 2

OLD HIGHWAY 41 BRIDGE REPLACEMENT

CHECKED: DATE:

BACKCHECKED: DATE:

CORRECTED: DATE:

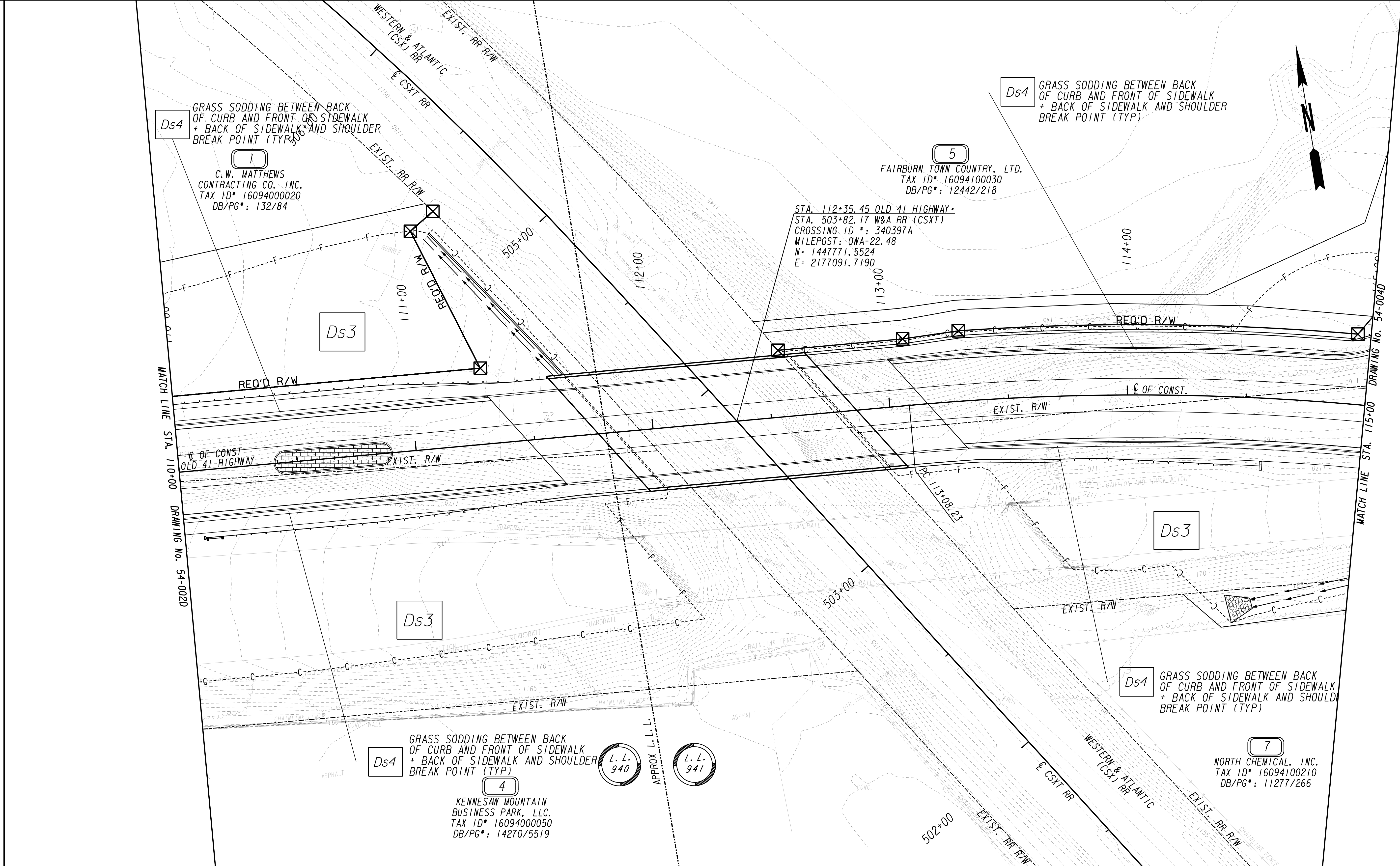
VERIFIED: DATE:

DRAWING No.

54-0003C

4/28/2016 GPLN





**LEGEND**

PAVEMENT REMOVAL

TEMPORARY CONSTRUCTION PAVEMENT

PERMANENT CONSTRUCTION

CONCRETE MEDIAN CONSTRUCTION

WILL & OVERLAY CONSTRUCTION

OPEN LANES OF TRAFFIC

**AECOM**

ONE MIDTOWN PLAZA  
1360 PEACHTREE ST., N.E., SUITE 500  
ATLANTA, GEORGIA 30309  
TEL: (404) 965-9600 FAX: (404) 965-9605

SCALE IN FEET

REVISION DATES

NO.	DATE	DESCRIPTION

**BMP LOCATION DETAILS**

STAGE 3

OLD HIGHWAY 41 BRIDGE REPLACEMENT

CHECKED:	DATE:
BACKCHECKED:	DATE:
CORRECTED:	DATE:
VERIFIED:	DATE:

DRAWING No.  
54-0003D

4/28/2016 GPLN



**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**EXHIBIT C**

**CSXT SPECIAL PROVISIONS**

**DEFINITIONS:**

As used in these Special Provisions, all capitalized terms shall have the meanings ascribed to them by the Agreement, and the following terms shall have the meanings ascribed to them below:

“CSXT” shall mean CSX Transportation, Inc., its successors and assigns.

“CSXT Representative” shall mean the authorized representative of CSX Transportation, Inc.

“Agreement” shall mean the Agreement between CSXT and Agency dated as of the effective date, as amended from time to time.

“Agency” shall mean the Cobb County DOT, a political subdivision of the State of Georgia.

“Agency Representative” shall mean the authorized representative of Cobb County DOT.

“Contractor” shall have the meaning ascribed to such term by the Agreement.

“Work” shall mean the Project as described in the Agreement.

**I. AUTHORITY OF CSXT ENGINEER**

The CSXT Representative shall have final authority in all matters affecting the safe maintenance of CSXT operations and CSXT property, and his or her approval shall be obtained by the Agency or its Contractor for methods of construction to avoid interference with CSXT operations and CSXT property and all other matters contemplated by the Agreement and these Special Provisions.

**II. INTERFERENCE WITH CSXT OPERATIONS**

- A. Agency or its Contractor shall arrange and conduct its work so that there will be no interference with CSXT operations, including train, signal, telephone and telegraphic services, or damage to CSXT’s property, or to poles, wires, and other facilities of tenants on CSXT’s Property or right-of-way. Agency or its Contractor shall store materials so as to prevent trespassers from causing damage to trains, or CSXT Property. Whenever Work is likely to affect the operations or safety of trains, the method of doing such Work shall first be submitted to the CSXT Representative for approval, but such approval shall not relieve Agency or its Contractor from liability in connection with such Work.
- B. If conditions arising from or in connection with the Project require that immediate and unusual provisions be made to protect train operation or CSXT’s property, Agency or its Contractor shall make such provision. If the CSXT Representative determines that such

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

provision is insufficient, CSXT may, at the expense of Agency or its Contractor, require or provide such provision as may be deemed necessary, or cause the Work to cease immediately.

**III. NOTICE OF STARTING WORK.** Agency or its Contractor shall not commence any work on CSXT Property or rights-of-way until it has complied with the following conditions:

- A. Notify CSXT in writing of the date that it intends to commence Work on the Project. Such notice must be received by CSXT at least ten business days in advance of the date Agency or its Contractor proposes to begin Work on CSXT property. The notice must refer to this Agreement by date. If flagging service is required, such notice shall be submitted at least thirty (30) business days in advance of the date scheduled to commence the Work.
- B. Obtain authorization from the CSXT Representative to begin Work on CSXT property, such authorization to include an outline of specific conditions with which it must comply.
- C. Obtain from CSXT the names, addresses and telephone numbers of CSXT's personnel who must receive notice under provisions in the Agreement. Where more than one individual is designated, the area of responsibility of each shall be specified.

**IV. WORK FOR THE BENEFIT OF THE CONTRACTOR**

- A. No temporary or permanent changes to wire lines or other facilities (other than third party fiber optic cable transmission systems) on CSXT property that are considered necessary to the Work are anticipated or shown on the Plans. If any such changes are, or become, necessary in the opinion of CSXT or Agency, such changes will be covered by appropriate revisions to the Plans and by preparation of a force account estimate. Such force account estimate may be initiated by either CSXT or Agency, but must be approved by both CSXT and Agency. Agency or Contractor shall be responsible for arranging for the relocation of the third party fiber optic cable transmission systems, at no cost or expense to CSXT.
- B. Should Agency or Contractor desire any changes in addition to the above, then it shall make separate arrangements with CSXT for such changes to be accomplished at the Agency or Contractor's expense.

**V. HAUL ACROSS RAILROAD**

- A. If Agency or Contractor desires access across CSXT property or tracks at other than an existing and open public road crossing in or incident to construction of the Project, the Agency or Contractor must first obtain the permission of CSXT and shall execute a license agreement or right of entry satisfactory to CSXT, wherein Agency or Contractor agrees to bear all costs and liabilities related to such access.



**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

- B. Agency and Contractor shall not cross CSXT's property and tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be permitted pursuant to this section.

**VI. COOPERATION AND DELAYS**

- A. Agency or Contractor shall arrange a schedule with CSXT for accomplishing stage construction involving work by CSXT. In arranging its schedule, Agency or Contractor shall ascertain, from CSXT, the lead time required for assembling crews and materials and shall make due allowance therefore.
- B. Agency or Contractor may not charge any costs or submit any claims against CSXT for hindrance or delay caused by railroad traffic; work done by CSXT or other delay incident to or necessary for safe maintenance of railroad traffic; or for any delays due to compliance with these Special Provisions.
- C. Agency and Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.
- D. Agency and Contractor understand and agree that CSXT does not assume any responsibility for work performed by others in connection the Project. Agency and Contractor further understand and agree that they shall have no claim whatsoever against CSXT for any inconvenience, delay or additional cost incurred by Agency or Contractor on account of operations by others.

**VII. STORAGE OF MATERIALS AND EQUIPMENT**

Agency and Contractor shall not store their materials or equipment on CSXT's property or where they may potentially interfere with CSXT's operations, unless Agency or Contractor has received CSXT Representative's prior written permission. Agency and Contractor understand and agree that CSXT will not be liable for any damage to such materials and equipment from any cause and that CSXT may move, or require Agency or Contractor to move, such material and equipment at Agency's or Contractor's sole expense. To minimize the possibility of damage to the railroad tracks resulting from the unauthorized use of equipment, all grading or other construction equipment that is left parked near the tracks unattended by watchmen shall be immobilized to the extent feasible so that it cannot be moved by unauthorized persons.

**VIII. CONSTRUCTION PROCEDURES**

- A. General
  - 1. Construction work on CSXT property shall be subject to CSXT's inspection and approval.
  - 2. Construction work on CSXT property shall be in accord with CSXT's written outline of specific conditions and with these Special Provisions.
  - 3. Contractor shall observe the terms and rules of the CSXT Safe Way manual, which Agency and Contractor shall be required to obtain from CSXT and in

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

accord with any other instructions furnished by CSXT or CSXT's Representative.

**B. Blasting**

1. Agency or Contractor shall obtain CSXT Representative's and Agency Representative's prior written approval for use of explosives on or adjacent to CSXT property. If permission for use of explosives is granted, Agency or Contractor must comply with the following:
  - a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of Agency or Contractor.
  - b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
  - c. No blasting shall be done without the presence of an authorized representative of CSXT. At least 10 days' advance notice to CSXT Representative is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.
  - d. Agency or Contractor must have at the Project site adequate equipment, labor and materials, and allow sufficient time, to (i) clean up (at Agency's expense) debris resulting from the blasting without any delay to trains; and (ii) correct (at Agency's expense) any track misalignment or other damage to CSXT's property resulting from the blasting, as directed by CSXT Representative, without delay to trains. If Agency's or Contractor's actions result in delay of any trains, including Amtrak passenger trains, Agency shall bear the entire cost thereof.
  - e. Agency and Contractor shall not store explosives on CSXT property.
2. CSXT Representative will:
  - a. Determine the approximate location of trains and advise Agency or Contractor of the approximate amount of time available for the blasting operation and clean-up.
  - b. Have the authority to order discontinuance of blasting if, in his or her opinion, blasting is too hazardous or is not in accord with these Special Provisions.

**IX. MAINTENANCE OF DITCHES ADJACENT TO CSXT TRACKS**

Agency or Contractor shall maintain all ditches and drainage structures free of silt or other obstructions that may result from their operations. Agency or Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

specifications for road and bridge construction, including either (1) silt fence; (2) hay or straw barrier; (3) berm or temporary ditches; (4) sediment basin; (5) aggregate checks; and (6) channel lining. All such maintenance and repair of damages due to Agency's or Contractor's operations shall be performed at Agency's expense.

**X. FLAGGING / INSPECTION SERVICE**

- A. CSXT has sole authority to determine the need for flagging required to protect its operations and property. In general, flagging protection will be required whenever Agency or Contractor or their equipment are, or are likely to be, working within fifty (50) feet of live track or other track clearances specified by CSXT, or over tracks.
- B. Agency shall reimburse CSXT directly for all costs of flagging that is required on account of construction within CSXT property shown in the Plans, or that is covered by an approved plan revision, supplemental agreement or change order.
- C. Agency or Contractor shall give a minimum of 10 days' advance notice to CSXT Representative for anticipated need for flagging service. No work shall be undertaken until the flag person(s) is/are at the job site. If it is necessary for CSXT to advertise a flagging job for bid, it may take up to 90-days to obtain this service and CSXT shall not be liable for the cost of delays attributable to obtaining such service.
- D. CSXT shall have the right to assign an individual to the site of the Project to perform inspection service whenever, in the opinion of CSXT Representative, such inspection may be necessary. Agency shall reimburse CSXT for the costs incurred by CSXT for such inspection service. Inspection service shall not relieve Agency or Contractor from liability for its Work.
- E. CSXT shall render invoices for, and Agency shall pay for, the actual pay rate of the flagpersons and inspectors used, plus standard additives, whether that amount is above or below the rate provided in the Estimate. If the rate of pay that is to be used for inspector or flagging service is changed before the work is started or during the progress of the work, whether by law or agreement between CSXT and its employees, or if the tax rates on labor are changed, bills will be rendered by CSXT and paid by Agency using the new rates. Agency and Contractor shall perform their operations that require flagging protection or inspection service in such a manner and sequence that the cost of such will be as economical as possible.

**XI. UTILITY FACILITIES ON CSXT PROPERTY**

Agency shall arrange, upon approval from CSXT, to have any utility facilities on or over CSXT Property changed as may be necessary to provide clearances for the proposed trackage.

**XII. CLEAN-UP**

Agency or Contractor, upon completion of the Project, shall remove from CSXT's Property any temporary grade crossings, any temporary erosion control measures used to control drainage, all

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation  
Marietta, Cobb Co., GA  
M.P. 0WA-22.48; DOT# 340397A; W&A Sub.  
CSXT OP# GA2039  
COBB DOT PROJECT NO. X2116**

machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Agency or Contractor. Agency or Contractor, upon completion of the Project, shall leave CSXT Property in neat condition, satisfactory to CSXT Representative.

**XIII. FAILURE TO COMPLY**

CSXT shall notify Agency or Contractor of any violation or failure to comply with any of the requirements of these Special Provisions, (a) CSXT may require Agency and/or Contractor to vacate CSXT Property; and (b) CSXT may withhold monies due Agency and/or Contractor; (c) CSXT may require Agency to withhold monies due Contractor; and (d) CSXT may cure such failure and the Agency shall reimburse CSXT for the cost of curing such failure.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**EXHIBIT D**

**FORCE ACCOUNT ESTIMATE**

ACCT. CODE : 709 - GA2039

Form Revision  
06/18/18

ESTIMATE SUBJECT TO REVISION AFTER:

5/6/2019

DOT NO.: 340397A

CITY: Marietta

COUNTY: Cobb

STATE: GA

DESCRIPTION:

Old US-41 OHBR Reconstruction over CSX, and the installation of new #2 signal approximately 120' North from the existing signal with two new insulated joints and meter service.

ZONE: Atlanta

SUB-DIV: W&A

MILE POST: OWA-22.48

AGENCY PROJECT NUMBER:

CCDOT Project No. X2116

PRELIMINARY ENGINEERING:

212 Contracted & Administrative Engineering Services

\$ 27,000

Subtotal

\$ 27,000

CONSTRUCTION ENGINEERING/INSPECTION:

212 Contracted & Administrative Engineering Services

\$ 92,400

Subtotal

\$ 92,400

FLAGGING SERVICE: (Contract Labor)

70 Labor (Conductor-Flagman)

0 Days @ \$ -

\$ -

50 Labor (Foreman/Inspector)

320 Days @ \$ 504.00

\$ 161,280

70 Additive 209.30% (Transportation Department)

\$ -

50 Additive 188.70% (Engineering Department)

\$ 304,335

230 Expenses (Engineering Department)

320 Days @ \$ 75.00

\$ 24,000

230 Expenses (Transportation Department)

0 Days @ \$ -

\$ -

Subtotal

\$ 489,615

SIGNAL & COMMUNICATIONS WORK:

\$ 111,140

TRACK WORK:

\$ -

PROJECT SUBTOTAL:

\$ 720,156

900 CONTINGENCIES:

10.00%

\$ 69,316

PROJECT TOTAL:

\$ 789,471

CURRENT AUTHORIZED BUDGET:

\$ 27,000

TOTAL SUPPLEMENT REQUESTED:

\$ 762,471

DIVISION OF COST:

Agency 100.00%

\$ 762,471

Railroad 0.00%

\$ -

This estimate has been prepared based on site conditions, anticipated work duration periods, material prices, labor rates, manpower and resource availability, and other factors known as of the date prepared. The actual cost for CSXT work may differ based upon the agency's requirements, their contractor's work procedures, and/or other conditions that become apparent once construction commences or during the progress of the work.

Office of Chief Engineer Public Projects--Jacksonville, Florida

Estimated prepared by: J. Brangenberg - STV

Approved by: CTA CSXT Public Project Group

DATE: 11/07/18 REVISED: 01/00/00 DATE: 11/14/18

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

ACCT. CODE : 709 - GA2039	Form Revision	
Pub EB - 3	GFP	06/18/18

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ESTIMATE SUBJECT TO REVISION AFTER: 5/6/2019 DOT NO.: 340397A

CITY: Marietta COUNTY: Cobb STATE: GA

DESCRIPTION: Old US-41 OHBR Reconstruction over CSX, and the installation of new #2 signal approximately 120' North from the existing signal with two new insulated joints and meter service.

ZONE: Atlanta SUB-DIV: W&A MILEPOST: 0WA-22.48

DRAWING NO.: \_\_\_\_\_ DRAWING DATE: \_\_\_\_\_

AGENCY PROJECT NUMBER: CCDOT Project No. X2116

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**PRELIMINARY ENGINEERING:**

Contracted & Administrative Engineering Services	\$ 27,000
<b>Subtotal</b>	<b>\$ 27,000</b>

---

**CONSTRUCTION ENGINEERING/INSPECTION:**

Contracted & Administrative Engineering Services	\$ 92,400
<b>Subtotal</b>	<b>\$ 92,400</b>

---

**FLAGGING SERVICE: (Contract Labor)**

Labor (Conductor-Flagman)	0	Days @	\$ -
Labor (Foreman/Inspector)	320	Days @	\$ 504.00
Additive 209.30% (Transportation Department)			\$ -
Additive 188.70% (Engineering Department)			\$ 304,335
Expenses (Engineering Department)	320	Days @	\$ 75.00
Expenses (Transportation Department)	0	Days @	\$ -
<b>Subtotal</b>			<b>\$ 489,615</b>

---

**COMMUNICATIONS WORK:**

Temporary (Details Attached)	\$ -
Permanent (Details Attached)	\$ -
<b>Subtotal</b>	<b>\$ -</b>

---

**TRACK: LABOR**

Traffic Control	0	MAN-HRS	\$ -
Remove Existing Crossing	0	MAN-HRS	\$ -
Renew Cross Ties	0	MAN-HRS	\$ -
Renew Rail	0	MAN-HRS	\$ -
Install OTM	0	MAN-HRS	\$ -
Install Field Welds	0	MAN-HRS	\$ -
Install Geo-Textile Fabric	0	MAN-HRS	\$ -
Install Sub-Drains	0	MAN-HRS	\$ -
Install Ballast	0	MAN-HRS	\$ -
Line and Surface	0	MAN-HRS	\$ -
Install Crossing Materials	0	MAN-HRS	\$ -
Install Bituminous Pavement	0	MAN-HRS	\$ -
_____	0	MAN-HRS	\$ -
_____	0	MAN-HRS	\$ -
Clean-Up	0	MAN-HRS	\$ -
Additive 188.70%			\$ -
Per Diem	0	MAN-DAY	\$ -
<b>Subtotal</b>			<b>\$ -</b>

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**TRACK: MATERIAL**

Cross Ties, Main Line	0	EA	\$	-
	0	EA	\$	-
Cross-tie - Borate	0	EA	\$	-
Crossties, 10' Length	0	EA	\$	-
Tie plates	0	EA	\$	-
Rail, 136RE, New	0	LF	\$	-
Misc. OTM	0	LOT	\$	-
Geo-Textile Fabric	0	RL	\$	-
Sub-Drains	0	LF	\$	-
Ballast - Car load	0	NT	\$	-
Ballast - Trucked in	0	NT	\$	-
Field Welds	0	EA	\$	-
	0	—	\$	-
	0	—	\$	-
Concrete Full Width	0	TF	\$	-
Concrete/Rubber Xing (CSX)	0	TF	\$	-
Rubber Crossing, Full Depth	0	TF	\$	-
Timber/Asphalt Crossing (CSX Standard)	0	TF	\$	-
Bituminous Material	0	NT	\$	-
Sales Tax on Material 10.00%			\$	-
Material Handling 15.00%			\$	-
<b>Subtotal</b>			<b>\$</b>	<b>-</b>

**CONTRACT:**

Asphalt Paving (In Place)	0	NT	\$	-
Disposal of Waste Materials	0	TF	\$	-
Maintenance of Traffic	0	DAY	\$	-
<b>Subtotal</b>			<b>\$</b>	<b>-</b>

**EQUIPMENT RENTAL:**

CSX vehicle and equipment rental included in overhead percentage			\$	-
<b>Subtotal</b> Use for extraordinary rental or unique Service Contract			<b>\$</b>	<b>-</b>

**WORK TRAIN:**

	0	DAY	\$	-
<b>Subtotal</b>			<b>\$</b>	<b>-</b>

**SALVAGE:**

Rail	0	NT	\$	-
OTM	0	NT	\$	-
<b>Subtotal</b>			<b>\$</b>	<b>-</b>

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
**Marietta, Cobb Co., GA**  
**M.P. 0WA-22.48; DOT# 340397A; W&A Sub.**  
**CSXT OP# GA2039**  
**COBB DOT PROJECT NO. X2116**

**SIGNAL WORK:**

Material - Field & Consumables	\$	19,696
Material - Sales Tax	\$	1,477
Material - Shop	\$	-
Construction Labor	\$	29,640
Shop Labor	\$	-
Per Diem	\$	-
RR Engineering, Preliminary		3490
RR Engineering, Construction		4446
Additives to Construction Labor		38324
Additives to Shop Labor		0
Additives to Engineering	\$	-
Equipment Expense	\$	-
Waste Management	\$	192
Contract Engineering	\$	6,495
Freight	\$	2,382
AC Power Service	\$	5,000
Salvage	\$	(1)
Other	\$	-
<b>Subtotal</b>	<b>\$</b>	<b>111,140</b>

**PROJECT SUBTOTAL:**

**\$ 720,156**

**CONTINGENCIES:**

10.00%

\$ 69,316

**PROJECT TOTAL:**

**\$ 789,471**

**CURRENT AUTHORIZED BUDGET:**

**\$ 27,000**

**TOTAL SUPPLEMENT REQUESTED:**

**\$ 762,471**

**DIVISION OF COST:**

Agency	<u>100.00%</u>	\$ 762,471
Railroad	<u>0.00%</u>	\$ -

This estimate has been prepared based on site conditions, anticipated work duration periods, material prices, labor rates, manpower and resource availability, and other factors known as of the date prepared. The actual cost for CSXT work may differ based upon the agency's requirements, their contractor's work procedures, and/or other conditions that become apparent once construction commences or during the progress of the work.

Office of Chief Engineer Public Projects--Jacksonville, Florida

Estimated prepared by: J. Brangenberg - STV

Approved by: CTA

CSXT Public Project Group

DATE: 11/07/18

REVISED:

DATE: 11/14/18



**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation  
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**EXHIBIT E**

**PAYMENT SCHEDULE**

**Advance Payment in Full**

Upon execution and delivery of notice to proceed with the Project, Agency will deposit with CSXT a lump sum equal to the Reimbursable Expenses, as shown by the Force Account Estimate attached hereto and incorporated herein by reference. If CSXT anticipates that it may incur Reimbursable Expenses in excess of the deposited amount, CSXT will contact Agency prior to the commencement of any activities that involve additional Agency cost(s) and will request in writing an additional deposit equal to the then remaining Reimbursable Expenses which CSXT estimates that it will incur. CSXT shall request such additional deposit by delivery of invoices to Agency. Agency shall make such additional deposit within eighty (80) days following delivery of such invoice(s), subject to the approval of Agency's Board of Commissioners at a regularly scheduled public meeting.

**EXHIBIT F**

**INSURANCE REQUIREMENTS**

**I. Insurance Policies:**

Agency and Contractor, if and to the extent that either is performing work on or about CSXT's property, shall procure and maintain the following insurance policies:

1. Commercial General Liability coverage at their sole cost and expense with limits of not less than \$5,000,000 in combined single limits for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured. The policy shall include endorsement ISO CG 24 17 evidencing that coverage is provided for work within 50 feet of a railroad. If such endorsement is not included, railroad protective liability insurance must be provided as described in item 4 below.
2. Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than \$1,000,000, which insurance must contain a waiver of subrogation against CSXT and its affiliates (if permitted by state law).
3. Commercial automobile liability insurance with limits of not less than \$1,000,000 combined single limit for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured. The policy shall include endorsement ISO CA 20 70 evidencing that coverage is provided for work within 50 feet of a railroad. If such endorsement is not included, railroad protective liability insurance must be provided as described in item 4 below.
4. Railroad protective liability insurance with limits of not less than \$5,000,000 combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of \$10,000,000, which insurance shall satisfy the following additional requirements:
  - a. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance - Insurance Services Office (ISO) Form CG 00 35.
  - b. CSX Transportation must be the named insured on the Railroad Protective Insurance Policy.
  - c. Name and Address of Contractor and Agency must appear on the Declarations page.
  - d. Description of operations must appear on the Declarations page and must match the Project description.

**Old US-41 Overhead Bridge Replacement over CSXT & Wayside Signal Relocation**  
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**COBB DOT PROJECT NO. X2116**

- e. Authorized endorsements must include the Pollution Exclusion Amendment - CG 28 31, unless using form CG 00 35 version 96 and later.
  - f. Authorized endorsements may include:
    - (i). Broad Form Nuclear Exclusion - IL 00 21
    - (ii). 30-day Advance Notice of Non-renewal or cancellation
    - (iii). Required State Cancellation Endorsement
    - (iv). Quick Reference or Index - CL/IL 240
  - g. Authorized endorsements may not include:
    - (i). A Pollution Exclusion Endorsement except CG 28 31
    - (ii). A Punitive or Exemplary Damages Exclusion
    - (iii). A "Common Policy Conditions" Endorsement
    - (iv). Any endorsement that is not named in Section 4 (e) or (f) above.
    - (v). Policies that contain any type of deductible
5. All insurance companies must be A. M. Best rated A- and Class VII or better.
6. The CSX OP number or CSX contract number, as applicable, must appear on each Declarations page and/or certificates of insurance.
7. Such additional or different insurance as CSXT may require.

**II. Additional Terms**

1. Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance and all notices and correspondence regarding the insurance policies to:

Insurance Department  
CSX Transportation, Inc.  
500 Water Street, C-907  
Jacksonville, FL 32202

OR

insurancedocuments@csx.com

2. Neither Agency nor Contractor may begin work on the Project until it has received CSXT's written approval of the required insurance.

**Old US-41 Overhead Bridge Replacement over CSXT& Wayside Signal Relocation  
Marietta, Cobb Co., GA  
M.P. 0WA-22.48; DOT# 340397A; W&A Sub.  
CSXT OP# GA2039  
COBB DOT PROJECT NO. X2116**

**SCHEDULE I**

**CONTRACTOR'S ACCEPTANCE**

To and for the benefit of CSX Transportation, Inc. ("CSXT") and to induce CSXT to permit Contractor on or about CSXT's property for the purposes of performing work in accordance with the Agreement dated \_\_\_\_\_, 201\_\_, between Cobb County DOT and CSXT, Contractor hereby agrees to abide by and perform all applicable terms of the Agreement, including, but not limited to Exhibits C and F to the Agreement, and Sections 3, 9 and 11 of the Agreement.

Contractor: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

### SUPPLEMENTAL SPECIFICATION

## **Section 550—Storm Drain Pipe, Pipe-Arch Culverts, and Side Drain Pipe**

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*Delete Section 550 and Substitute the following:*

### **550.1 General Description**

This work includes furnishing and installing the following:

- Storm drain pipe
- Side drain pipe
- Pipe-arch culverts
- Elliptical pipe
- Flared end sections
- Safety end sections
- Tapered pipe inlets

Install structures according to the Specifications and the details shown on the Plans, or as directed by the Engineer.

#### **550.1.01 Definitions**

Side Drain – All driveway pipes (commercial, non-commercial, residential, utility, farm, logging, and mining).

Storm Drain Pipe –All pipe used in the highway drainage system that receives surface water through inlets and conveys the water through conduits to a pipe outlet

Thermoplastic Pipe – High Density Polyethylene (HDPE), Polypropylene (PP) and Polyvinyl Chloride (PVC).

General Provisions 101 through 150.

#### **550.1.02 Related References**

##### **A. Standard Specifications**

Section 205—Roadway Excavation

Section 207—Excavation and Backfill for Minor Structures

Section 208—Embankments

Section 645—Repair of Galvanized Coatings

Section 812—Backfill Materials

Section 815—Graded Aggregate

Section 834—Masonry Materials

Section 840—Corrugated Aluminum Alloy Pipe

Section 841—Iron Pipe

Section 843—Concrete Pipe

Section 844—Steel Pipe

Section 845—Thermoplastic Pipe

Section 847—Miscellaneous Pipe

Section 848—Pipe Appurtenances

## **B. Referenced Documents**

General Provisions 101 through 150.

GDOT Manual on Drainage Design for Highways

Ga. Std. 1030D

Ga. Std. 1030P

GDT 136

ASTM D 2321

### **550.1.03 Submittals**

General Provisions 101 through 150.

## **550.2 Materials**

Ensure materials meet the requirements of the following Specifications:

<b>Material</b>	<b>Section</b>
Backfill Materials	207
Graded Aggregate	815
Reinforced Concrete Pipe	843.2.01
Nonreinforced Concrete Pipe	843.2.02
Mortar And Grout	834.2.03
Bituminous Plastic Cement	848.2.05
Rubber Type Gasket Joints (Concrete Pipe)	848.2.01
Preformed Plastic Gaskets	848.2.06
Corrugated Steel Pipe	844.2.01
Bituminous Coated Corrugated Steel Pipe	844.2.02
Corrugated Aluminum Alloy Pipe	840.2.01
Bituminous Coated Corrugated Aluminum Pipe	840.2.03
Aluminized Type 2 Corrugated Steel Pipe	844.2.06
Ductile Iron Pipe, Fittings and Joints	841
Precoated, Galvanized Steel Culvert Pipe	844.2.05
Smooth Lined Corrugated High Density (HDPE) Polyethylene Culvert Pipe	845.2.01
Polyvinyl Chloride (PVC) Profile Wall Drain Pipe	845.2.02
Polyvinyl Chloride (PVC) Corrugated Smooth Interior Drain Pipe	845.2.03
Smooth Lined Corrugated Polypropylene (PP) Pipe	845.2.05
Miscellaneous Pipe	847

Use any of the following types of pipe:

- Reinforced concrete

- Nonreinforced concrete
- Corrugated steel or Aluminum
- Smooth-lined corrugated high density polyethylene (HDPE)
- Ductile iron
- Polyvinyl Chloride (PVC) Profile Wall Drain Pipe
- Polyvinyl Chloride (PVC) Corrugated Smooth Interior Drain Pipe
- Precoated, Galvanized Steel Culvert Pipe (Polymer)
- Smooth Lined Corrugated Polypropylene (PP) Pipe

Use the type of pipe designated on the Plans, or acceptable alternate types when applicable. For a listing of acceptable alternate pipe types see the GDOT Approved Material Selections List in Chapter 7– Storm Drain Design of the Department’s Manual on Drainage Design for Highways. This document summarizes general applications for pipe.

For concrete, corrugated steel and aluminum pipes see Ga. Std. 1030D for minimum thicknesses, minimum cover, maximum fill, allowable pipe diameters and trench construction detail.

For thermoplastic pipes see Ga. Std. 1030P for minimum cover, maximum fill, allowable pipe diameters and trench construction details.

#### **A. Thermoplastic Pipe Project Restrictions**

Thermoplastic pipe is restricted to the following project conditions:

1. Storm Drain
  - a. Travel Bearing: ADT equal to or less than 15,000
  - b. Non-Travel Bearing: Non-Interstate
2. Side Drain
  - a. Allowed on all projects

#### **550.2.01 Delivery, Storage, and Handling**

General Provisions 101 through 150.

### **550.3 Construction Requirements**

#### **550.3.01 Personnel**

General Provisions 101 through 150.

#### **550.3.02 Equipment**

General Provisions 101 through 150.

#### **550.3.03 Preparation and Backfill**

Before installing pipe, shape the foundation material as shown on the Plans.

Prepare structure excavations, foundation and backfill according to Section 207. Except, use the following foundation and backfill material requirements for thermoplastic pipe installations:

1. For storm drain applications (cross and longitudinal) use graded aggregate material meeting Subsection 815.2.01.
  - a. 20 ft (6.1 m) maximum fill height for High Density (HDPE) Polyethylene Culvert Pipe.
  - b. 25 ft (7.6 m) maximum fill height for Polyvinyl Chloride (PVC) and Polypropylene (PP) Pipe.
2. For side drain applications (driveway) use backfill material based on fill height.

- a. Fill heights up to 10 ft (3 m), use normal backfill material meeting the following soil classes per Subsection 810.2.01.
  - High Density (HDPE) Polyethylene Culvert Pipe use Class II B2 soil or better.
  - Polyvinyl Chloride (PVC) and Polypropylene (PP) Pipe use Class II B3 soil or better.
  - If the required soil Class is not available use graded aggregate material meeting Subsection 815.2.01.
- b. Fill heights above 10 ft (3 m), use graded aggregate material meeting Subsection 815.2.01.

#### **550.3.04 Fabrication**

General Provisions 101 through 150.

#### **550.3.05 Construction**

##### **A. Drainage**

Provide necessary temporary drainage. Periodically remove any debris or silt constricting the pipe flow to maintain drainage throughout the life of the Contract.

##### **B. Damage**

Protect the structure by providing sufficient depth and width of compacted backfill before allowing construction over a culvert. Repair damage or displacement from traffic or erosion occurring after installing and backfilling at no additional cost to the Department.

##### **C. Installation**

Check vertical and horizontal alignment of the pipe culvert or pipe barrel by sighting along the crown, invert and sides of the pipe, and by checking for sagging, faulting and invert heaving. Repair any issues involving incorrect horizontal and/or vertical alignment before backfilling pipe.

##### **1. Concrete Pipe**

Lay sections in a prepared trench with the socket ends pointing upstream. Join section using rubber gasket installed according to Subsection 848.2.01 and the manufacturer's recommendations.

##### **2. Ductile Iron Pipe**

Lay pipe sections in a prepared trench, with bells pointing upstream. Construct joints according to Subsection 841.2.02.A.

##### **3. Corrugated Aluminum or Steel Pipe and Pipe-Arches**

Lay pipe sections in a prepared trench, with outside laps of circumferential joints pointing upstream and longitudinal joints at the sides. Join the sections with coupling bands, fastened by two or more bolts. Before backfilling the structure:

- a. Repair areas of damaged coatings and exposed base metal according to applicable AASHTO Standard Specification specified in Section 844.

##### **4. Smooth-Lined Corrugated HDPE Pipe**

Install smooth-lined corrugated HDPE pipe according to ASTM D 2321 using backfill requirements in Subsection 550.3.03. Use fitting and couplings that comply with the joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II. Ensure all joints are "silt tight" as stated in the AASHTO bridge specifications.

##### **5. Specials (Wyes, Tees, and Bends)**

Install wyes, tees, and bends as shown on the Plans or as directed.

##### **6. Tapered Pipe Inlets**

Locate and install tapered pipe inlet end sections as shown on the Plans or as directed.

##### **7. Elongation**

Elongate metal pipe as shown on the Plans. Order the elongation of the vertical axis of the pipe to be done in the shop.



Ensure the manufacturer ship metal pipe with wire ties in the pipe ends. Remove wire-ties immediately after completing the fill.

8. Flared End Sections

Use flared end sections on the inlet, outlet, or on both ends of storm drain pipe, according to Plan details.

9. PVC Drain Pipe

Install polyvinyl chloride (PVC) drain pipe according to ASTM D 2321 using backfill requirements in Subsection 550.3.03. Use fittings and couplings complying with the joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II. Ensure all joints are “silt tight” as stated in the AASHTO bridge specifications.

10. Smooth-Lined Polypropylene Pipe

Install smooth-lined polypropylene pipe according to ASTM D 2321 using backfill requirements in Subsection 550.3.03. Use fittings and couplings complying with the joint performance criteria of AASHTO Standard Specifications for Highway Bridges, Division II. Ensure all joints are “silt tight” as stated in the AASHTO bridge specifications.

### **550.3.06 Quality Acceptance**

#### **A. Post Installation Inspection**

For projects located on the State Route system, including interstates, inspect 100% of all storm drain pipe and a minimum of 10.0 % of all side drain pipe installations. Conduct post installation inspections in accordance with the requirements of this Specification and GDT 136.

Before post installation inspection, dewater installed pipe (if necessary) and provide the Engineer with a post installation inspection schedule. Notify the Engineer at least seven days in advance of beginning inspection. Perform post installation inspections once compacted backfill has reached a depth of 8 feet or after completion of the pipe installation and final cover, which includes the embankment and all non-asphalt bases and/or subgrades. Notify the Engineer of problems found during the inspection. The Engineer will determine if corrective action is necessary.

Perform post installation inspection with the use of low barrel distortion video equipment with laser profile technology, non-contact video micrometer and associated software.

Video and laser profiling and measurement technology must be certified by the company performing the work to meet the requirements of GDT 136. Inspection contractor personnel completing remote inspections shall be NASSCO – PACP Certified Technicians.

For video recorded, laser profiled pipe indicating deflection is in excess of Specification requirements, the Contractor may elect to further test the pipe with the use of a mandrel. Ensure mandrel meets requirements of GDT 136 and the Engineer has approved before use. Pull the mandrel by hand.

Manual post installation inspection allowed for pipe diameters greater than 48 inches per Subsection 550.3.06.B.

Re-inspect 100% of pipe remediation locations or where replacement was required.

#### **B. Manual Post Installation Inspections**

Perform a manual inspection by entering the pipe structure to record video and to make measurements. For all pipe structures considered a confined space, provide entry for all project inspection personnel according to OSHA requirements. Furnish a video recording of each inspection. On the recording, identify the date and time of the inspection, a description of the pipe structure, location, and viewing direction. Record the entire run of pipe. Provide a light source which allows observation of all areas of concern on the video recording. Furnish the video recording in a digital, reproducible format on one of the following media types: DVD or CD.

Measure the deflection of the pipe using either a metal or fabric tape and read to the nearest 0.5 inch (10 mm). Measure crack width using either a crack comparator or a feeler gage capable of measuring 0.01 inch (0.25 mm). Measure joint gaps using a tape or ruler and read to the nearest 0.5 inch (10 mm). Other measuring devices may be used if approved by the Engineer.

Record the measurements and include them in the inspection report. Measure and record the following:

1. The location, length and greatest width of each crack.
2. Smallest inside diameter three times for each pipe section in the run. Take the first measurement vertically from the crown to invert (12 o'clock to 6 o'clock positions). Take the second measurement by rotating 60 degrees from

vertical (2 o'clock to 8 o'clock positions). Take the third measurement by rotating 120 degrees from vertical (4 o'clock to 10 o'clock positions). For all measurements, stretch tape to full extent across inside of pipe.

3. Widest gap at each joint in the run.

Record the location and describe other defects not listed above. For each measurement location in a pipe, record the length from the nearest drainage structure.

#### **C. Inspection Report**

Submit inspection report to the Engineer after completion of the required post installation inspection. Ensure inspection report meets the requirements of this Specification and GDT 136.

#### **D. Requirements for Concrete Pipe**

1. Joints: Note differential movement, cracks, spalling, improper gasket placement, movement or settlement of pipe sections, and leakage in the inspection report. Repair or replace pipe sections to the satisfaction of the Engineer where joint separation is greater than 1 inch (25 mm). Repair or replace pipe sections where soil migration through the joint is occurring.
2. Longitudinal and Transverse Cracks: Cracks with a width less than 0.01 inch (0.25 mm) are considered hairline and minor and only need to be noted in the inspection report, no corrective action is necessary. When cracks are wider than 0.01 inch (0.25 mm) and extend for a length of 12 inch (300 mm) or more, regardless of position in the wall of the pipe, measure the width, length, and locations of the cracks and diameter of the pipe, both horizontally and vertically, use remediation methods in accordance with recommendations of the pipe manufacturer and submit to the Engineer for review and approval an evaluation utilizing a Professional Engineer that takes into consideration structural integrity, environmental conditions, and the design service life of the pipe.

Seal by a method approved by the Engineer cracks having widths equal to or greater than 0.01 inch (0.25mm) that extend for a length of 12 inch (300 mm) or more and determined to be detrimental. Remediate or replace pipe with cracks widths greater than 0.1 inch (2.5 mm) and determined by the Engineer to be beyond satisfactory structural repair. Repair or replace pipes having displacement across the crack.

#### **E. Requirements for Thermoplastic Pipe**

1. Joints: Remediate pipe showing evidence of crushing at the joints. Note differential movement, improper joint sealing, movement or settlement of pipe sections, and leakage in the inspection report. Remediate joint separation of greater than 1 inch (25 mm). Repair or replace pipe sections where soil migration through the joint is occurring.
2. Cracks: Remediate cracks or splits in the interior wall of the pipe. Use remediation methods in accordance with recommendations of the pipe manufacturer and accepted and authorized by the Engineer.
3. Buckling, bulging, and racking: Note in the inspection report flat spots or dents at the crown, sides or flowline of the pipe due to racking. Note areas of wall buckling and bulging in the inspection report. The Engineer will determine if corrective action is necessary.
4. Deflection: Where pipe deflection exceeds 5% of the nominal diameter, submit to the Engineer for review and approval an evaluation utilizing a Professional Engineer taking into consideration the severity of the deflection, structural integrity, environmental conditions, and the design service life of the pipe. Remediate or replace pipe where the evaluation finds the deflection could be problematic or where pipe deflection exceeds 7.5% of the nominal diameter.

#### **F. Requirements for Corrugated Aluminum or Coated Steel Pipe**

1. Joints: Remediate pipe showing evidence of crushing at the joints. Note differential movement, improper joint sealing, movement or settlement of pipe sections, and leakage in the inspection report. Remediate joint separation of greater than 1 inch (25 mm). Repair or replace pipe sections where soil migration through the joint is occurring.
2. Cracks: Remediate cracks or splits in the interior wall of the pipe. Use remediation methods in accordance with recommendations of the pipe manufacturer and accepted and authorized by the Engineer.
3. Buckling, bulging, and racking: Note flat spots or dents at the crown, sides or flowline of the pipe due to racking in the inspection report. Note areas of wall buckling and bulging in the inspection report. The Engineer will determine if an additional evaluation by a Professional Engineer is required. Remediate or replace pipe where the evaluation finds the damaged section could be problematic.

4. Deflection: Where pipe deflection exceeds 5% of the nominal diameter, submit to the Engineer for review and approval an evaluation utilizing a Professional Engineer that takes into consideration the severity of the deflection, structural integrity, environmental conditions, and the design service life of the pipe. Remediate or replace pipe where the evaluation finds the deflection could be problematic or where pipe deflection exceeds 7.5% of the nominal diameter.
5. Coating: Note areas of the pipe where the original coating has been scratched, scoured or peeled in the inspection report. The Engineer will determine if repair is necessary. Use remediation methods in accordance with recommendations of the pipe manufacturer and accepted and authorized by the Engineer.

### **550.3.07 Contractor Warranty and Maintenance**

General Provisions 101 through 150.

## **550.4 Measurement**

### **A. Excavation and Backfill**

Foundation backfill materials Types I, II and III are measured according to Subsection 207.4, "Measurement."

Normal backfill is not measured separately.

No measurement will be made for grade aggregate used for structural backfill of thermoplastic pipe.

### **B. Flat Bottom and Circular Pipe (All Types)**

The overall length of pipe installed, excluding tapered inlets, is measured in linear feet (meters), along the central axis of the diameter of the pipe. Wyes, tees, and bends are included in this measurement.

### **C. Pipe-Arches**

The overall length of pipe-arch installed is measured in linear feet (meters), along the bottom center line of the pipe.

### **D. Multiple Installations**

In multiple installations, each single line of culvert structure is measured separately.

### **E. Tapered Pipe Inlets**

Tapered pipe inlet sections are measured as a unit; do not include them in the overall length of the pipe.

### **F. Flared-End Sections**

Flared-end sections are measured separately by the unit and not included in the overall pipe length.

### **G. Smooth-Flow Pipe**

Smooth-flow pipe is measured by the linear foot (meter) along the pipe invert.

### **H. Elliptical Pipe**

Elliptical pipe is measured in linear feet (meters) along the bottom center line of the pipe.

### **I. Post Installation Inspection**

No measurement will be made for post installation inspection.

### **550.4.01 Limits**

Excavation and normal backfill are not measured for payment.

## **550.5 Payment**

### **A. Backfill**

Foundation backfill material Type II and III will be paid for according to Section 207.

Foundation backfill material Type I will be paid for according to Section 205 or Section 206.

Graded aggregate used for structural backfill of thermoplastic pipe will not be paid for separately, payment will be included in the overall price bid for pipe.

## B. Pipe Installations

Pipe installations complete in place and accepted will be paid for at the Contract Price for each item.

This payment is full compensation for excavating, furnishing, and hauling materials; installing, cutting pipe where necessary; repairing or replacing damaged sections; post installation inspection, making necessary connections; strutting, elongating, providing temporary drainage; joining an extension to an existing structure where required; and removing, disposing of, or using excavated material as directed by the Engineer.

### 1. Smooth Flow Pipe

The quantity of each diameter and steel thickness of smooth flow pipe as measured will be paid for at the Contract Unit Price per linear foot (meter) bid for the various sizes. Payment is full compensation for furnishing labor, materials, tools, O-ring mechanical joints, equipment, and incidentals to complete this Item, including removing and disposing excavation material.

### 2. Flared-End Sections

Flared-end sections, measured as specified above, will be paid for at the Contract Unit Price for each section of the specified size.

Payment will also include sawing, removing, and replacing existing pavement removed to install a new drainage structure.

## C. Post Installation Inspection

No separate payment will be made for this work. Include the cost in the bid submitted for this pay item.

Payment for this item is made as follows:

One hundred percent of the Contract Price bid per linear foot (meter) is paid when the pipe is installed per the specifications including the required material documentation. The Contract Price is paid before post installation inspection.

Payment will be made under:

Item No. 550	Storm drain pipe ___ in (mm), H=___	Per linear foot (meter)
Item No. 550	Side drain pipe ___ in (mm), H=___	Per linear foot (meter)
Item No. 550	Pipe arch (span) ___ in (mm) x (rise) ___ in (mm)	Per linear foot (meter)
Item No. 550	Tapered pipe inlet ___ in (mm),	Per each
Item No. 550	Flared-end section ___ in (mm),	Per each
Item No. 550	Elliptical pipe ___ in (mm) wide x ___ in (mm) high	Per linear foot (meter)

### 550.5.01 Adjustments

Excavation will not be paid for separately, but the other provisions of Section 205 and Section 208 shall govern.

Office of Materials and Testing