

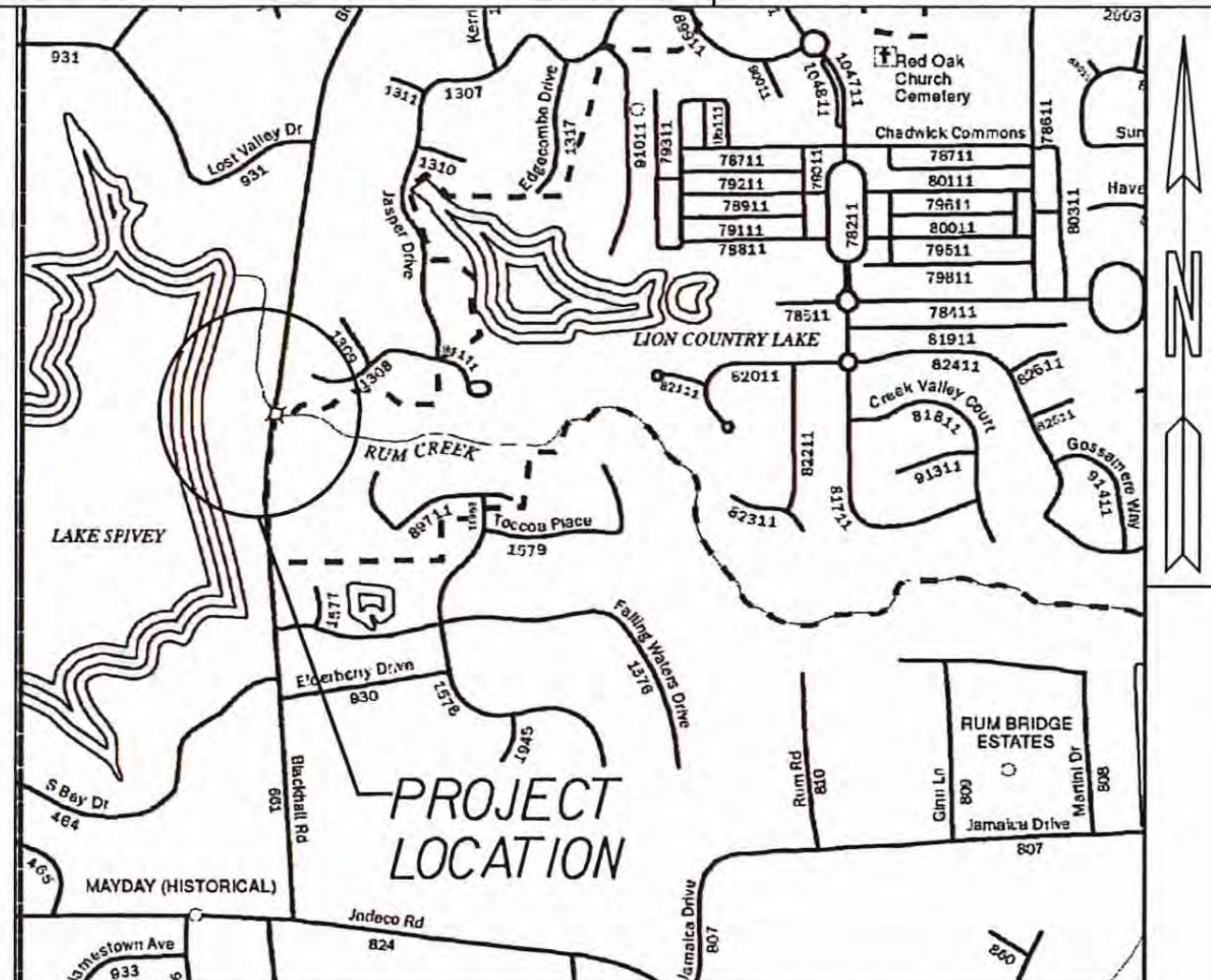
DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

PLAN AND PROFILE OF PROPOSED BRIDGE REPLACEMENT ON CR661/BLACKHALL RD AT RUM CREEK

FEDERAL AID PROJECT

LOCATION & DESIGN
APPROVAL DATE: MARCH 31, 2017

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.



LOCATION SKETCH

DESIGN DATA:
2019 TRAFFIC A.D.T.: 6550
2039 TRAFFIC A.D.T.: 8300
TRAFFIC D.H.V.: 830
DIRECTIONAL DIST: 60%
% TRUCKS: 4%
24 HR. TRUCKS %: 5%
SPEED DESIGN: 45 MPH

FUNCTIONAL CLASS:
RURAL MINOR ARTERIAL

THIS PROJECT IS 100% IN HENRY COUNTY AND IS 100% IN CONG. DIST. NO. 013.

PROJECT DESIGNATION: EXEMPT
DESIGNED IN ENGLISH UNITS.

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.

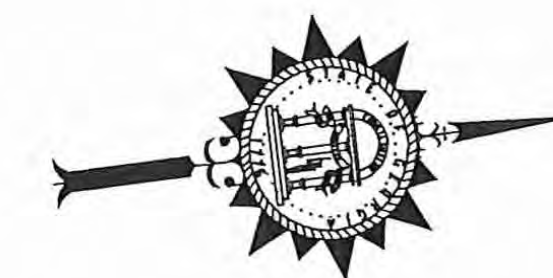
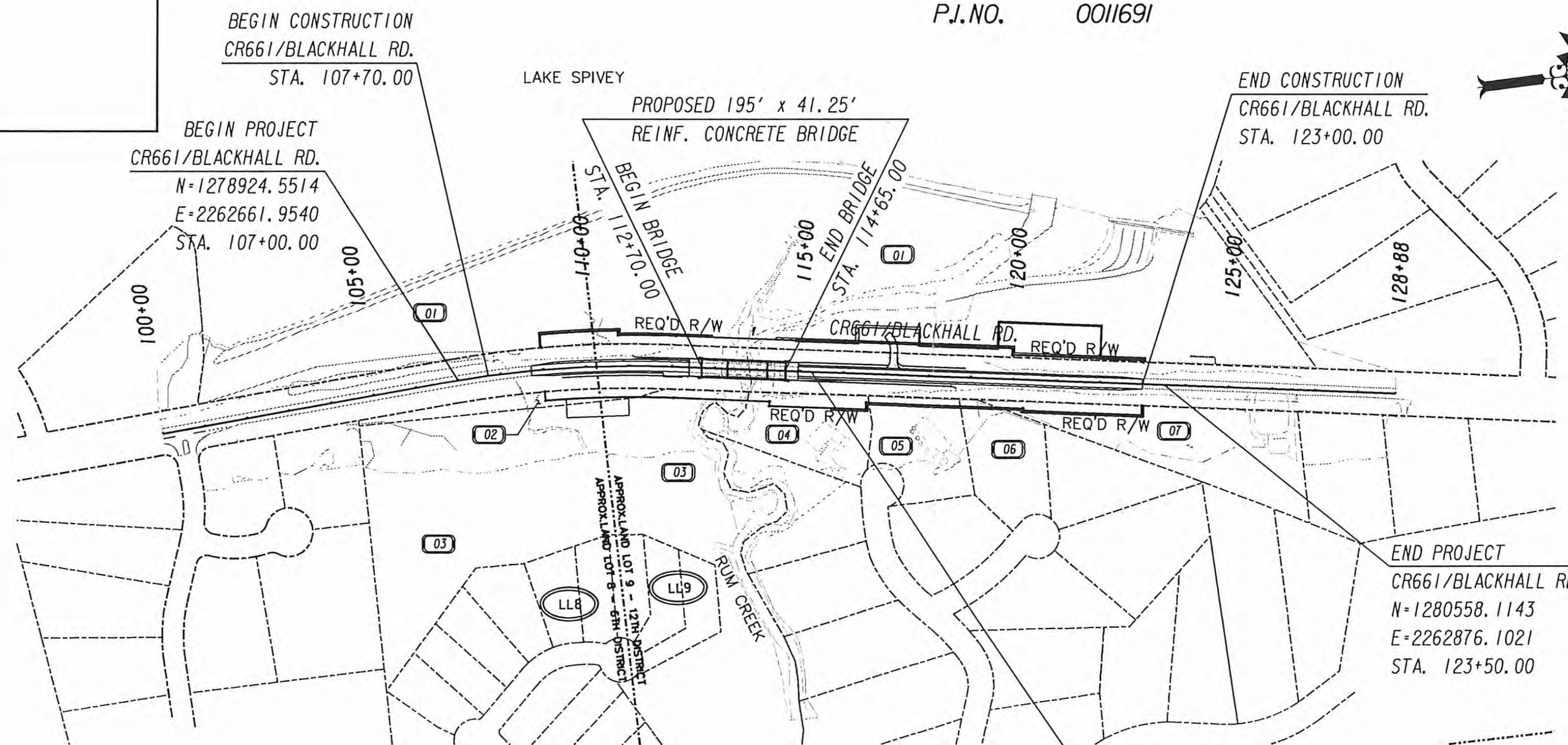
THE DATA TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT 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.

HENRY COUNTY

FEDERAL ROUTE * N/A

STATE ROUTE * N/A

P.J. NO. 0011691



PLANS PREPARED BY



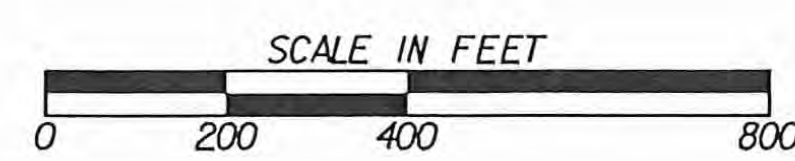
270 Peachtree St. NW, Suite 1500
Atlanta, GA 30303-1283
678.954.5000 - www.chacompanies.com

PREPARED BY: CHRISTOPHER A. EDMONDSON
DESIGNER'S NAME

SUBMITTED BY: *Kimberly J. Pettit*
STATE PROGRAM DELIVERY ADMINISTRATOR

DATE: 6/7/18
CHIEF ENGINEER: *Manuel B. Pirek*

LENGTH OF PROJECT	HENRY COUNTY COUNTY No. 151 Project No. 0011691
	MILES
NET LENGTH OF ROADWAY	0.276
NET LENGTH OF BRIDGES	0.037
NET LENGTH OF PROJECT	0.313
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.313



PLANS COMPLETED	DATE
REVISIONS	
07/06/2018	
07/30/2018	
08/10/2018	

DRAWING No.
01-0001

DRAWING NO.	DESCRIPTION
INDEX	
1-001	Cover
2-001	Index
3-001	Revision Summary
4-001 to 4-002	General Notes
5-001 to 5-002	Typical Sections
6-001 to 6-002	Summary Quantities
7-001	Quantities Amendment
8-001	Quantities (Construction)
13-001 to 13-004	Mainline Plan
15-001 to 15-003	Mainline Roadway Profile
17-001	Driveway Profile
20-001	Staging Details Detour Plans
20-002	Staging Details - Environmental Impacts
21-001	Drainage Area Map
22-001	Drainage Profiles
23-001 to 23-011	Cross Sections
24-000 to 24-004	Utility Plans
26-001 to 26-005	Signing and Marking Plans
35-001 to 35-018	Bridge Plans
Construction Details	
40-001	D-7 Berm Ditches, Side Ditches, Surface Ditches (7-80)
40-002	F-2 Gate Details for Chain Link & Woven Wire Fence (1-88)
40-003	F-4 Typical Details For Field Fencing (2-88)
40-004	F-5 Detail of Gate to be Used With Field Fencing (3-88)
40-005	M-2 Subbases for Approach Slabs (3-06)
40-006	P-7 Pavement Edge Treatment Asphalt and Concrete Pavement (11-11)
40-007	S-4 Shoulder Paving and Surfacing at Guardrail (4-16)
40-008	S-6 Typical Slope Paving Details (11-88)
40-009	S-7 Serrated Slope Detail/Benching Detail (6-09)
40-010	T-01 Sign Plates (1-00)
40-011	T-3A Type 7, 8 and 9 Square Tube Post Installation Detail (7-02)
40-012	T-11A Details of Pavement Marking Placement (9-16) ON Non-Limited Access Roadway
40-013	T-15A Details of Raised Pavement Marker Location (9-16) Non-Limited Access Roadway
40-014	T-15C Details of Raised Pavement Markers (9-11)
40-015	T-23A Details of Edge Line Rumble Strip (9-17)
40-016	T-23B Details of Shoulder Rumble Strip: Non-Freeway (9-17)
40-017	T-23C Details of Shoulder Rumble Strip: Asphalt Freeways (9-17)
40-018	T-25 Details of Rumble Strip Details For Shoulder, Edgeline and Freeway (9-17)
Construction Standards	
41-001	1011A Brick Manholes (10-81)
41-002	1120 Flared End Sections for Pipes (6-06)
41-003	1030D1 Concrete and Metal Pipe Culverts Sheet 1 of 3 (9-01)
41-004	1030D2 Concrete and Metal Pipe Culverts Sheet 2 of 3 (9-01)
41-005	1030D3 Concrete and Metal Pipe Culverts Sheet 3 of 3 (9-01)
41-006	1034F Catch Basins (For use with 4", 6", 8" or 10" (8-82) Header or Integral Curbs, (In Sag or low points)
41-007	1034FP Precast Catch Basins (For use with 4", 6", 8" or 10" (9-82) Header or Integral Curbs, (In Sag or low points)
41-008	3054 End Post and End Post Guardrail Attachment Detail (9-02)
41-009	3901 Bar Bending Details (8-69)
41-010	4000W Guardrail Warrant Guides (3-16)
41-011	4360 Reflectorized Guardrail Washers and Anchorage Nose Striping (10-14)

DRAWING NO.	DESCRIPTION
Construction Details	
41-012	4380 "W" Beam Guardrail 31" Inch Guardrail Height (3-16)
41-013	4381 Posts and Offset Blocks for "W" & "T" Beam Guardrail 31 Inch Height (3-16)
41-014	4382 Guardrail Connection at Bridge End or At Concrete Barrier End (3-16)
41-015	4383 Guardrail Anchorage Type 1 31 Inch Guardrail Height (8-11)
41-016	4384 Type 12 31 Inch Guardrail Height (3-16)
41-017	4385 "T" Beam Guardrail Connection to 31 Inch Height "W" Beam (8-11)
41-018	4386 "Guardrail Locations in Medians, Guardrail locations (3-16) at Turnouts 31 Inch Guardrail Height
41-019	4388 Guardrail Location Details for Undivided (3-16) Highways (With Shoulders Adjacent To Roadway) 31 Inch Guardrail Height
41-020	4960 Concrete Barrier - Temporary (End Treatment Options) (5-07)
41-021	4961 Details of Precast Temporary Barrier (9-06)
41-022	9003 Details of Markers Federal Aid and State (4-06) Project Markers; Right of Way Markers; County Line Markers
41-023	9017R Reinforced Concrete Approach Slab w/Asphalt (9-02) Inlay 30 ft. Length (Typical Use: Where Shoulder is Adjacent to Roadway and/or Bridge)
41-024	9031N Chain-Link Wire Fence (8-85)
41-025	9031T Isometric Views of Side Road or Drive Flare (8-95) Detail at Bridge Ends
41-026	9032B Concrete Curb and Gutter, Concrete curbs, Concrete Medians (11-11)
41-027	9037 Typical Fill Detail at End of Bridge (9-99)
50-001	Erosion Control Cover Sheet
51-001 to 51-005	ESPC General Notes Erosion Control Legend and Uniform Code Sheet
52-001	EC-L1 Erosion Control Legend and Uniform Code Sheet (Sheet 1 of 7) (3-17)
52-002	EC-L2 Erosion Control Legend and Uniform Code Sheet (Sheet 2 of 7) (3-17)
52-003	EC-L3 Erosion Control Legend and Uniform Code Sheet (Sheet 3 of 7) (3-17)
52-004	EC-L4 Erosion Control Legend and Uniform Code Sheet (Sheet 4 of 7) (3-17)
52-005	EC-L5 Erosion Control Legend and Uniform Code Sheet (Sheet 5 of 7) (3-17)
52-006	EC-L6 Erosion Control Legend and Uniform Code Sheet (Sheet 6 of 7) (3-17)
52-007	EC-L7 Erosion Control Legend and Uniform Code Sheet (Sheet 7 of 7) (3-17)
53-001	Erosion Control Drainage Area Map
54-001 to 54-012	BMP Location Details
55-001	Watershed Map/Site Monitoring Location (1" = 200')
55-002	Watershed Map/Site Monitoring Location (1" = 2000')
Erosion Control Construction Standards and Details	
56-001	D-19 Temporary Pipe Slope Drain with Drain Inlet (2-00)
56-002	D-20 Silt Control Gates for Structures Type - 1, 2, and 3 (4-16)
56-003	D-24A Temporary Silt Fence (Sheet 1 of 4) (1-11)
56-004	D-24B Temporary Silt Fence Berm Ditch, Installation, Brush Barrier - Sheet 2 of 4 (1-11)
56-005	D-24C Temporary Silt Fence J-Hooks, Inlet Sediment Traps - Sheet 3 of 4 (1-11)
56-006	D-24D Temporary Silt Fence Fabric Check Dam - Sheet 4 of 4 (7-15)
56-007	D-35 Permanent Soil Reinforcing Mat (Turf Reinforcing Mat) (1-11) Installation on ditches
56-008	D-41 Construction Exits (4-16)
56-009	D-43 Rock Filter Dam (4-16)
56-010	D-47 Typical Diversion Across Road (5-08)
56-011	D-55A Rip Rap Outlet Protection (sheet 1 of 2) (4-16)
56-012	D-55B Rip Rap Outlet Protection (sheet 2 of 2) (4-16)
60-001 to 60-007	Right of Way Map



REVISION DATES

INDEX

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED:	DATE:	DRAWING No. 02-0001
BACKCHECKED:	DATE:	
CORRECTED:	DATE:	
VERIFIED:	DATE:	

GENERAL NOTES:



- ALL DRIVEWAYS THAT ARE TO BE RECONSTRUCTED SHALL BE PLACED IN KIND I.E. ASPHALT FOR ASPHALT, CONCRETE FOR CONCRETE, AND AGGREGATE SURFACE COURSE FOR DIRT DRIVES. DRIVEWAY RELOCATIONS ARE SHOWN FROM THE BEST AVAILABLE DATA. THE CONTRACTOR SHALL CONSTRUCT NEW DRIVEWAYS TO MATCH THE ACTUAL FIELD LOCATION OF EXISTING DRIVEWAYS OR AS LOCATED IN THE PLANS. RESIDENTIAL DRIVES SHALL BE 14 FEET WIDE AT THE THROAT UNLESS NOTED OTHERWISE IN THE PLANS. COMMERCIAL DRIVES SHALL BE 24 FEET WIDE UNLESS NOTED OTHERWISE IN THE PLANS. THE CONTRACTOR SHALL OBTAIN THE APPROVAL FROM THE ENGINEER PRIOR TO MAKING ANY REVISIONS TO LOCATION, WIDTH, AND/OR NUMBER OF DRIVES TO BE CONSTRUCTED. REQUIRED DRIVEWAY EASEMENTS NOT SHOWN ON THE PLANS SHALL BE ACQUIRED. DRIVES SHALL BE CONSTRUCTED USING:
 - ASPHALT - RECYCLED ASPH CONC 12.5mm SUPERPAVE (165 LF/SY)
 - GRADED AGGREGATE BASE, 6"
 - CONCRETE - RESIDENTIAL - DRIVEWAY CONCRETE, 6" THICK
- METHOD OF UTILITY LOCATION: OWNER MARK-UPS
- CONTRACTOR SHALL NOTIFY THE HENRY COUNTY BOARD OF COMMISSIONERS, HENRY COUNTY SHERIFF'S OFFICE, HENRY COUNTY BOARD OF EDUCATION, HENRY COUNTY FIRE DEPARTMENT, AND HENRY COUNTY EMS, IN WRITING, A MINIMUM OF 30-CALENDAR DAYS PRIOR TO CLOSURE OF BLACKHALL ROAD. A COPY OF WRITTEN NOTIFICATION SHALL BE PROVIDED TO THE AREA ENGINEER.
- INCLUDE THE COST OF DETOUR SIGN AND BARRICADE REMOVAL IN THE LUMP SUM PRICE FOR TRAFFIC CONTROL.

CLEARING & EARTHWORK

- NO CLEARING OR STAGING OF CONSTRUCTION EQUIPMENT OR ANY CONSTRUCTION ACTIVITIES SHALL BE PERMITTED IN ENVIRONMENTALLY SENSITIVE AREAS (ESA'S)
- THERE IS NO KNOWN SUITABLE PLACE TO BURY EXISTING BRIDGE / CONSTRUCTION DEBRIS WITHIN THE PROJECT'S LIMITS. THE CONTRACTOR SHALL PROVIDE AN ENVIRONMENTALLY APPROVED SITE AS SHOWN IN GA. SPECIFICATION 201 TO DISPOSE OF EXISTING BRIDGE / CONSTRUCTION DEBRIS AT NO ADDITIONAL COST TO THE DEPARTMENT.
- ALL BORROW AND WASTE SITES FOR THIS PROJECT SHALL BE ENVIRONMENTALLY APPROVED PRIOR TO CONSTRUCTION ACTIVITIES OCCURRING IN THEM. ALL COMMON FILL OR EXCESS MATERIAL DISPOSED OUTSIDE THE PROJECT RIGHT OF WAY SHALL BE PLACED IN EITHER A PERMITTED SOLID WASTE FACILITY, A PERMITTED INERT WASTE LANDFILL OR IN AN ENGINEERED FILL. SEE SECTION 201 OF THE STANDARD SPECIFICATION AND SUPPLEMENTS THERE TO FOR ADDITIONAL INFORMATION.
- THE CONTRACTOR SHALL ENSURE THAT NO CONSTRUCTION-RELATED ACTIVITIES (SUCH AS THE USE OF STAGING, EASEMENT, CONSTRUCTION, VEHICULAR USE, BORROW OR WASTE ACTIVITIES, SEDIMENT BASINS, TRAILER PLACEMENT, ETC.) OCCUR UNDER THE DRIP LINE OF DESIRED TREES THAT WILL REMAIN IN THE RIGHT OF WAY. THIS DOES NOT APPLY TO TREES WITHIN THE CONSTRUCTION LIMITS OR LIMITS OF DISTURBANCE THAT WILL BE CLEARED FOR CONSTRUCTION OF ROADWAY ELEMENTS.

EROSION CONTROL

- THIS PROJECT WILL REQUIRE A NOTICE OF INTENT (NOI)
- FOR DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING) OR DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION), DO NOT USE ANY SPECIES OR CULTIVARS OF SPECIES THAT ARE ON THE GDOT LIST OF NON-NATIVE INVASIVE PLANTS (6755-9, TABLE 5.1), OR THE EXOTIC PEST PLANT COUNCIL'S NON-NATIVE INVASIVE LIST IN CATEGORY 1, 2, OR 3. CATEGORY 4 PLANTS SHOULD BE AVOIDED IF POSSIBLE.
- FOR PERMANENT GRASSING/EROSION CONTROL WITHIN ENVIRONMENTAL RESOURCE AREAS LOCATED AT PERENNIAL STREAM 7 & BUFFER (STA 112+30 TO 118+14 LT/RT) USE RIPARIAN SEED MIX FROM GDOT SPECIFICATION SECTION 700 - GRASSING. (PER GDOT SPEC 700, NO LIME OR FERTILIZER SHOULD BE APPLIED IN STREAM BUFFER AREAS, AND ONLY WHEAT STRAW SHALL BE USED AS MULCH.) FOR ALL OTHER PERMANENT GRASSING/EROSION CONTROL, USE NATIVE GRASS SEEDING TABLE 3 AND/OR HERBACEOUS PLANT SEEDING TABLE 4 FROM GDOT SPECIFICATION SECTION 700 - GRASSING WHERE POSSIBLE.

STANDARD SIGNS

- ALL STANDARD HIGHWAY SIGNS SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE DETAILS SHOWN IN THE PLANS, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, AND THE GEORGIA SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND/OR SPECIAL PROVISIONS.
- SIGN ERECTION STATIONS ARE APPROXIMATE AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS WHERE NECESSARY, BUT SHALL BE WITHIN THE LIMITATIONS SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION. NO SIGN LOCATION SHALL BE CHANGED BY THE CONTRACTOR OR BY THE PROJECT ENGINEER WITHOUT PRIOR APPROVAL FROM THE OFFICE OF TRAFFIC OPERATIONS.

STANDARD SIGNS

- ALL STANDARD HIGHWAY SIGNS SHALL BE ERECTED AT A HEIGHT OF 7 FEET ABOVE THE NORMAL EDGE OF PAVEMENT TO THE BOTTOM OF THE SIGN OR ASSEMBLY.
- HORIZONTAL CLEARANCE FOR STANDARD HIGHWAY SIGNS ON INTERSTATE HIGHWAYS SHALL BE 32 FEET FROM THE NORMAL EDGE OF PAVEMENT TO THE NEARER EDGE OF THE SIGN(S), UNLESS SPECIFIED OTHERWISE IN THE PLANS. HORIZONTAL CLEARANCE FOR STANDARD HIGHWAY SIGNS ON RAMPS SHALL BE 2 FEET FROM THE NORMAL EDGE OF PAVED SHOULDER, OR EDGE OF GRADED SHOULDER WHEN PRESENT.
- HORIZONTAL CLEARANCE FOR STANDARD HIGHWAY SIGNS ON ALL OTHER ROADWAYS SHALL BE 6 FEET FROM THE EDGE OF THE PAVED SHOULDER OR 12 FEET FROM THE NORMAL EDGE OF PAVEMENT TO THE NEARER EDGE OF THE SIGN(S), WHICHEVER IS GREATER. THE HORIZONTAL CLEARANCE IN NON-MOUNTABLE CURB SECTIONS SHALL BE AT LEAST 2 FEET FROM THE CURB FACE TO THE NEARER EDGE OF THE SIGN(S).
- HORIZONTAL CLEARANCE FOR STANDARD HIGHWAY SIGNS MOUNTED BEHIND GUARD RAIL SHALL BE 6 FEET FROM THE FACE OF THE GUARD RAIL TO THE NEARER EDGE OF THE SIGN(S).
- SINGLE PLATE, HORIZONTAL RECTANGULAR SIGNS OVER 48 INCHES IN WIDTH SHALL BE MOUNTED ON TWO POSTS WITH 2 EACH 2 INCH x 1/4 INCH x (WIDTH OF SIGN) ALUMINUM OR GALVANIZED STEEL STRAPS. THE STRAPS SHALL BE FLUSH WITH THE BACK OF THE SIGN WITH ONE EACH ACROSS THE TOP AND BOTTOM OF THE SIGN. THE CENTERLINE OF EACH POST SHALL BE INSET 1/8TH OF THE SIGN WIDTH FROM THE EDGE OF THE SIGN. SIGN PLATE BOLT HOLES SHALL BE 3/8 INCH DIAMETER, DRILLED OR PUNCHED, AS SHOWN ON THE SIGN PLATE DETAILS.
- EACH 42 OR 48 INCH WIDE x 18 OR 24 INCH HIGH SIGN REQUIRES ONE 2 INCH x 1/4 INCH x (WIDTH OF SIGN) ALUMINUM OR GALVANIZED STEEL STRAP LOCATED IN THE CENTER OF THE SIGN AND FLUSH WITH THE BACK OF THE SIGN.
- SIGN ASSEMBLIES SHALL BE MOUNTED ON ALUMINUM OR GALVANIZED STEEL STRAP FRAMES. FOR DETAILS AND STRAP SPECIFICATIONS REFER TO SIGN ASSEMBLY- TYPICAL FRAMING DETAILS.
- TYPE 9 (HIGH INTENSITY) REFLECTIVE SHEETING SHALL BE USED FOR ALL STANDARD HIGHWAY SIGNS REQUIRING REFLECTORIZED BACKGROUNDS EXCEPT AS SPECIFIED BELOW OR SPECIFIED OTHERWISE IN THE PLANS. EITHER CLASS 1 OR CLASS 2 ADHESIVE BACKING IS PERMISSIBLE.
- TYPE 11 (VERY HIGH INTENSITY) REFLECTIVE SHEETING SHALL BE USED FOR ALL RED SERIES SIGNS (R1-1, R1-2, R1-3P, R5-1, R5-1A, R5-1B).

- TYPE 11 (VERY HIGH INTENSITY) FLUORESCENT YELLOW GREEN REFLECTIVE SHEETING SHALL BE USED FOR SCHOOL ZONE (S1-1, S2-1, S3-1, S4-3, AND THE TOP PORTION OF THE S5-1) SIGNS, BICYCLE CROSSING (W11-1) SIGNS, AND PEDESTRIAN CROSSING (W11-2 AND W11A-2) SIGNS. SIGNS WITHIN THE SAME ASSEMBLY AS THE SCHOOL ZONE SIGNS SPECIFICALLY LISTED ABOVE AND ALL REGULATORY SIGNS PLACED AS PART OF THE SCHOOL ZONE SIGNING SHALL HAVE TYPE 11 (VERY HIGH INTENSITY) REFLECTIVE SHEETING BACKGROUNDS OF THE APPROPRIATE COLOR.
- TYPE 11 (VERY HIGH INTENSITY) FLUORESCENT YELLOW REFLECTIVE SHEETING SHALL BE USED FOR ALL WARNING SIGNS.
- A 1*2 INCH MINIMUM AIR SPACE SHALL BE REQUIRED BETWEEN ALL SIGN PLATES WITHIN AN ASSEMBLY.
- WHERE SIGNS WITHIN AN ASSEMBLY EXTEND BELOW THE STANDARD MOUNTING HOLES ON THE POST(S), ADDITIONAL 3*8 INCH DIAMETER HOLE(S), DRILLED OR PUNCHED, SHALL BE REQUIRED TO PROPERLY MOUNT THE ASSEMBLY.
- FOR DETAILS OF SPECIAL DESIGN HIGHWAY SIGNS, SEE DETAILS OF MISCELLANEOUS SIGNS.
- REFER TO PLAN SHEETS FOR LOCATION OF THE DISTRICT ENGINEERS OFFICE TO BE SHOWN ON ALL R552-1 (LIMITED ACCESS) SIGNS IN THIS PROJECT, IF ANY.
- THE CONTRACTOR WILL, AS REQUESTED BY THE DISTRICT TRAFFIC OPERATIONS ENGINEER, BE REQUIRED TO REMOVE ANY EXISTING SIGNS THAT ARE DUPLICATED OR ARE CONTRARY TO THESE SIGN PLANS.

DRAINAGE

- INCLUDE THE COST OF TEMPORARY DRAINAGE IN THE LUMP SUM PRICE FOR TRAFFIC CONTROL.

Resistivity $\frac{pH}{1000}$ County: HENRY P. I. Number: 0011691

Pipe Culvert Material Alternates

TYPE OF INSTALLATION	PIPE TYPE										
	CONCRETE	STEEL			ALUMINUM	THERMOPLASTIC					
	REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTH LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M-330	PVC CORRUGATED SMOOTH INTERIOR AASHTO F-949	PVC Profile Wall Drain Pipe AASHTO M-304	
STORM DRAIN	INTERSTATE	X									
	NON INTERSTATE	X	X		X	X	X	X	X	X	
	GRADE 10%	ADT < 1,500	X	X		X	X	X	X	X	X
		1,500 < ADT < 5,000	X	X		X	X	X	X	X	X
		5,000 < ADT < 15,000	X					X	X	X	X
ADT > 15,000 & INTERSTATES	X										
GRADE > 10%				X			X	X	X	X	
SIDE DRAIN	X	X	X	X	X		X	X	X	X	
PERMANENT SLOPE DRAIN		X	X	X	X		X	X	X	X	
PERFORATED UNDERDRAIN		X	X		X	X	X	X	X	X	

NOTE:
 1. Allowable materials are indicated by an 'X'.
 2. Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications.
 3. The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
 4. Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.
 Rev. 1-12-16

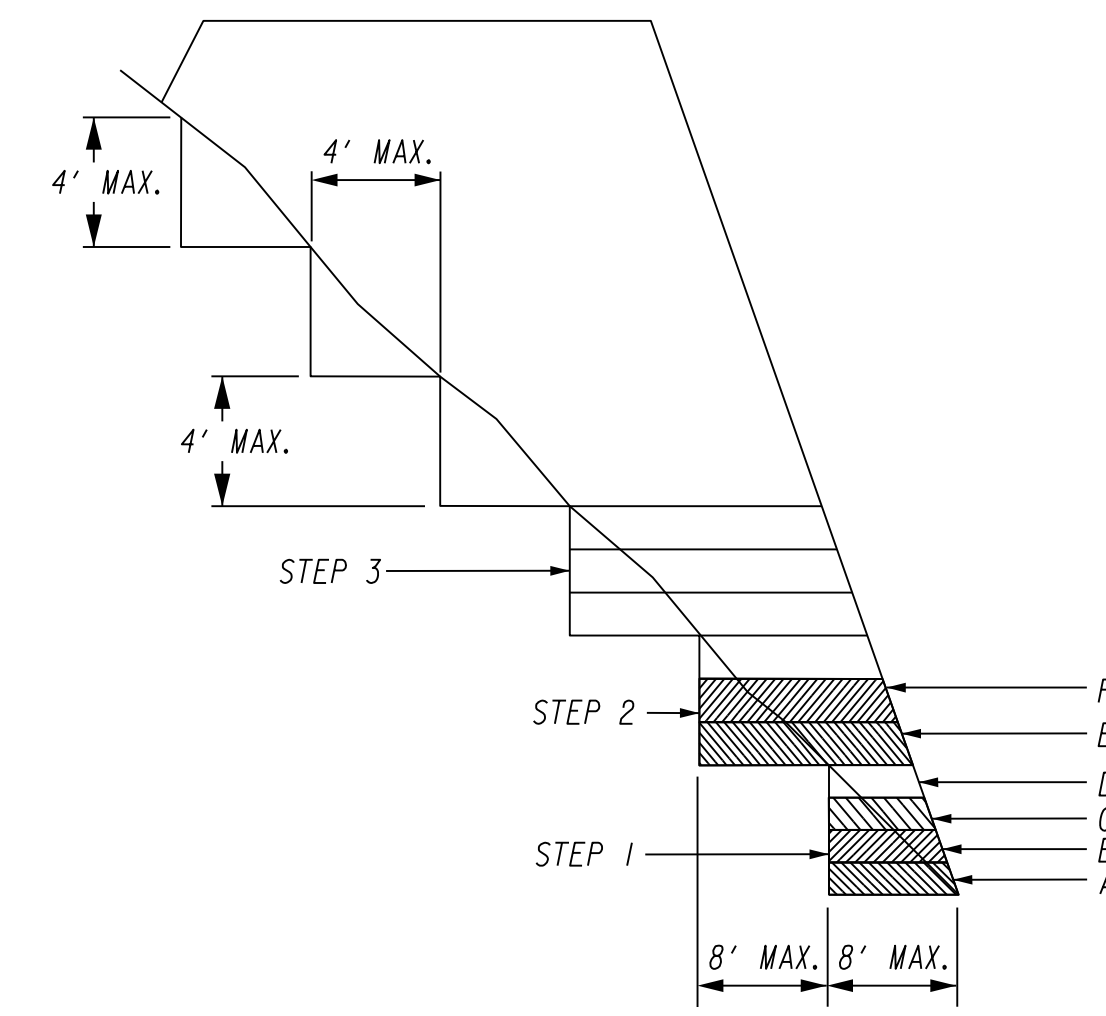


REVISION DATES		GENERAL NOTES	
		CR661/BLACKHALL RD. AT RUM CREEK	
CHECKED:	CAE	DATE:	9/26/17
BACKCHECKED:		DATE:	
CORRECTED:	JSJ	DATE:	9/26/17
VERIFIED:	IC	DATE:	9/26/17
		DRAWING No. 04-0001	

Environmental Resources Impact Table						
These resources and the restrictions listed are governed by state and federal law.						
Resource Name	Location			Permitted Construction Activity	Special Provision?	Comments
(from Section A of the ECT)	Beginning STA	Ending STA	Side	(from Section A of the ECT)	(from Section B of the ECT)	(from Section C of the ECT, comments only)
OPEN WATER (OW) 1	107+00	123+50	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
OPEN WATER (OW) 1 BUFFER	107+00	123+50	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
WETLAND 2	106+60	108+50	RT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
WETLAND 5	108+45	110+40	RT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
INTERMITTENT STREAM 3	106+85	108+05	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
INTERMITTENT STREAM 3 BUFFER	106+85	108+35	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
PERENNIAL STREAM 4	108+40	110+10	RT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
PERENNIAL STREAM 4 BUFFER	108+20	110+35	RT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
WETLAND 6	112+74	113+58	LT	NO IMPACT	NA	The contractor will ensure that no construction-related activities or access occur beyond the Orange Barrier Fencing protecting this resource.
PERENNIAL STREAM 7	118+14	112+55	LT/RT	BRIDGE CONSTRUCTION	NA	The contractor will ensure that no construction-related activities or access occur beyond the Orange Barrier Fencing protecting this resource.
PERENNIAL STREAM 7 BUFFER	112+30	118+14	LT/RT	BRIDGE CONSTRUCTION WITHIN EXEMPT AREA	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
INTERMITTENT STREAM 8	115+06	113+75	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
INTERMITTENT STREAM 8 BUFFER	113+56	115+35	LT	NO IMPACT	NA	The contractor shall ensure that no construction-related activities (such as the use of easements, staging, construction, vehicular use, borrow or waste activities, sediment basins, and trailer placement), other than those shown on the approved plans, occur within the boundary of this resource.
404 Permits and Variances (from Section D of the ECT)		Expiration dates (if applicable) Contact GDOT OES 6 months prior to expiration, if work will extend beyond this date.				
NOI for NPDES						
404 Nationwide Permit 3A						
Buffer Variance						
OTHER COMMENTS OR REQUIREMENTS						
OPEN WATER 1 IS LAKE SPIVEY AND IT EXTENDS BEYOND PROJECT LIMITS						

If there are no resources, indicate "None" in the first row. Include this table in the General Notes section of the plans as always.

ECT = Environmental Commitments Table, AKA "Green Sheet".



1. WHERE THE EMBANKMENT IS TO BE PLACED ON A HILLSIDE OR ANOTHER EXISTING EMBANKMENT HAVING A SLOPE OF 3 TO 1 OR STEEPER, THE FOUNDATION MUST BE BENCHING WHILE THE EMBANKMENT IS BEING MADE. (SEE DIAGRAM AT LEFT.)

2. THE DIAGRAM SHOWS THAT BEFORE LAYER "A" IS PLACED THE FIRST STEP IS TO (1) CUT INTO THE SLOPE A MAXIMUM DISTANCE OF ABOUT 8 FEET (ABOUT THE WIDTH OF THE TYPICAL D-8 BULLDOZER BLADE). SUCCESSIVE LAYERS B, C, AND D ARE THEN PLACED BEFORE LAYER "E" IS PLACED, THE SECOND STEP IS CUT 8 FEET INTO THE SLOPE AND SUCCESSIVE LAYERS ARE AGAIN PLACED. IF IT IS ANTICIPATED THAT THE VERTICAL PART OF THE STEP WILL EXCEED 4 FEET IF A 8 FEET HORIZONTAL CUT IS MADE, THEN THE ACTUAL CUT STOPS WHEN THE VERTICAL PART REACHES A MAXIMUM OF 4 FEET ALLOWING THE HORIZONTAL DISTANCE TO VARY.

3. THE PROCESS OF BENCHING IS CONSIDERED INCIDENTAL TO THE ITEM OF UNCLASSIFIED EXCAVATION AND BORROW OR GRADING COMPLETE IN CONSTRUCTION OF THE EMBANKMENT AND NO ADDITIONAL MEASUREMENT OF QUANTITY OR PAYMENT WILL BE MADE FOR BENCHING.

BENCHING DETAIL

NO SCALE

UTILITY OWNER	SERVICE
ATLANTA GAS LIGHT	GAS
AT&T	TELEPHONE
CLAYTON COUNTY WATER AUTHORITY	WATER
HENRY COUNTY WATER AUTHORITY	WATER
GEORGIA POWER	ELECTRICITY

REVISION DATES

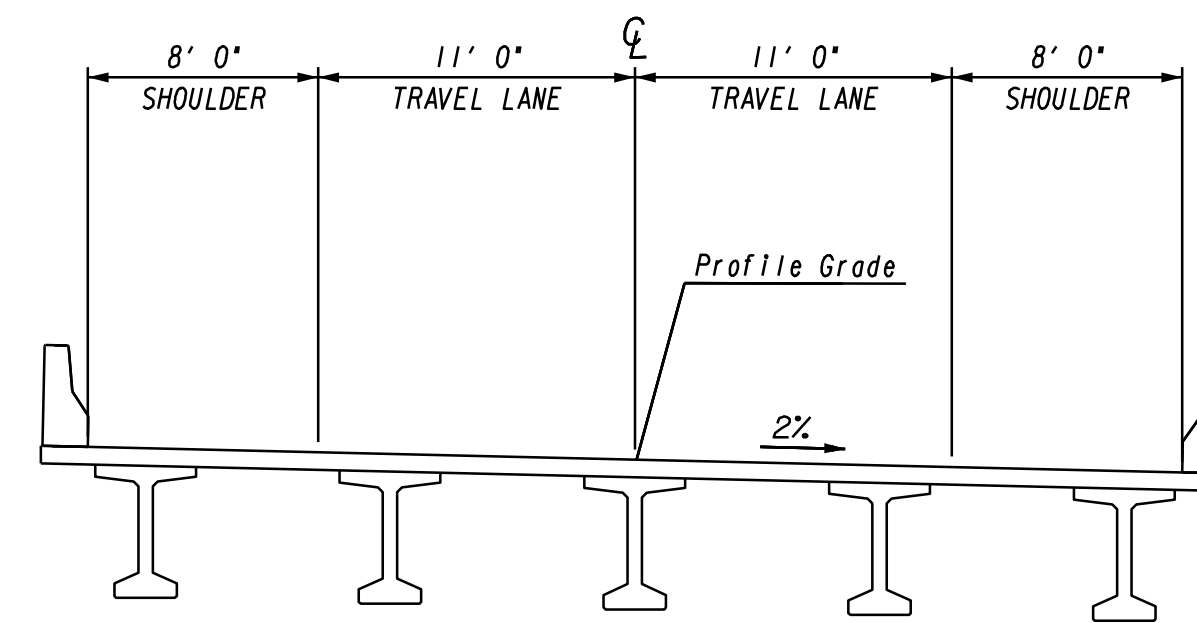
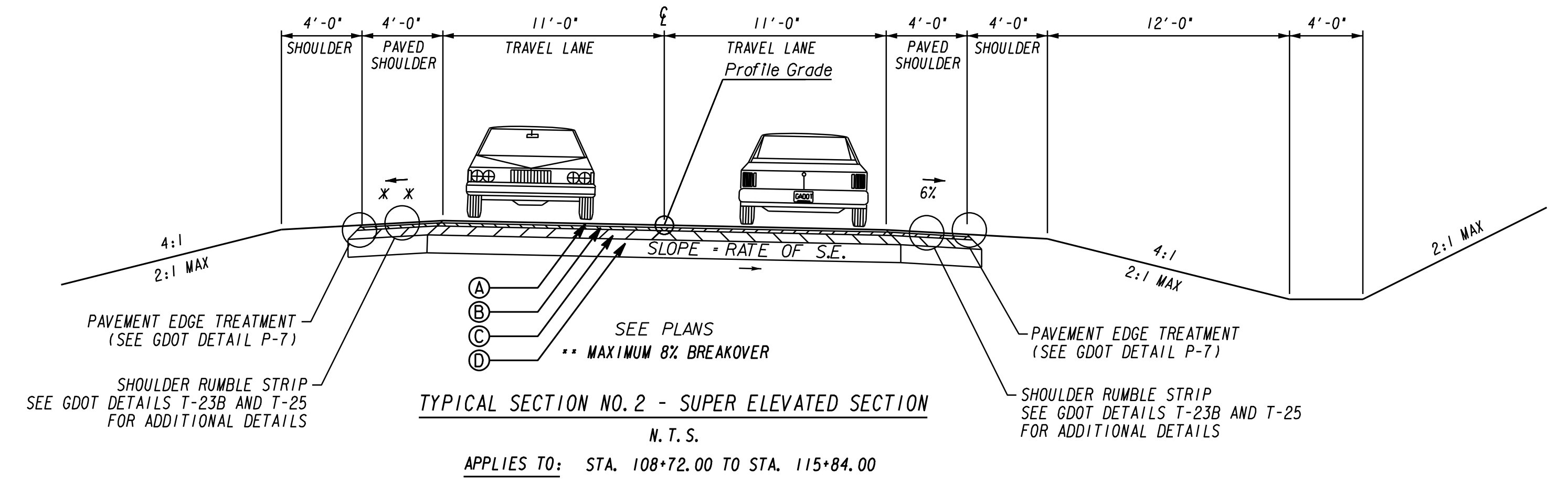
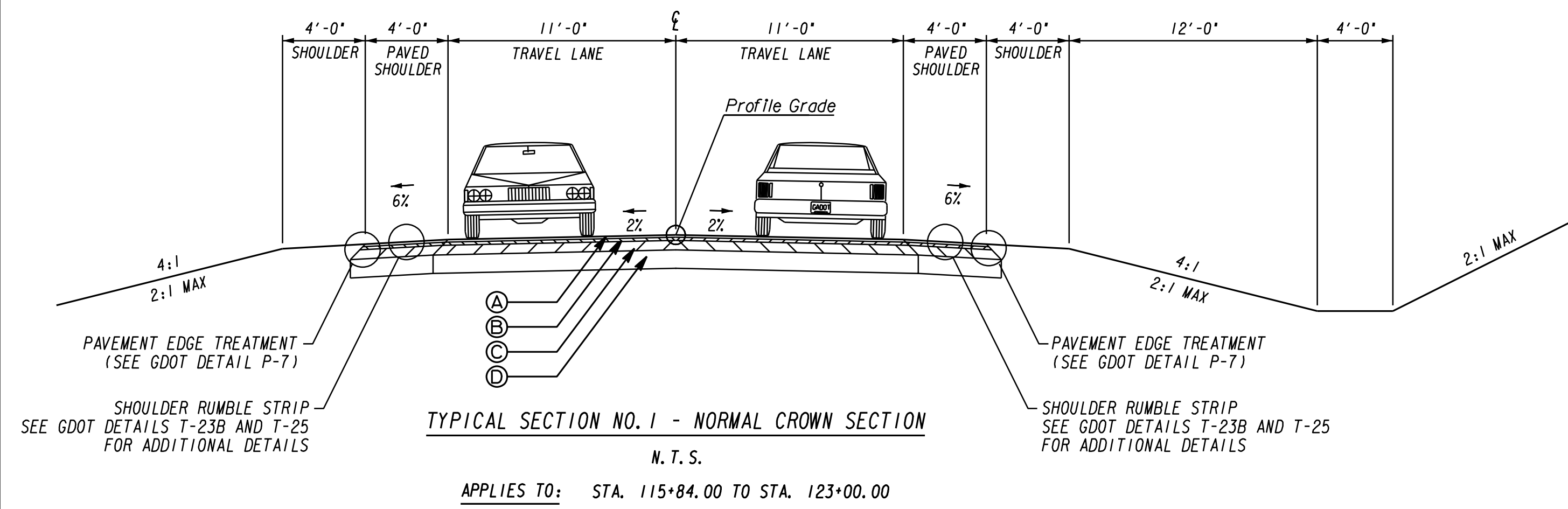
NO.	DATE	DESCRIPTION

GENERAL NOTES

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 9/26/17	DRAWING No.
BACKCHECKED: JSJ	DATE: 9/26/17	04-0002
VERIFIED: IC	DATE: 9/26/17	





NOTES :

- SLOPE : SEE ROADWAY PLANS FOR SUPERELEVATION RATES AND TRANSITIONS.
- NOTE: FOR METHOD OF SUPERELEVATION SEE CONSTR PLAN & PROFILE SHEETS-CURVE DATA. LOCATIONS OF NORMAL CROWN & FULL S.E. NOTED ON CONSTR CENTERLINE.
- SHOULDER MAY BE GRADED AWAY FROM ROADWAY TO FACILITATE THE SLOPE TIE TO EXISTING GROUND.
- SEE DETAIL S-4 FOR SHOULDER AND GUARDRAIL CONSTRUCTION.
- SEE PLANS FOR THE LOCATION OF PROPOSED GUARDRAIL.

REQUIRED PAVEMENT

- Ⓐ RECYCLED ASPH CONC 12.5mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME, 165 LB/SY
- Ⓑ RECYCLED ASPH CONC 19mm SUPERPAVE, GP 1 OR GP 2, INCL BITUM MATL & H LIME, 220 LB/SY
- Ⓒ RECYCLED ASPH CONC 25mm SUPERPAVE, GP 1 OR GP 2, INCL BITUM MATL & H LIME, 440 LB/SY
- Ⓓ GR AGGR BASE CRS, 14 IN, INCL MATL
- Ⓔ RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME, AS REQ'D BY THE ENGINEER

SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	—	0-10'
2:1	ALL	OVER 10'

REVISION DATES

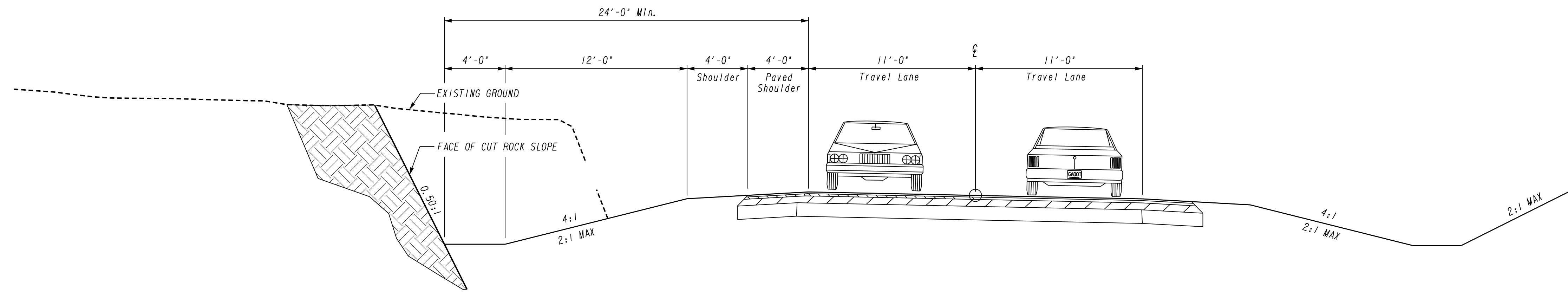
NO.	DATE	DESCRIPTION

TYPICAL SECTIONS

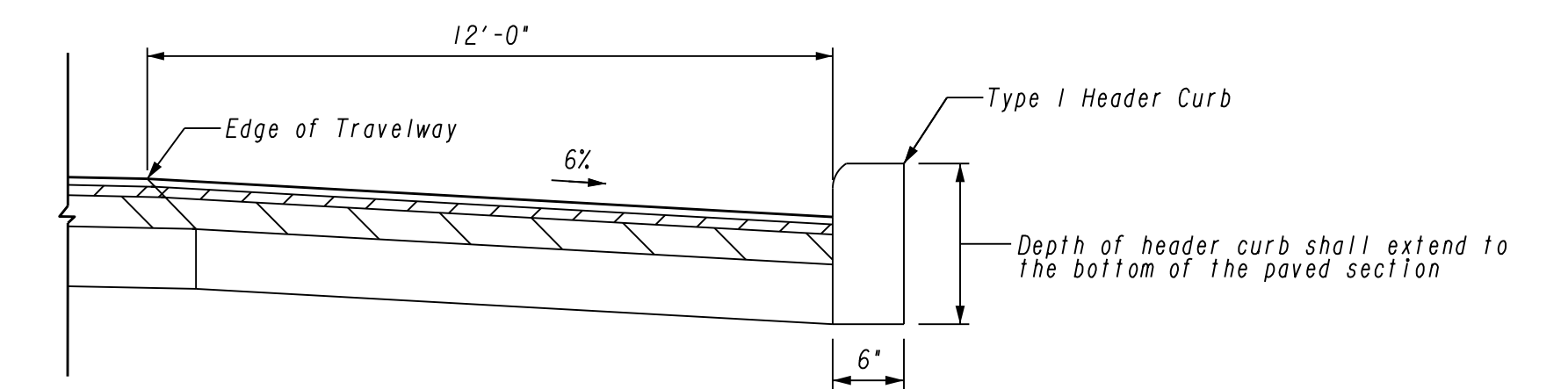
CR661/BLACKHALL RD. AT RUM CREEK

CHECKED:	DATE:	DRAWING No.
CAE	9/26/17	05-0001
BACKCHECKED:	DATE:	
CORRECTED:	DATE:	
VERIFIED:	DATE:	





ALTERNATE TYPICAL SECTION - ROCK EXCAVATION
N. T. S.
APPLIES TO: STA. 109+00.00+/- TO STA. 111+25.00+/-



HEADER CURB DETAIL
N. T. S.
APPLIES TO: STA. 111+79.96 TO STA. 112+40.00

NOTES :
SEE DETAIL S-4 FOR SHOULDER AND GUARDRAIL CONSTRUCTION.
SEE PLANS FOR THE LOCATION OF PROPOSED GUARDRAIL.

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REVISION DATES	
08/10/2018	

TYPICAL SECTIONS

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED:	CAE	DATE:	9/26/17	DRAWING No.
BACKCHECKED:		DATE:		05-0002
CORRECTED:	JSJ	DATE:	9/26/17	
VERIFIED:	IC	DATE:	9/26/17	

SUMMARY OF QUANTITIES

SUMMARY OF STANDARD ROADSIDE SIGNS										
HIGHWAY SIGNS								SQUARE TUBE POST		
STATION	SIGN CODE	TP1 MATL. REFL. SHEETING TP 9			TP1 MATL. REFL. SHEETING TP 11			TYPE 7 (2" 14GA)		
		SIZE	QUANTITY	SQUARE FEET	SIZE	QUANTITY	SQUARE FEET	LENGTH (FEET)	QUANTITY	TOTAL LENGTH
BLACKHALL ROAD										
107+70 RT	W8-13				36" X 36"	1	9	15	1	15
119+65 LT	W8-13				36" X 36"	1	9	15	1	15
111+54 RT	R2-1	24" X 30"	1	5				13	1	13
115+95 LT	R2-1	24" X 30"	1	5				13	1	13
	BEGIN BMP*				10"X24"	3	*5.01	11	3	*33
	END BMP*				10"X24"	3	*5.01	11	3	*33
	SPCL. SIGN #1				18"X24"	8	24			
	SPCL. SIGN #2				18"X18"	8	18			
TOTAL				10			60			56

* BMP SIGNS TO BE PAID FOR AS PART OF BMP

PAVEMENT ITEMS	UNIT	TOTAL
RECYCLED ASPH CONC 12.5mm 165LBS/SY SUPERPAVE, GP 2 ONLY, INCL BITUM MAT'L & H LIME	TONS	403
RECYCLED ASPH CONC 19mm 220 LBS/SY SUPERPAVE, GP 1 OR GP 2, INCL BITUM MAT'L & H LIME	TONS	510
RECYCLED ASPH CONC 25mm 440 LBS/SY SUPERPAVE, GP 1 OR GP 2, INCL BITUM MAT'L & H LIME	TONS	875
GRADED AGGR BASE CRS. INCL MAT'L	TONS	3160
TACK COAT	GAL	515

INCLUDES DRIVEWAY ASPHALT

DESCRIPTION	UNIT	TOTAL
INDENTATION RUMBLE STRIPS - GROUND IN PLACE (SKIP)	GLM	0.580

GATE, FIELD FENCE-6FT X 12FT - TEMPORARY
STA. 117+11 LT 1 EA

GUARDRAIL QUANTITIES GA STDS. 4380, 4381, 4382, 4383,4384,4385,4386,4388						
STATION		SIDE	T-BEAM	W-BEAM	TP 1 ANCHOR	TP 12A TERMINAL
BEGIN	END		LENGTH (LF)	LENGTH (LF)		
109+97.48	112+50.85	RT		257		1
112+50.85	112+71.50	RT	21			
114+63.50	114+84.15	RT	21			
114+84.15	118+66.00	RT		388	1	
111+09.95	112+50.85	LT		144	1	
112+50.85	112+71.50	LT	21			
114+63.50	114+84.15	LT	21			
114+84.15	116+47.62	LT		169		1
117+24.07	118+34.13	LT		125	1	1
Total			84	1083	3	3

CH LK FENCE, PVC, 6 FT, 9 GA - BLACK			
STATION		SIDE	LENGTH (LF)
BEGIN	END		
109+00.00	112+90.00	LT	442
114+85.00	123+00.00	LT	838
115+78.65	123+00.00	RT	766
Total			2050

GATE, CHAIN LINK PVC COAT - BLACK
STA. 117+11 LT 1 EA

DESCRIPTION	UNIT	QUANTITY	
		THERMO PLASTIC	PREFORMED
THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	LF	2460	
THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	LF	2460	
PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-WHITE), TP PB	LF		396
PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-YELLOW), TP PB	LF		396
TOTAL		4920	792

REMOVE HWY SIGN	
LOCATION	QUANTITY
110+50 LT (GEESE X-ING SIGN)	1
TOTAL	1

RESET HWY SIGN	
LOCATION	QUANTITY
110+50 LT (GEESE X-ING SIGN)	1
TOTAL	1

REINFORCED CONCRETE APPROACH SLAB. GA. STD. 9017R		
STATION		SQ. YDS.
BEGIN	END	
112+40.00	112+70.00	135
114+65.00	114+95.00	135
Total		270

CONCRETE RIGHT-OF-WAY MARKER
TOTAL 20 EA

AGGREGATE SURFACE COURSE*
TOTAL 200 TONS
*AS DIRECTED BY ENGINEER

RAISED PAVEMENT MARKERS		
DESCRIPTION	UNIT	QUANTITY
RPM TYPE 1 YELLOW	EA	72

TRAFFIC CONTROL
BLACKHALL ROAD P.I. 0011691 LUMP SUM

GRADING COMPLETE
BLACKHALL ROAD P.I. 0011691 LUMP SUM

GPS DATA COLLECTION AND SUBMITTAL
BLACKHALL ROAD P.I. 0011691 LUMP SUM

TEMPORARY FIELD FENCE			
STATION		SIDE	LENGTH (LF)
BEGIN	END		
114+85.00	123+00.00	LT	1030
Total			1030

REVISION DATES		SUMMARY QUANTITIES	
07/30/2018		CR661/BLACKHALL RD. AT RUM CREEK	
		CHECKED: CAE	DATE: 10/5/17
		BACKCHECKED: JSJ	DATE: 10/5/17
		CORRECTED: JSJ	DATE: 10/5/17
		VERIFIED: IC	DATE: 10/5/17
		DRAWING No. 06-0001	



SUMMARY OF QUANTITIES

STRUCTURE NUMBER	LOCATION	DRAINAGE ITEMS				
		STORM DRAIN PIPE 18" H1-10	18" FLARED END SECTION STORM DRAIN GDOT STD 1120	CATCH BASIN GP 1 GDOT STD 1034F	STORM SEWER MANHOLE TP 1 GDOT STD 1011A	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1
		LIN FT	EACH	EACH	EACH	LIN FT
BLACKHALL RD						
A-1	112+31.57 RT	57		1		
A-2	112+31.57 LT	43			1	4
A-3	112+75.90 LT		1			
TOTAL		100	1	1	1	4

BRIDGE NO. 1 SUMMARY OF QUANTITIES			
PAY ITEM NUMBER	QUANTITY	UNIT	PAY ITEM
207-0203	12	CY	FOUND BK FILL MATL, TP II
211-0300	79	CY	BRIDGE EXCAVATION, STREAM CROSSING
500-0100	780	SY	GROOVED CONCRETE
500-1011	LUMP	LS	SUPERSTR CONCRETE, CL D BR NO - 1 (273)
500-2100	378	LF	CONCRETE BARRIER
500-5000	LUMP	LS	ULTRA HIGH PERFORMANCE CONCRETE BR NO - 1 (11)
501-2001	3200	LB	STR STEEL
504-0600	40	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC
507-9030	958	LF	PSC BEAMS, AASHTO, BULB TEE, 54 IN, BR NO - 1
511-1000	4714	LB	BAR REINF STEEL
511-3000	LUMP	LS	SUPERSTR REINF STEEL, BR NO - 1 (67982)
520-0589	30	EA	H-PILE POINTS, HP 14 X 89
520-1151	1040	LF	PILING IN PLACE, STEEL H, HP 14 X 89
520-4151	1	EA	LOAD TEST, STEEL H, HP 14 X 89 (IF REQD)
523-1100	2	EA	DYNAMIC PILE TEST
540-1101	LUMP	LS	REMOVAL OF EXISTING BR, STA NO - 113+76.50
603-2024	703	SY	STN DUMPED RIP RAP, TP 1, 24 IN
603-7000	703	SY	PLASTIC FILTER FABRIC
999-0025	LUMP	LS	COMPOSITE DECK-BEAM UNITS, BR NO - 1

ALTERNATE 1			
PAY ITEM NUMBER	QUANTITY	UNIT	PAY ITEM
504-0600	99	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC
511-1000	25694	LB	BAR REINF STEEL

ALTERNATE 2 (PRECAST)			
PAY ITEM NUMBER	QUANTITY	UNIT	PAY ITEM
500-3650	68	CY	CLASS AA - 1 CONCRETE
504-0600	31	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC
511-1000	26218	LB	BAR REINF STEEL

TEMPORARY EROSION CONTROL		
ITEM	UNIT	TOTAL
TEMPORARY GRASSING	AC	3
MULCH	TN	80
CONSTRUCTION EXIT	EA	2
TEMPORARY SILT FENCE, TYPE C	LF	7850
CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAINS	LF	115
CONSTRUCT & REMOVE FABRIC CHECK DAMS - TYPE C SILT FENCE	LF	4176
CONSTRUCT & REMOVE ROCK FILTER DAMS	EA	4
CONSTRUCT & REMOVE INLET SEDIMENT TRAP	EA	2
MAINTENANCE OF TEMPORARY SILT FENCE, TP C	LF	3925
MAINTENANCE OF CHECK DAMS - ALL TYPES	LF	2088
MAINTENANCE OF CONSTRUCTION EXIT	EA	2
MAINTENANCE OF INLET SEDIMENT TRAP	EA	2
MAINTENANCE OF ROCK FILTER DAM	EA	4
WATER QUALITY MONITORING AND SAMPLING	EA	2
WATER QUALITY INSPECTION	MO	12

PERMANENT EROSION CONTROL		
ITEM	UNIT	TOTAL
EROSION CTRL MATS, SLOPES	SY	5170
PERMANENT GRASSING	AC	5
AGRICULTURAL LIME	TN	13
FERTILIZER MIXED GRADE	TN	5
FERTILIZER NITROGEN CONTENT	LB	206
TURF REINFORCING MATTING, TP 1	SY	1776
STN DUMPED RIP RAP, TP 3, 18 IN	SY	62
PLASTIC FILTER FABRIC	SY	62

BARRIER FENCE (ORANGE), 4 FT	
LOCATION	LF
STA. 108+43 TO 108+76 RT	65
STA. 109+52 TO 110+23 RT	107
STA. 112+93 TO 113+41 LT	53
STA. 112+42 TO 113+06 RT	84
STA. 114+24 TO 115+03 LT	87
STA. 116+29 TO 117+72 LT	173
TOTAL	569

CONC HEADER CURB 4", TP 1, STD 9032-B		
LOCATION	SIDE	LF
111+80 TO 112+41	RT	52
TOTAL		52

(TEMPORARY) SIDE DRAIN PIPE 18"		
TOTAL	190	LF

* For information purposes only, cost included under traffic control.

TEMPORARY BARRIER METHOD 1	
TOTAL	750 LF

TEMPORARY PORTABLE IMPACT ATTENUATOR	
TOTAL	4 EA

REVISION DATES

07/06/2018
08/10/2018

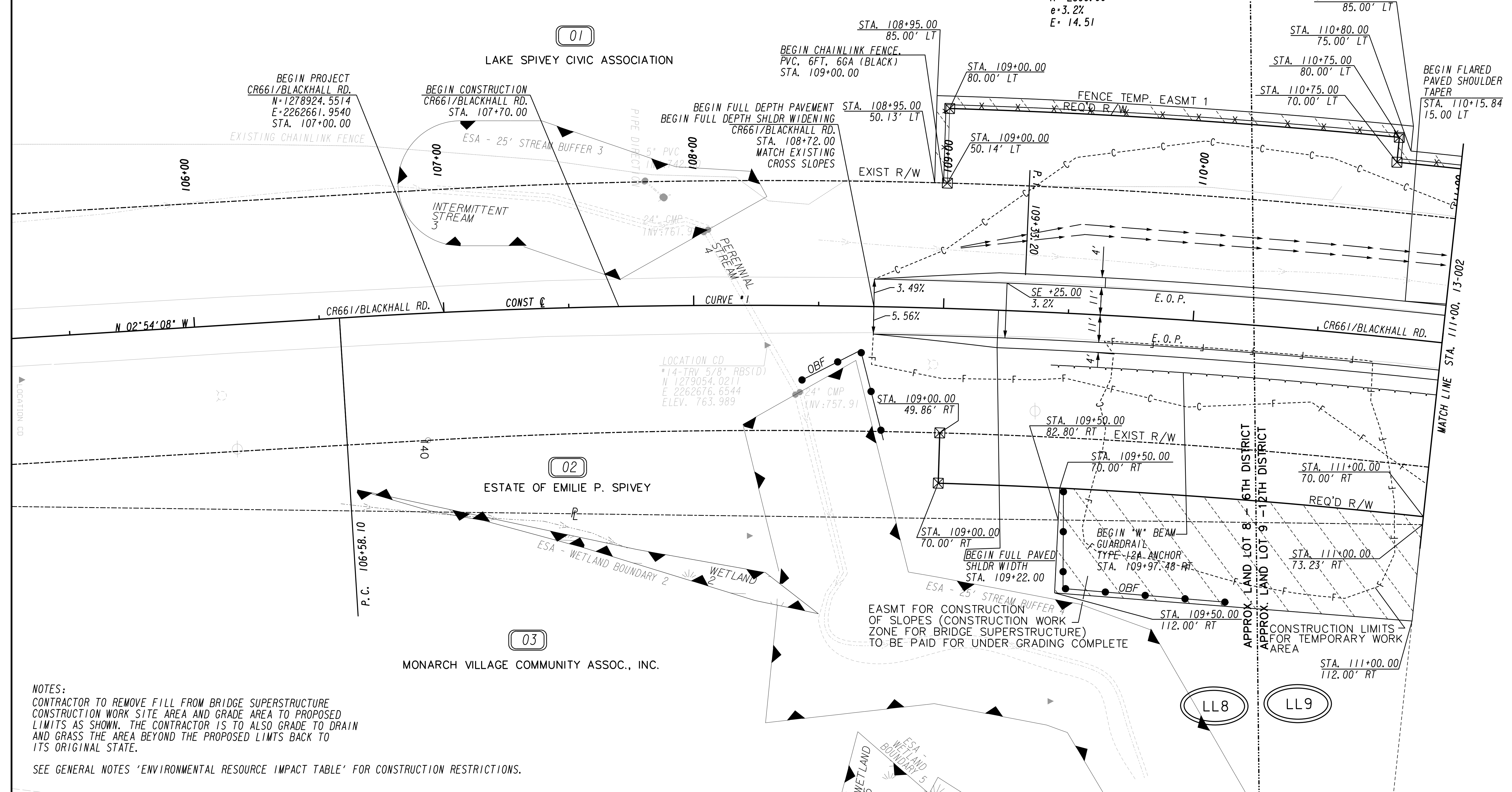
SUMMARY QUANTITIES

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 10/5/17	DRAWING No. 06-0002
BACKCHECKED: JSJ	DATE: 10/5/17	
CORRECTED: JSJ	DATE: 10/5/17	
VERIFIED: JC	DATE: 10/5/17	

LOCATION CD
 *14-TRV 5/8" RBS(D)
 N 1279054.0211
 E 2262676.6544
 ELEV. 763.989
 STA. 108+29.50
 15.88' RT

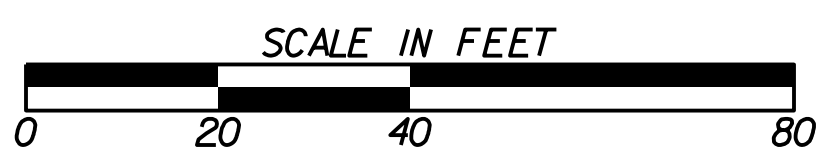
Curve # 1
 PI Sta. 109+33.20
 N = 1279157.4387
 E = 2262649.8089
 DELTA = 12°04'47.1" (RT)
 D = 02°12'13.26"
 T = 275.10
 L = 548.16
 R = 2600.00
 e = 3.2%
 E = 14.51



NOTES:
 CONTRACTOR TO REMOVE FILL FROM BRIDGE SUPERSTRUCTURE
 CONSTRUCTION WORK SITE AREA AND GRADE AREA TO PROPOSED
 LIMITS AS SHOWN. THE CONTRACTOR IS TO ALSO GRADE TO DRAIN
 AND GRASS THE AREA BEYOND THE PROPOSED LIMITS BACK TO
 ITS ORIGINAL STATE.
 SEE GENERAL NOTES 'ENVIRONMENTAL RESOURCE IMPACT TABLE' FOR CONSTRUCTION RESTRICTIONS.

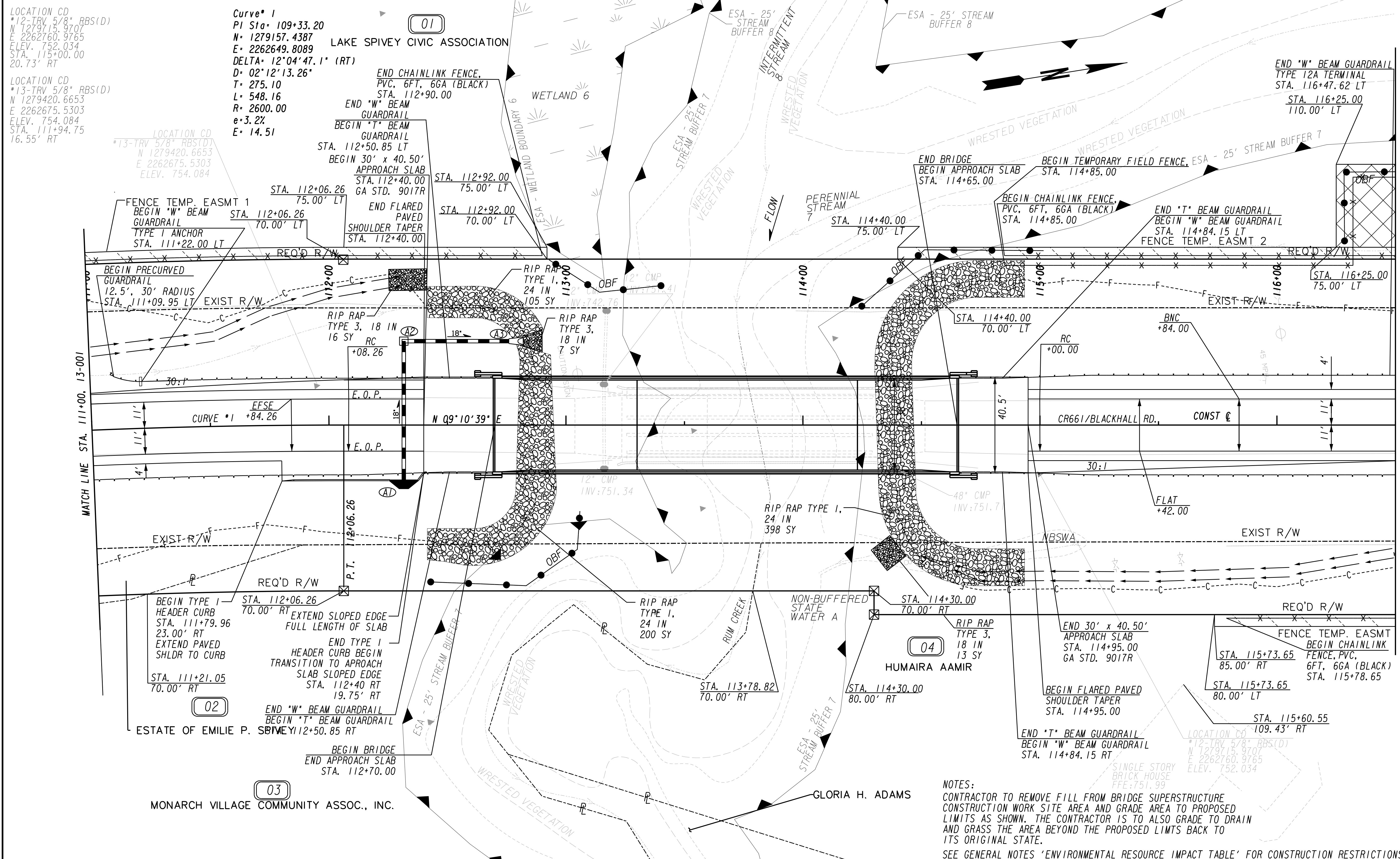
PROPERTY AND EXISTING R/W LINE	---
REQUIRED R/W LINE	---
CONSTRUCTION LIMITS	---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	---C---F---
EASEMENT FOR CONSTR OF SLOPES	▨
EASEMENT FOR CONSTR OF DRIVES	▩

BEGIN LIMIT OF ACCESS.....BLA	---
END LIMIT OF ACCESS.....ELA	---
LIMIT OF ACCESS	---
REQ'D R/W & LIMIT OF ACCESS	---
FENCE	---x---
ENVIRONMENTALLY SENSITIVE AREA	▼



REVISION DATES	

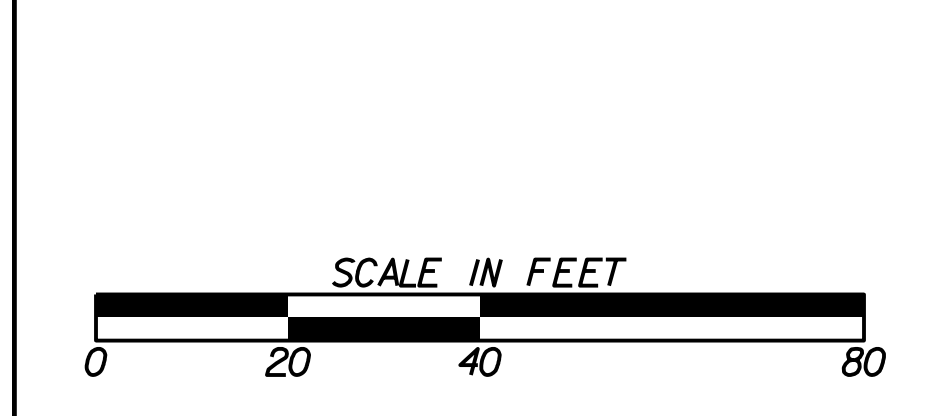
CONSTRUCTION PLAN			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 9/26/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 9/26/17	13-0001	
CORRECTED: JSJ	DATE: 9/26/17		
VERIFIED: IC	DATE: 9/26/17		



PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS
 FENCE
 ENVIRONMENTALLY SENSITIVE AREA

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REVISION DATES

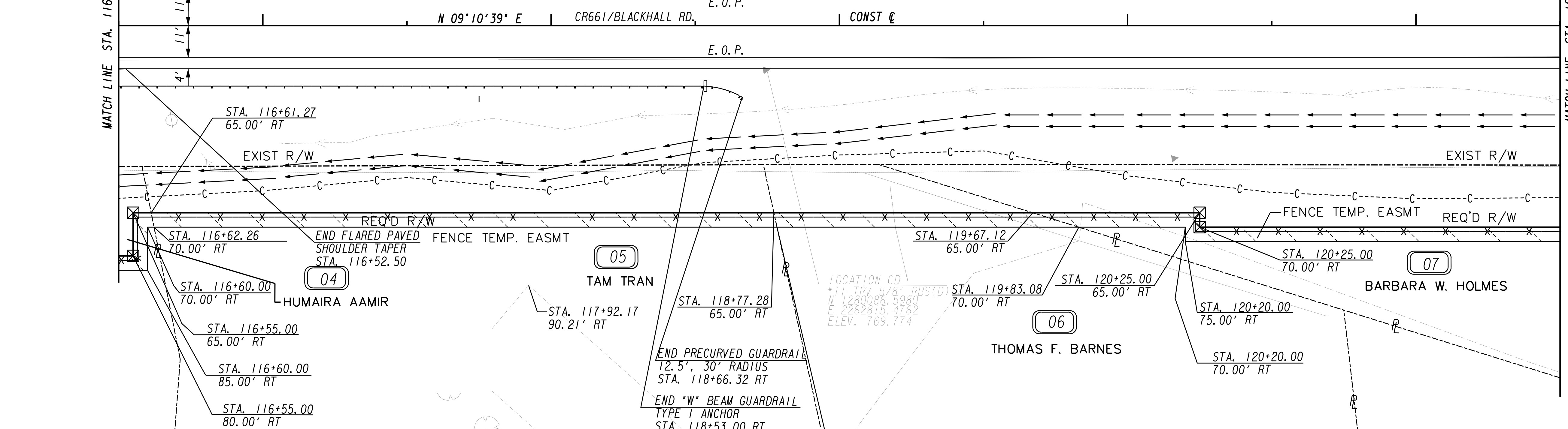
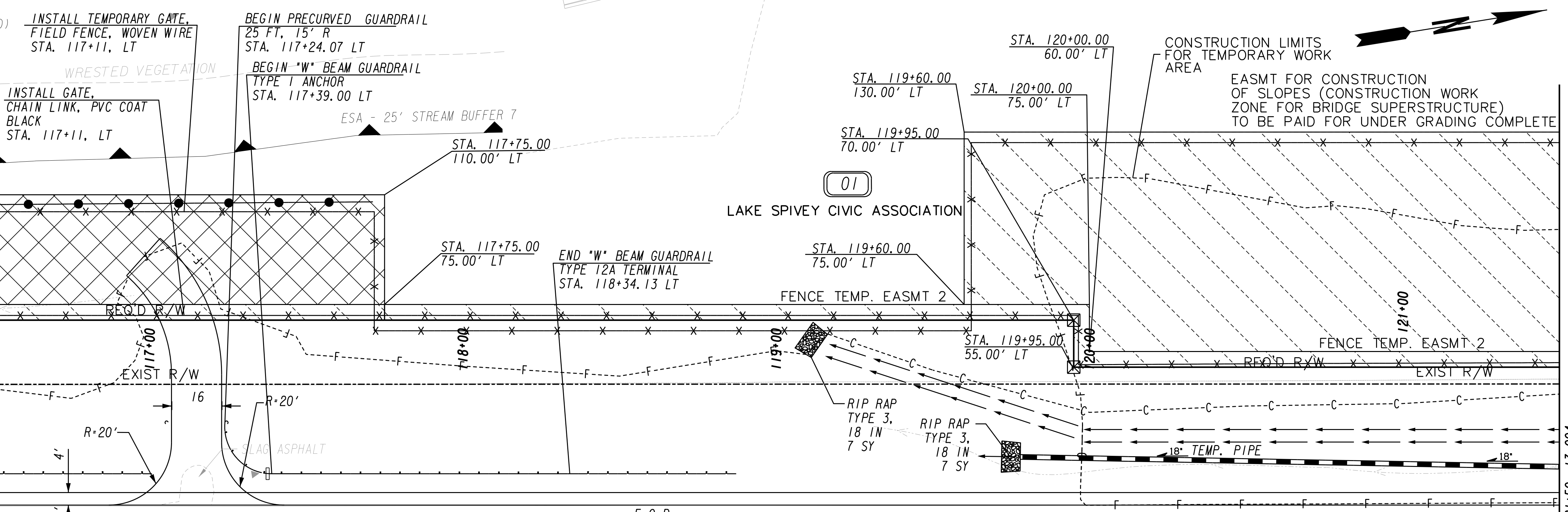
CONSTRUCTION PLAN

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 8/27/17	DRAWING No. 13-0002
BACKCHECKED: JSJ	DATE: 9/27/17	
CORRECTED: JSJ	DATE: 9/27/17	
VERIFIED: IC	DATE: 9/27/17	

NOTES:
 CONTRACTOR TO REMOVE FILL FROM BRIDGE SUPERSTRUCTURE
 CONSTRUCTION WORK SITE AREA AND GRADE AREA TO PROPOSED
 LIMITS AS SHOWN. THE CONTRACTOR IS TO ALSO GRADE TO DRAIN
 AND GRASS THE AREA BEYOND THE PROPOSED LIMITS BACK TO
 ITS ORIGINAL STATE.
 SEE GENERAL NOTES 'ENVIRONMENTAL RESOURCE IMPACT TABLE' FOR CONSTRUCTION RESTRICTIONS.

LOCATION CD
 *11-TRV 5/8" RBS(D)
 N 1280086.5980
 E 2262815.4762
 ELEV. 769.774
 STA. 118+74.44
 15.42' RT

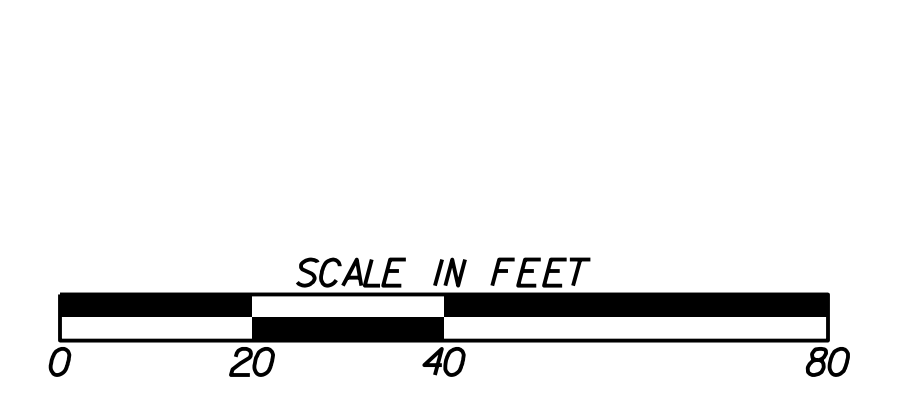


NOTES:
 CONTRACTOR TO REMOVE FILL FROM BRIDGE SUPERSTRUCTURE CONSTRUCTION WORK SITE AREA AND GRADE AREA TO PROPOSED LIMITS AS SHOWN. THE CONTRACTOR IS TO ALSO GRADE TO DRAIN AND GRASS THE AREA BEYOND THE PROPOSED LIMITS BACK TO ITS ORIGINAL STATE.
 SEE GENERAL NOTES 'ENVIRONMENTAL RESOURCE IMPACT TABLE' FOR CONSTRUCTION RESTRICTIONS.

PROPERTY AND EXISTING R/W LINE	---
REQUIRED R/W LINE	---
CONSTRUCTION LIMITS	---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	---F---
EASEMENT FOR CONSTR OF SLOPES	---F---
EASEMENT FOR CONSTR OF DRIVES	---F---

BEGIN LIMIT OF ACCESS.....BLA	---
END LIMIT OF ACCESS.....ELA	---
LIMIT OF ACCESS	---
REQ'D R/W & LIMIT OF ACCESS	---
FENCE	---
ENVIRONMENTALLY SENSITIVE AREA	---

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REVISION DATES	

CONSTRUCTION PLAN			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 9/27/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 9/27/17	13-0003	
CORRECTED: JSJ	DATE: 9/27/17		
VERIFIED: IC	DATE: 9/27/17		

LOCATION CD
*10-TRV 5/8" RBS(D)
N 1280374.9099
E 2262863.4977
ELEV. 784.644
STA. 121+66.72
16.84' RT

LOCATION CD
*9-TRV 5/8" RBS(D)
N 1280663.3105
E 2262908.8378
ELEV. 799.603
STA. 124+58.66
15.61' RT

STA. 122+00.00
130.00' LT

EASMT FOR CONSTRUCTION
OF SLOPES (CONSTRUCTION WORK
ZONE FOR BRIDGE SUPERSTRUCTURE)

CONSTRUCTION LIMITS
FOR TEMPORARY WORK
AREA

STA. 122+00.00
60.00' LT

STA. 123+00.00
55.00' LT

END TEMPORARY FIELD FENCE.
TIE TO EXIST.
STA. 123+00.00

END CHAINLINK FENCE.
PVC, 6FT, 6GA (BLACK)
TIE TO EXIST.
STA. 123+00.00

STA. 123+05.00
60.00' LT

STA. 123+05.00
49.68' LT

STA. 123+00.00
49.68' LT

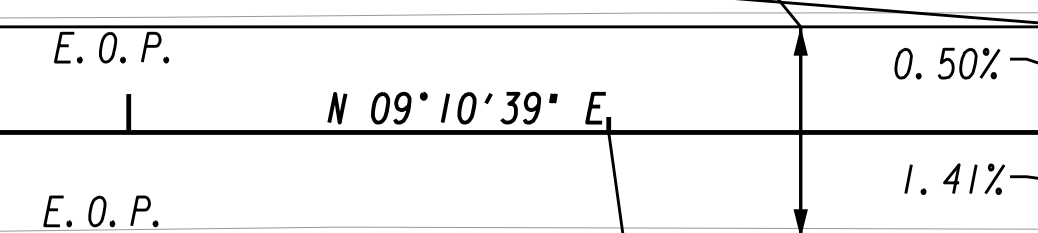
END CONSTRUCTION
END FULL DEPTH
PAVEMENT AND
FULL DEPTH
SHOULDER WIDENING
CR661/BLACKHALL RD.
STA. 123+00.00
MATCH EXISTING
CROSS SLOPES



NOTES:

CONTRACTOR TO REMOVE FILL FROM BRIDGE SUPERSTRUCTURE CONSTRUCTION WORK SITE AREA AND GRADE AREA TO PROPOSED LIMITS AS SHOWN. THE CONTRACTOR IS TO ALSO GRADE TO DRAIN AND GRASS THE AREA BEYOND THE PROPOSED LIMITS BACK TO ITS ORIGINAL STATE.

MATCH LINE STA. 121+50.13-003



END PROJECT
CR661/BLACKHALL RD.
STA. 123+50.00
N-1280558.1143
E-2262876.1021

18" CMP
INV: 800.97

18" CMP
INV: 802.31

18" CMP
INV: 805.52

LOCATION CD
*10-TRV 5/8" RBS(D)
N 1280374.9099
E 2262863.4977
ELEV. 784.644

BEGIN FULL DEPTH
SHLDR TAPER
STA. 122+50.00

FENCE TEMP. EASMT

STA. 123+05.00
48.62' RT

END CHAINLINK FENCE.
PVC, 6FT, 6GA (BLACK)
TIE TO EXIST.
STA. 123+00.00

STA. 123+05.00
75.00' RT

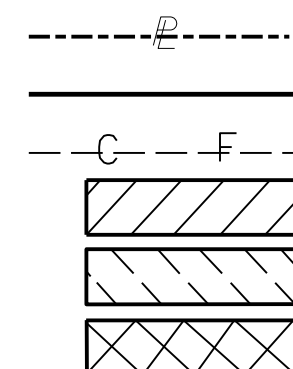
STA. 123+00.00
70.00' RT

BARBARA W. HOLMES

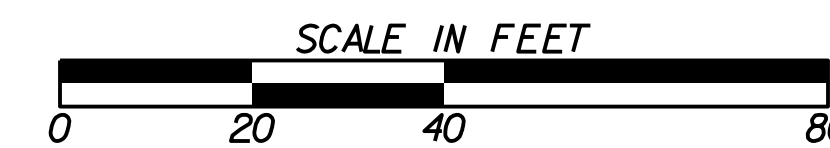
LOCATION CD
*9-TRV 5/8" RBS(D)
N 1280663.3105
E 2262908.8378
ELEV. 799.603

PETER W. & PATTI J. MCFARLANE

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR
& MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES



BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS
FENCE
ENVIRONMENTALLY SENSITIVE AREA



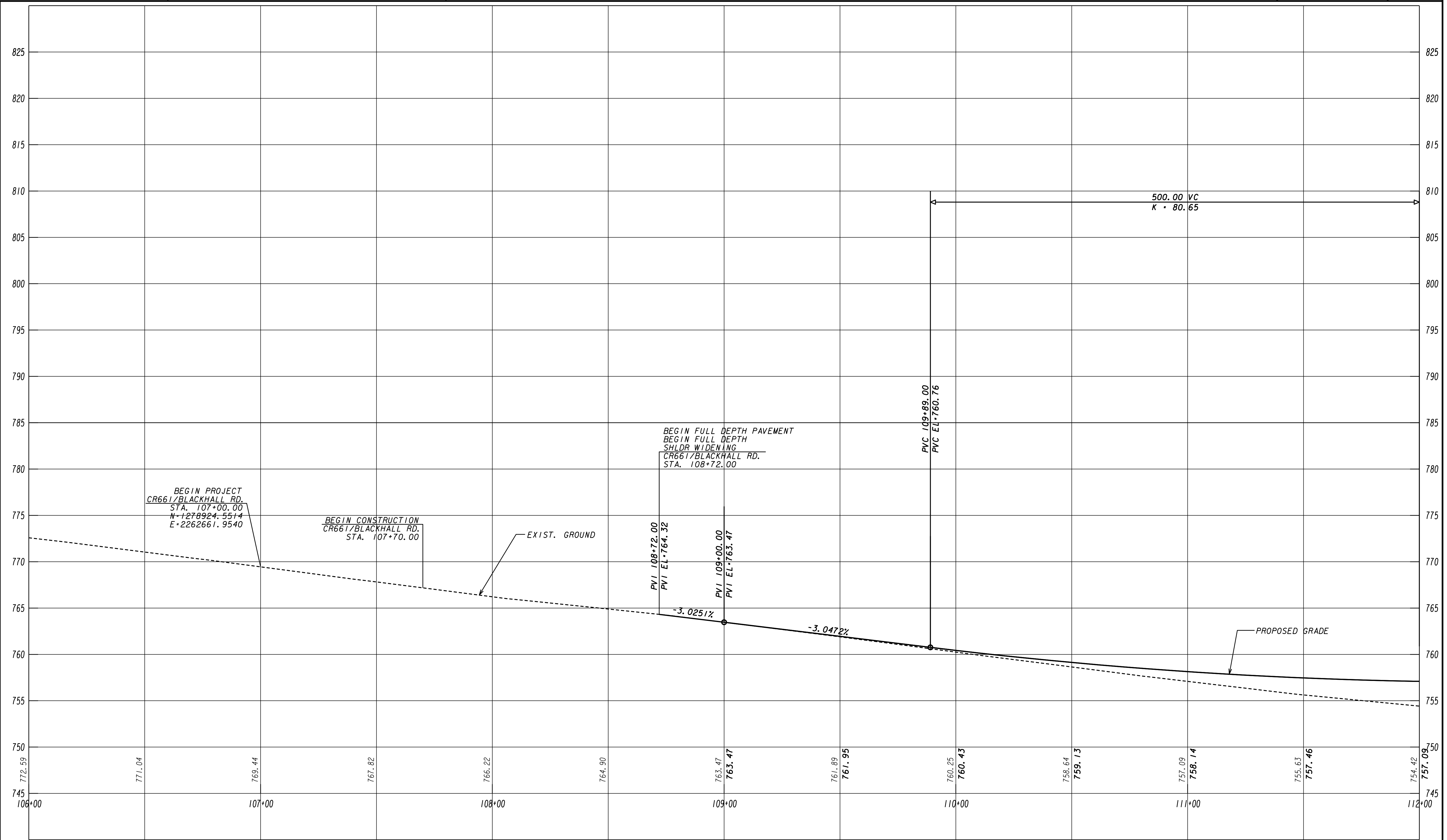
REVISION DATES

NO.	DATE	DESCRIPTION

CONSTRUCTION PLAN

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 9/27/17	DRAWING No.
BACKCHECKED: JSJ	DATE: 9/27/17	13-0004
CORRECTED: JSJ	DATE: 9/27/17	
VERIFIED: IC	DATE: 9/27/17	



SCALE : 1" = 20' H
1" = 5' V

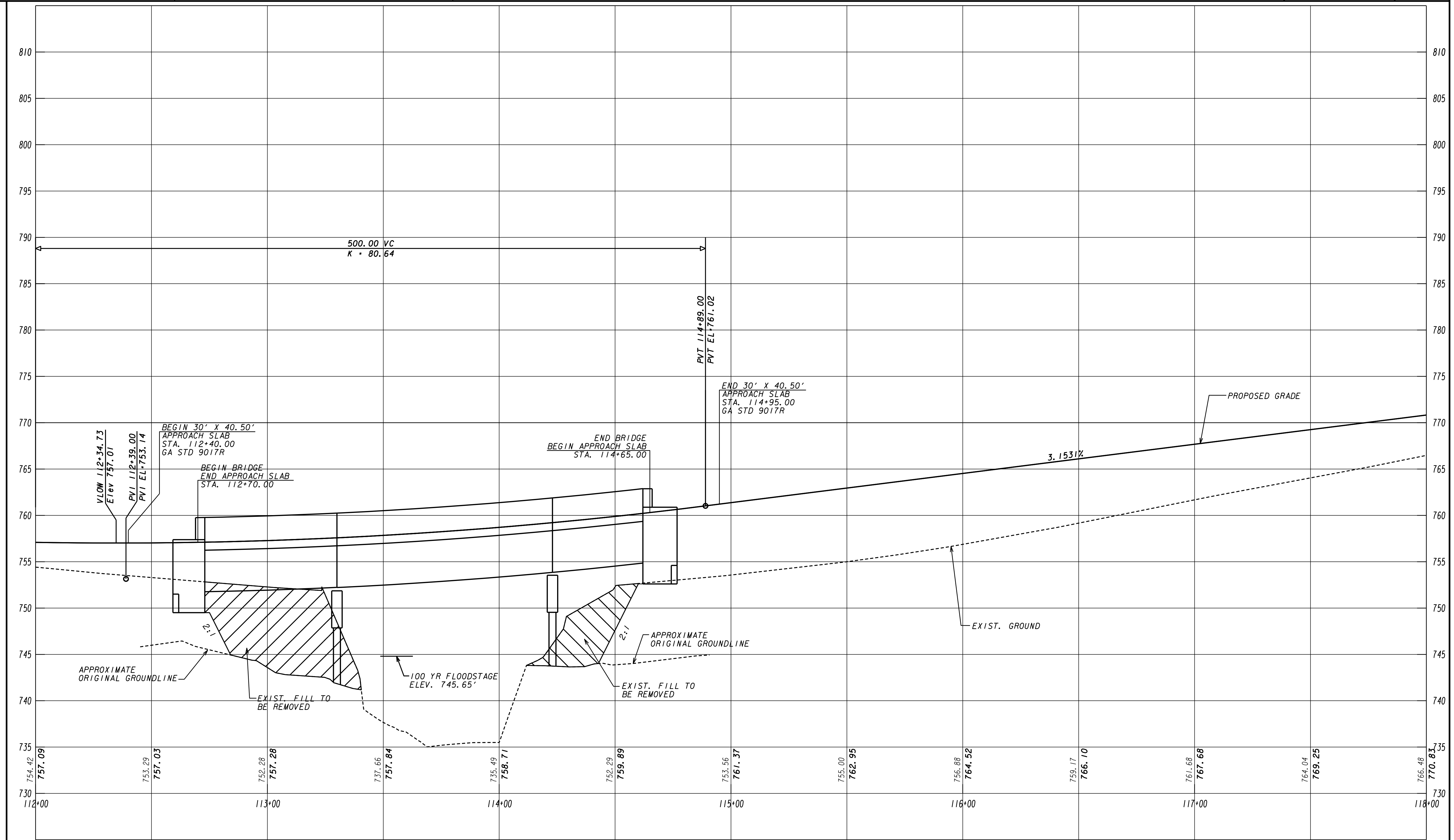
REVISION DATES

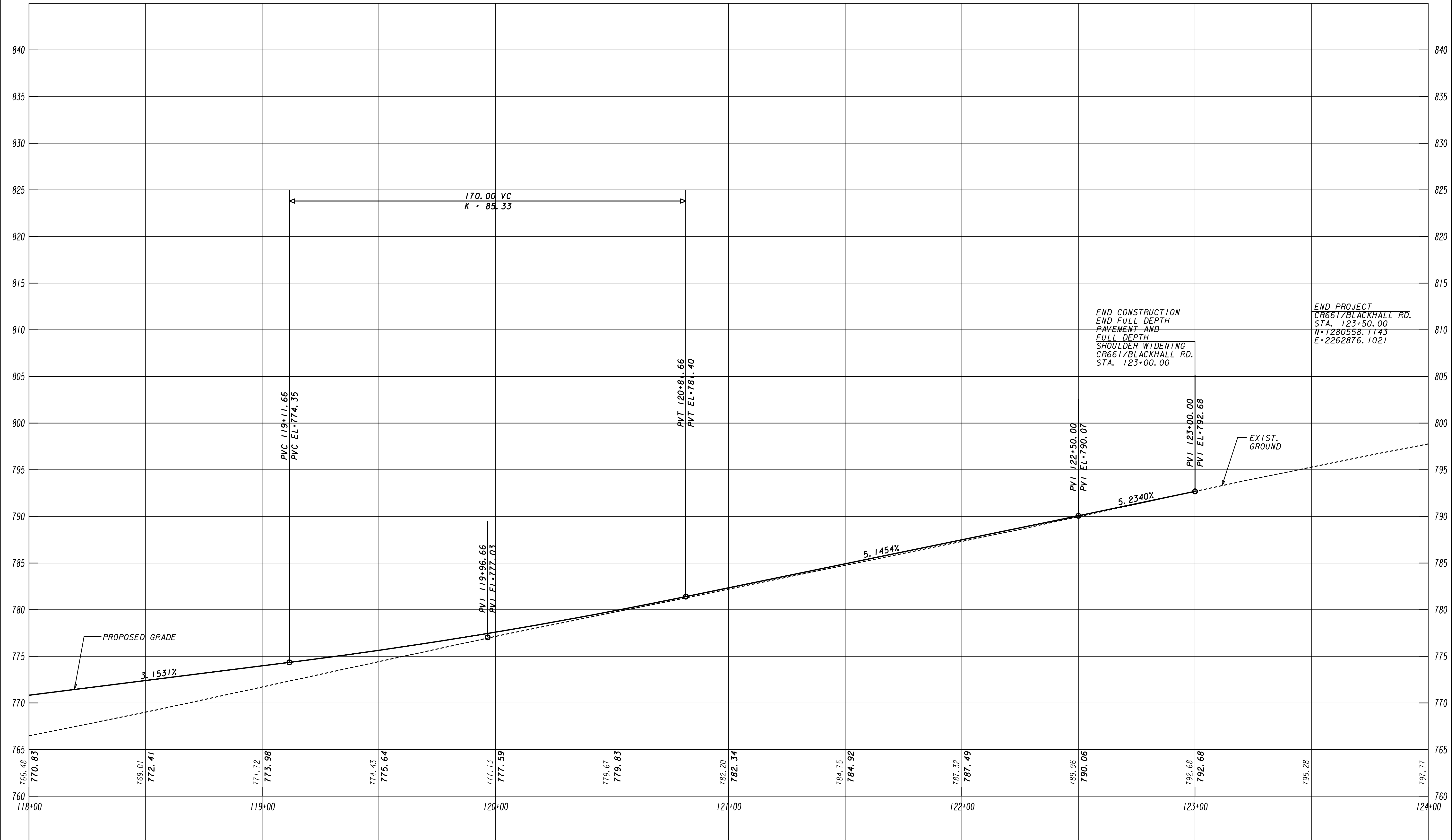
No.	Description	Date

MAINLINE PROFILE

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 9/27/17	DRAWING No.
BACKCHECKED:	DATE:	15-0001
CORRECTED: JSJ	DATE: 9/27/17	
VERIFIED: IC	DATE: 9/27/17	





SCALE : 1" = 20' H
1" = 5' V

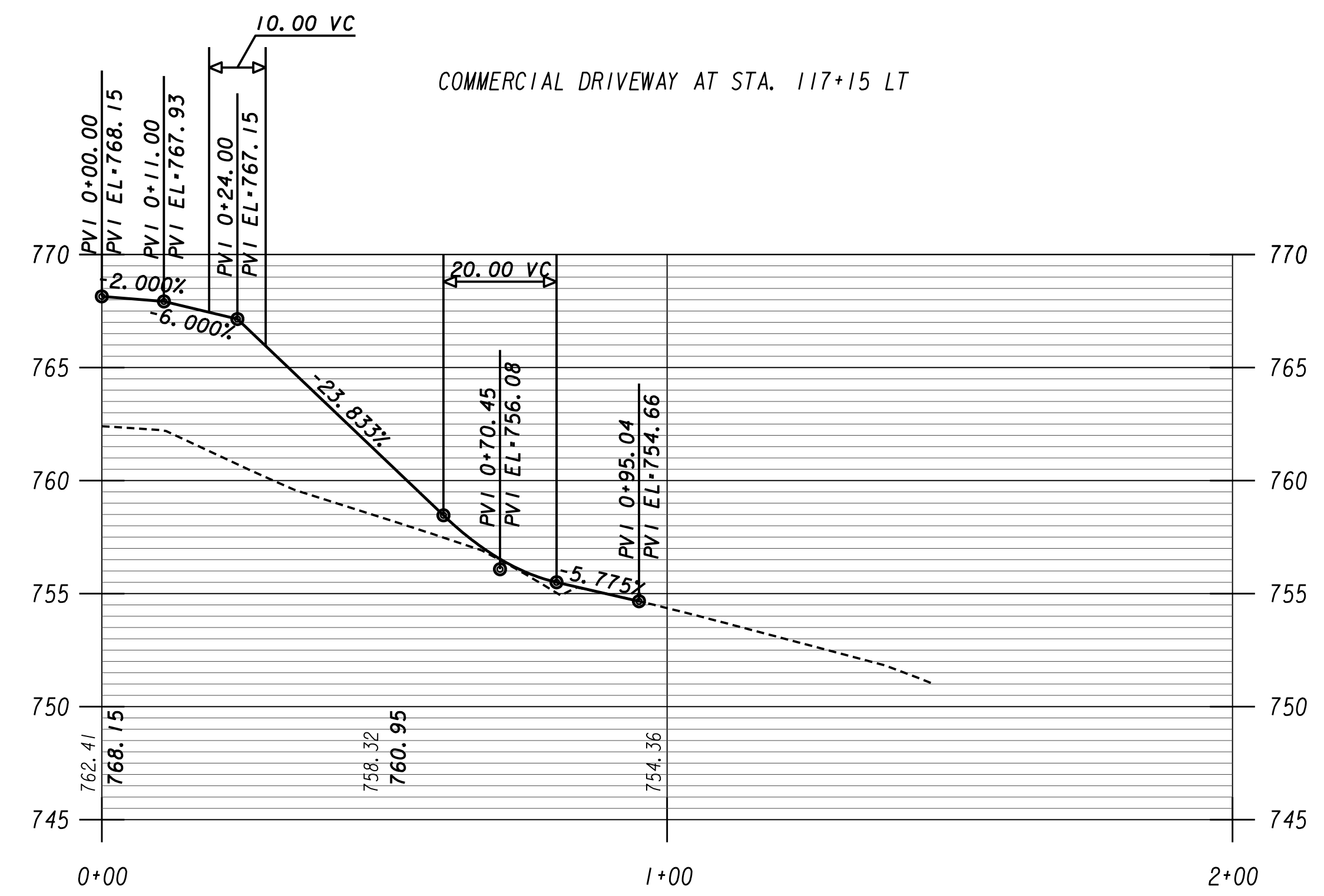
REVISION DATES

No.	Date	Description

MAINLINE PROFILE

CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 9/27/17	DRAWING No.
BACKCHECKED:	DATE:	15-0003
CORRECTED:	DATE:	
VERIFIED:	DATE:	



SCALE : 1" = 20' H
1" = 5' V

REVISION DATES

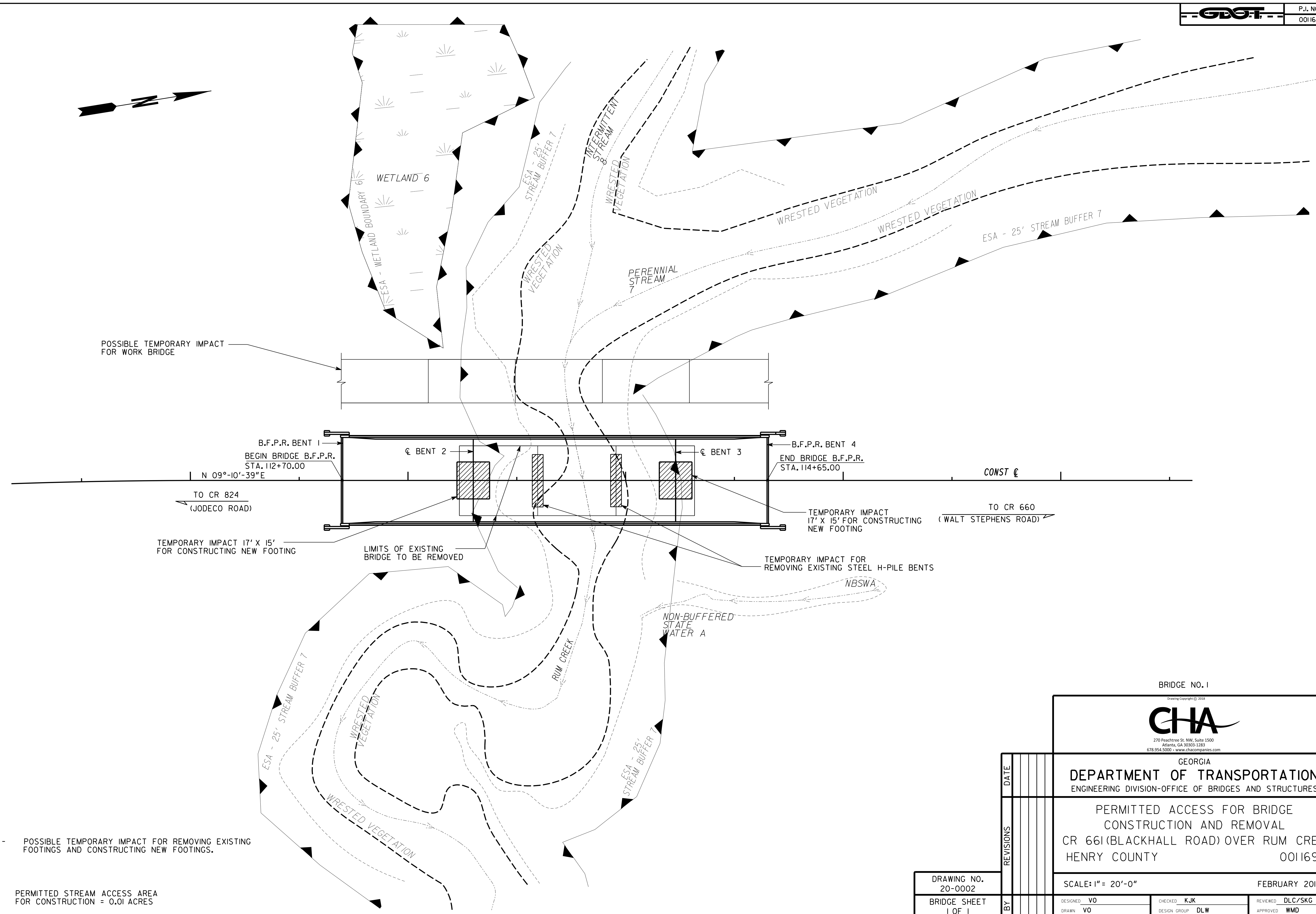
No.	Description	Date

DRIVEWAY PROFILE

CR661/BLACKHALL RD. AT RUM CREEK

Checked By	Date	Checked By	Date
CHEKED: CAE	DATE: 9/27/17	BACKCHECKED: JSJ	DATE: 9/27/17
VERIFIED: IC	DATE: 9/27/17		

DRAWING No.
17-0001



POSSIBLE TEMPORARY IMPACT FOR REMOVING EXISTING FOOTINGS AND CONSTRUCTING NEW FOOTINGS.

PERMITTED STREAM ACCESS AREA FOR CONSTRUCTION = 0.01 ACRES

REVISIONS	DATE

BRIDGE NO. 1
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GEORGIA
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

PERMITTED ACCESS FOR BRIDGE
CONSTRUCTION AND REMOVAL
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 001691

SCALE: 1" = 20'-0" FEBRUARY 2018

DESIGNED: VO	CHECKED: KJK	REVIEWED: DLC/SKG
DRAWN: VO	DESIGN GROUP: DLW	APPROVED: WMD

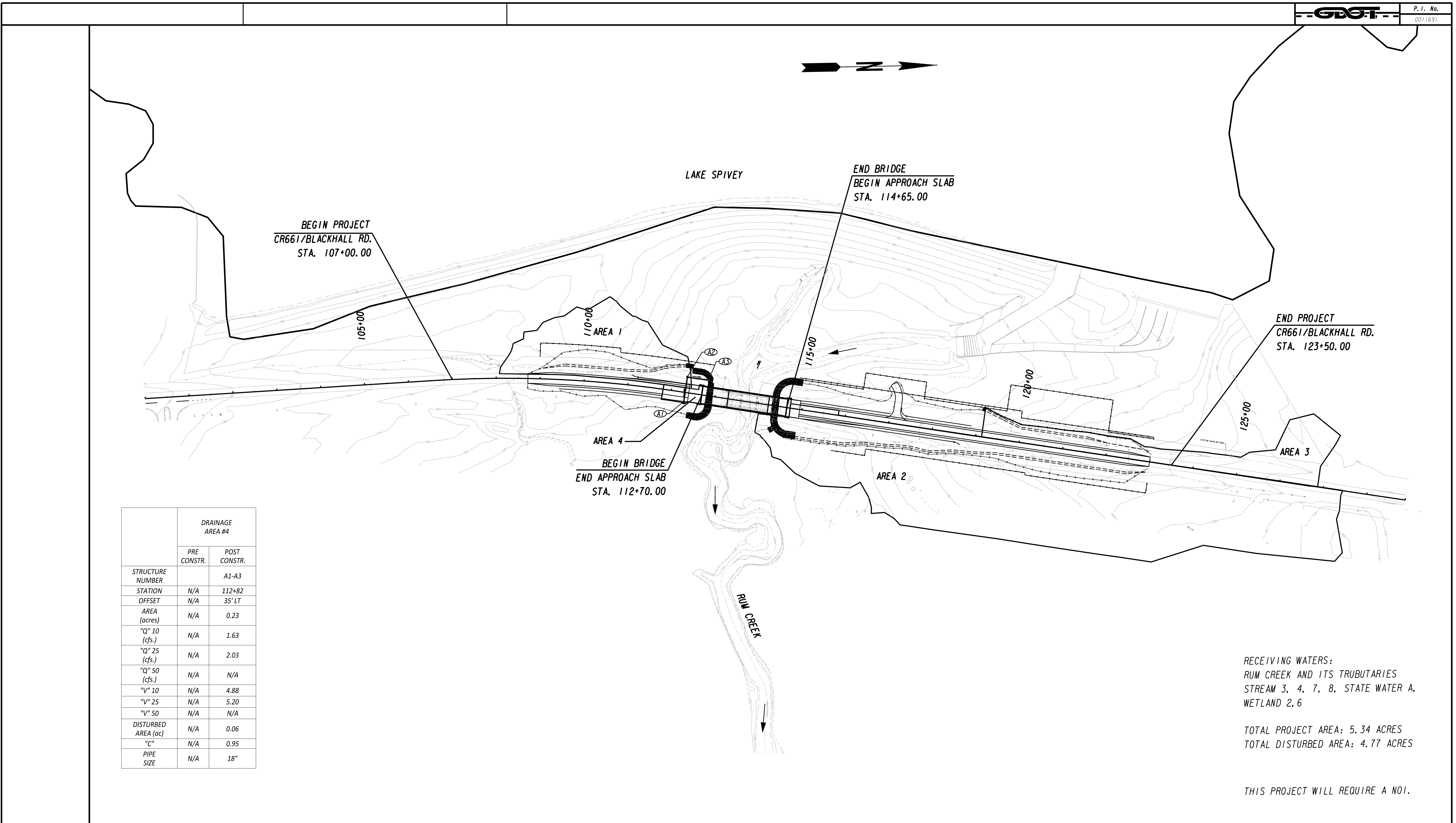
DRAWING NO. 20-0002
BRIDGE SHEET 1 OF 1

1 INCH WHEN PRINTED FULL SIZE

03/27/2018 10:51:23 AM

5353

X.DGN



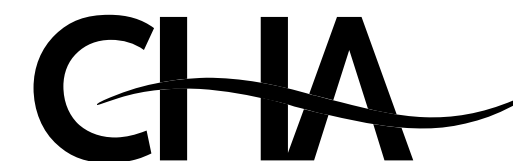
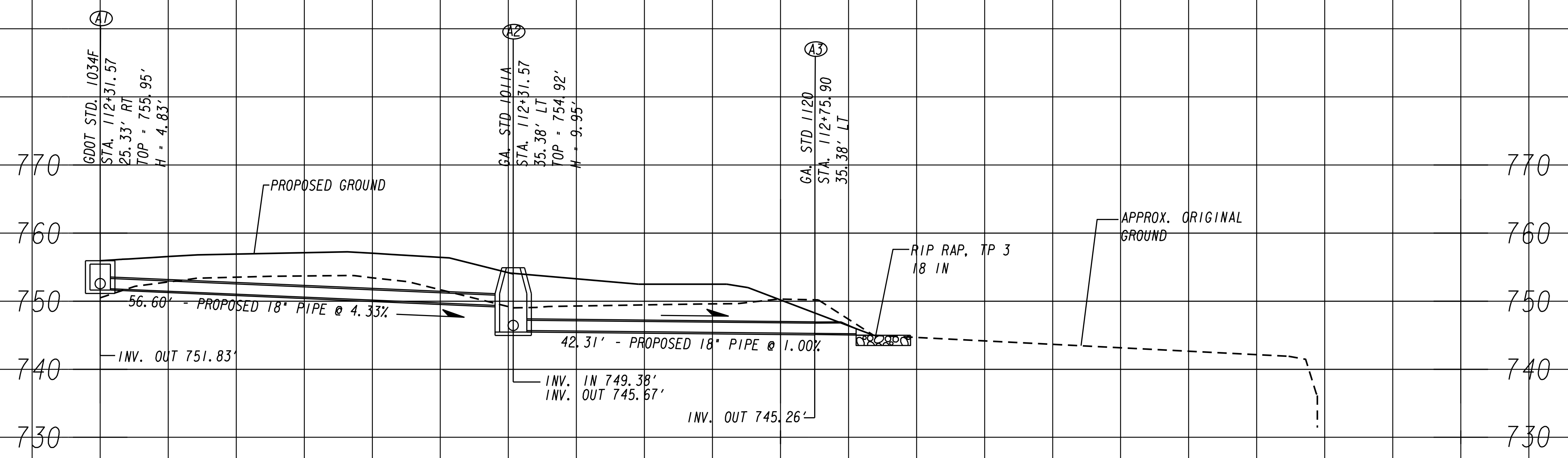
	DRAINAGE AREA #4	
	PRE CONSTR.	POST CONSTR.
STRUCTURE NUMBER		A1-A3
STATION	N/A	112+82
OFFSET	N/A	35' LT
AREA (acres)	N/A	0.23
"Q" 10 (cfs.)	N/A	1.63
"Q" 25 (cfs.)	N/A	2.03
"Q" 50 (cfs.)	N/A	N/A
"V" 10	N/A	4.88
"V" 25	N/A	5.20
"V" 50	N/A	N/A
DISTURBED AREA (ac)	N/A	0.06
"C"	N/A	0.95
PIPE SIZE	N/A	18"

RECEIVING WATERS:
RUM CREEK AND ITS TRIBUTARIES
STREAM 3, 4, 7, 8, STATE WATER A,
WETLAND 2, 6

TOTAL PROJECT AREA: 5.34 ACRES
TOTAL DISTURBED AREA: 4.77 ACRES

THIS PROJECT WILL REQUIRE A NOI.

<p>Drawing Copyright (C) 2018</p>  <p>270 Peachtree St. NW, Suite 1500 Atlanta, GA 30303-1283 678.954.5000 - www.chacompanies.com</p>	<p>SCALE IN FEET</p> 	<table border="1"> <thead> <tr> <th colspan="2">REVISION DATES</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	REVISION DATES										<p>DRAINAGE AREA MAP</p> <p>CR661/BLACKHALL RD AT RUM CREEK</p> <table border="1" style="width: 100%;"> <tr> <td>CHECKED: CAE</td> <td>DATE: 9/27/17</td> <td rowspan="4" style="text-align: center; vertical-align: middle; font-size: 24pt;">DRAWING No. 21-0001</td> </tr> <tr> <td>BACKCHECKED: JSJ</td> <td>DATE: 9/27/17</td> </tr> <tr> <td>CORRECTED: JSJ</td> <td>DATE: 9/27/17</td> </tr> <tr> <td>VERIFIED: JC</td> <td>DATE: 9/27/17</td> </tr> </table>	CHECKED: CAE	DATE: 9/27/17	DRAWING No. 21-0001	BACKCHECKED: JSJ	DATE: 9/27/17	CORRECTED: JSJ	DATE: 9/27/17	VERIFIED: JC	DATE: 9/27/17
REVISION DATES																						
CHECKED: CAE	DATE: 9/27/17	DRAWING No. 21-0001																				
BACKCHECKED: JSJ	DATE: 9/27/17																					
CORRECTED: JSJ	DATE: 9/27/17																					
VERIFIED: JC	DATE: 9/27/17																					



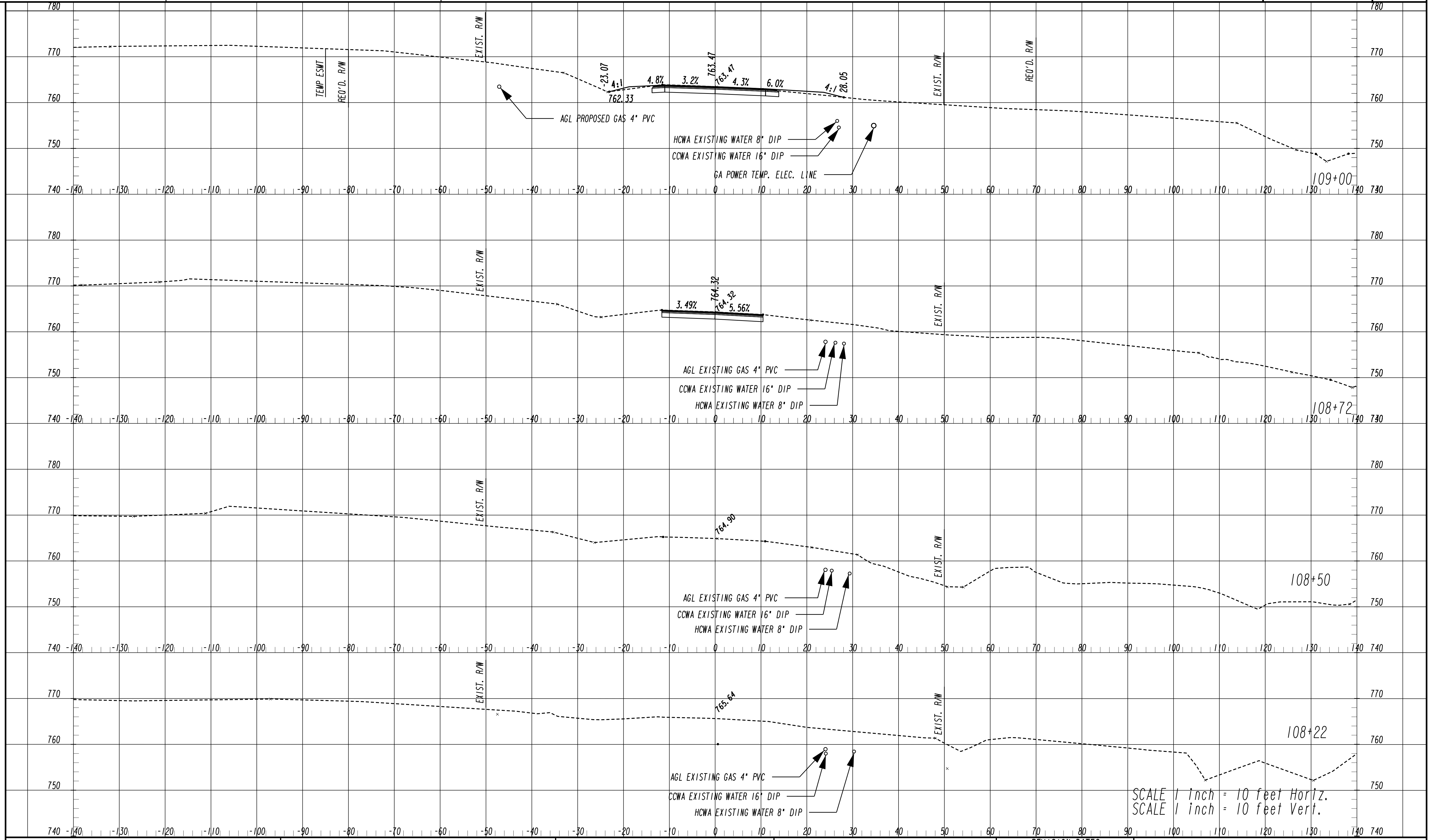
REVISION DATES

No.	Date	Description

DRAINAGE PROFILES

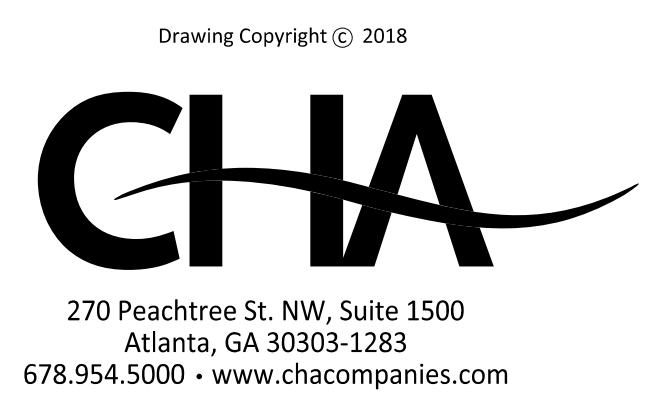
CR661/BLACKHALL RD. AT RUM CREEK

CHECKED: CAE	DATE: 9/27/17	DRAWING No.
BACKCHECKED:	DATE:	22-0001
CORRECTED: JSJ	DATE: 9/27/17	
VERIFIED: CAE	DATE: 9/27/17	



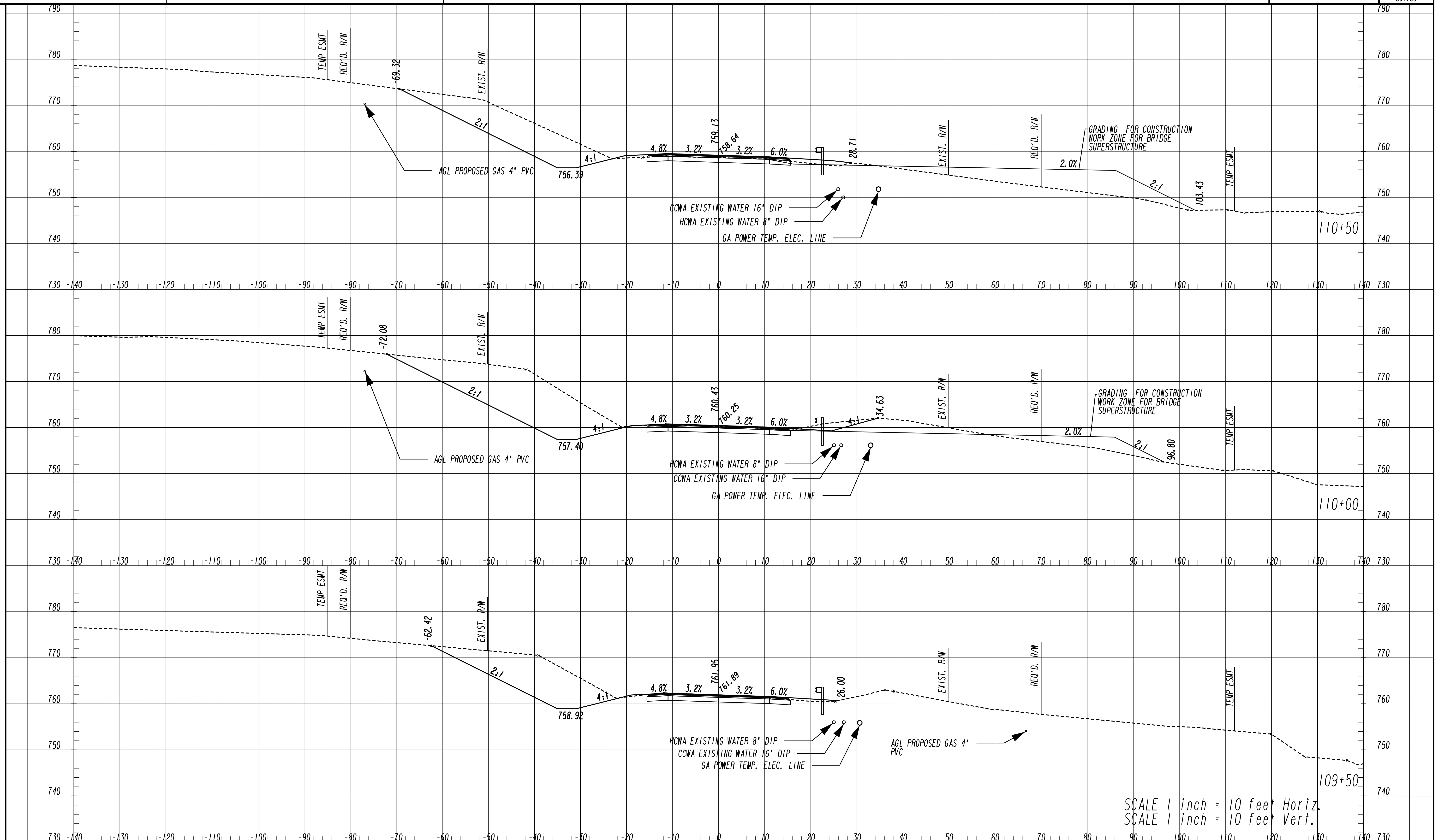
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0001	
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VERIFIED: IC	DATE: 10/4/17		



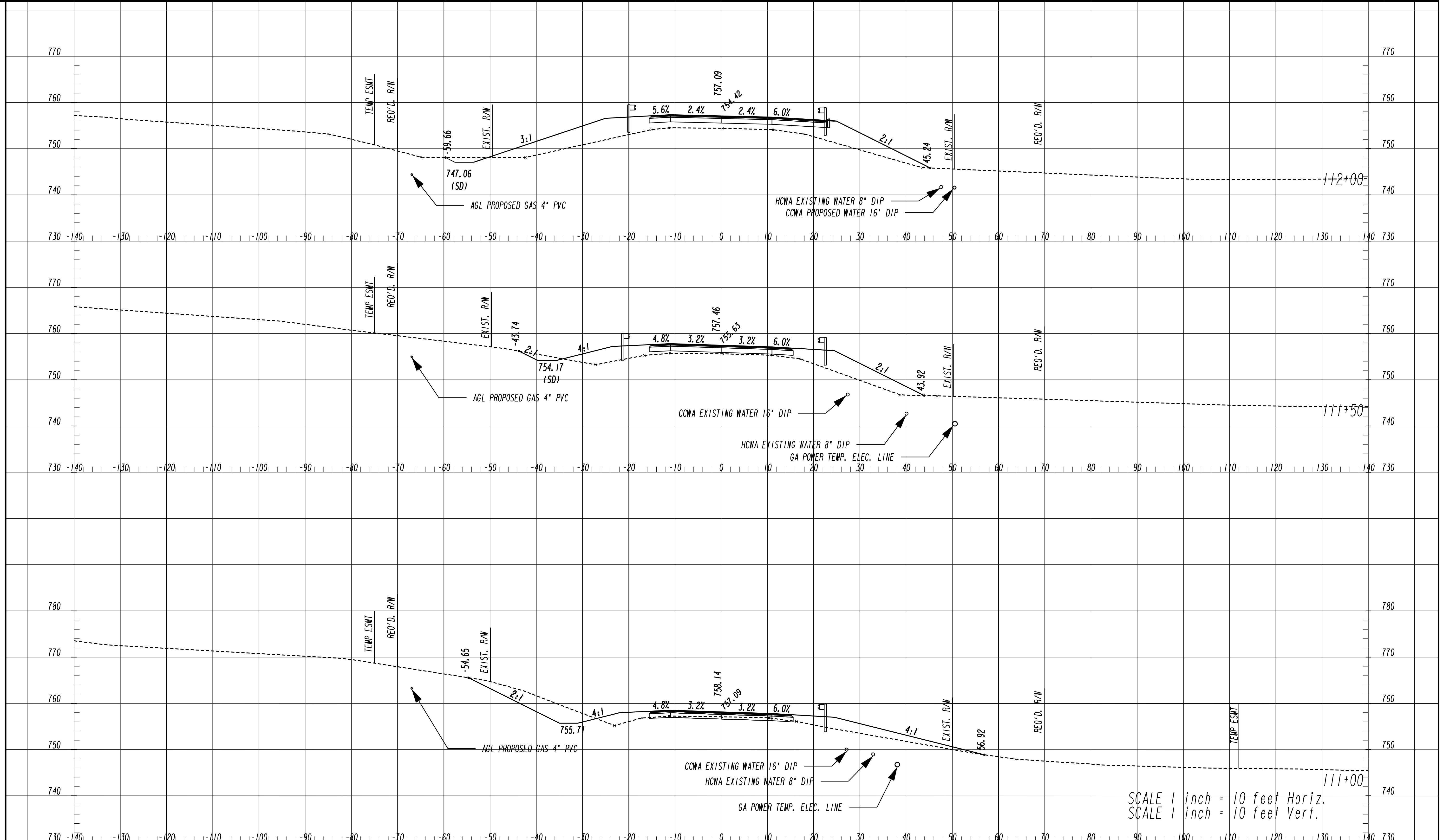
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0002	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



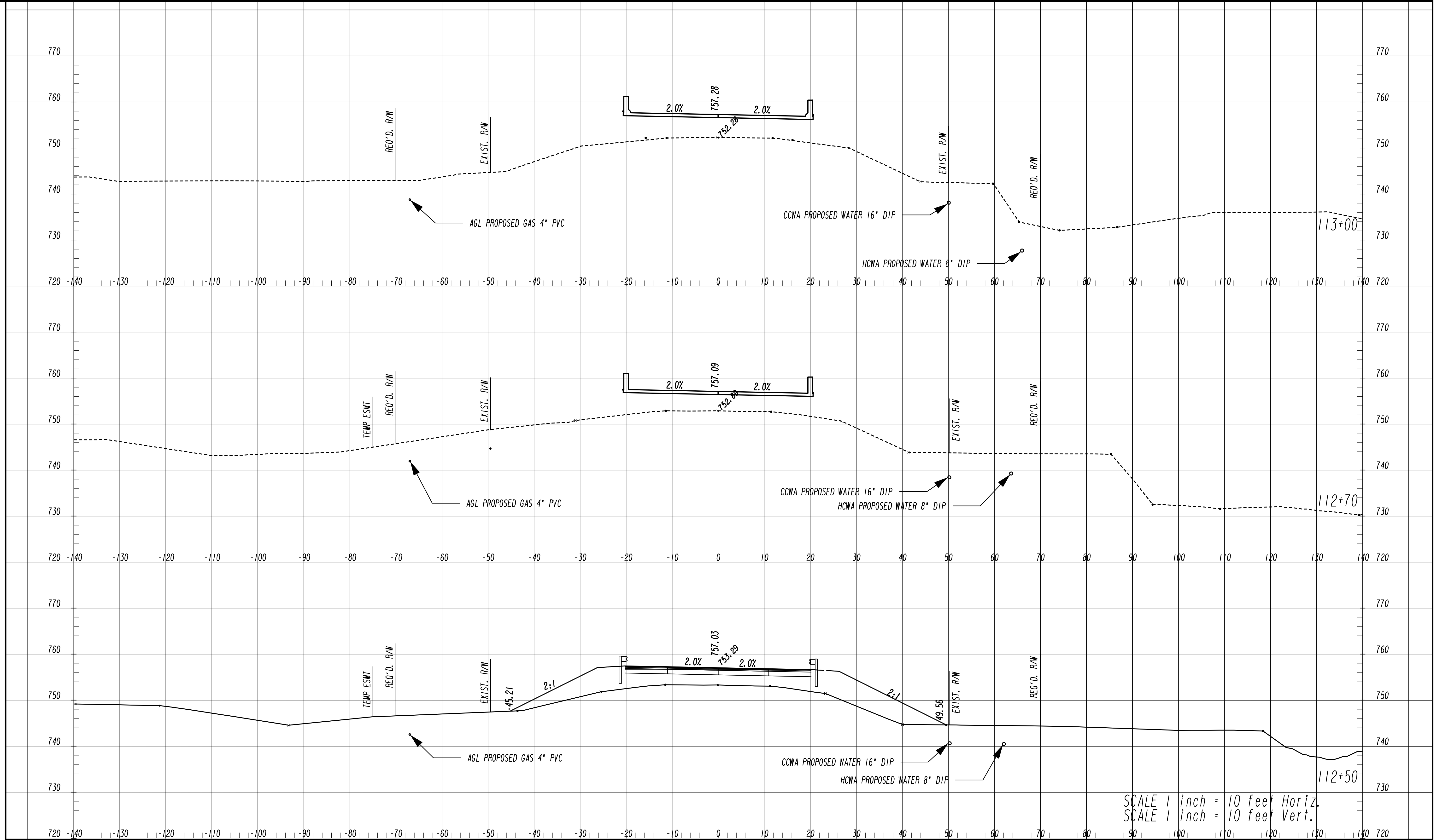
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0003	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



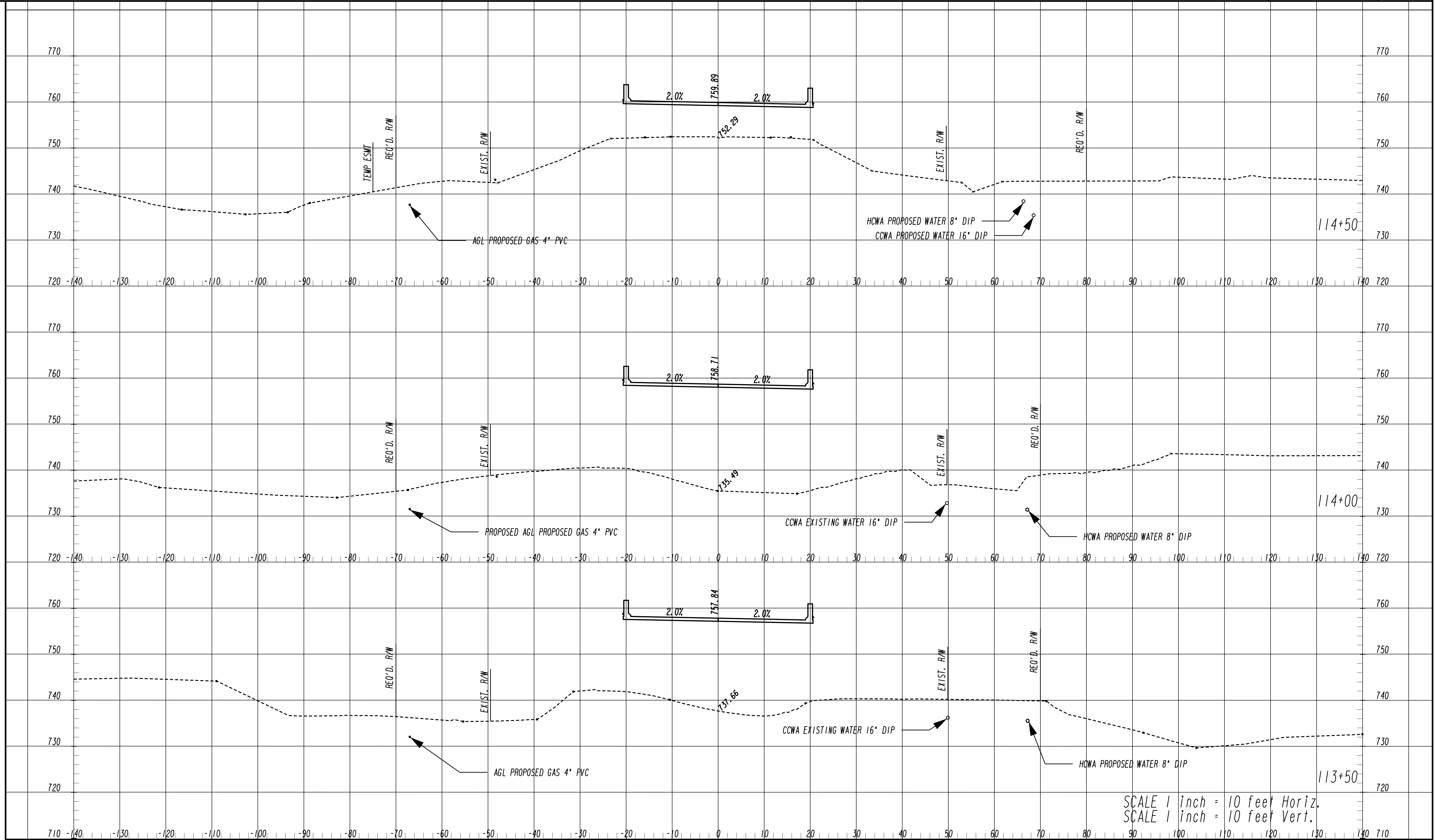
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0004	
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VERIFIED: IC	DATE: 10/4/17		



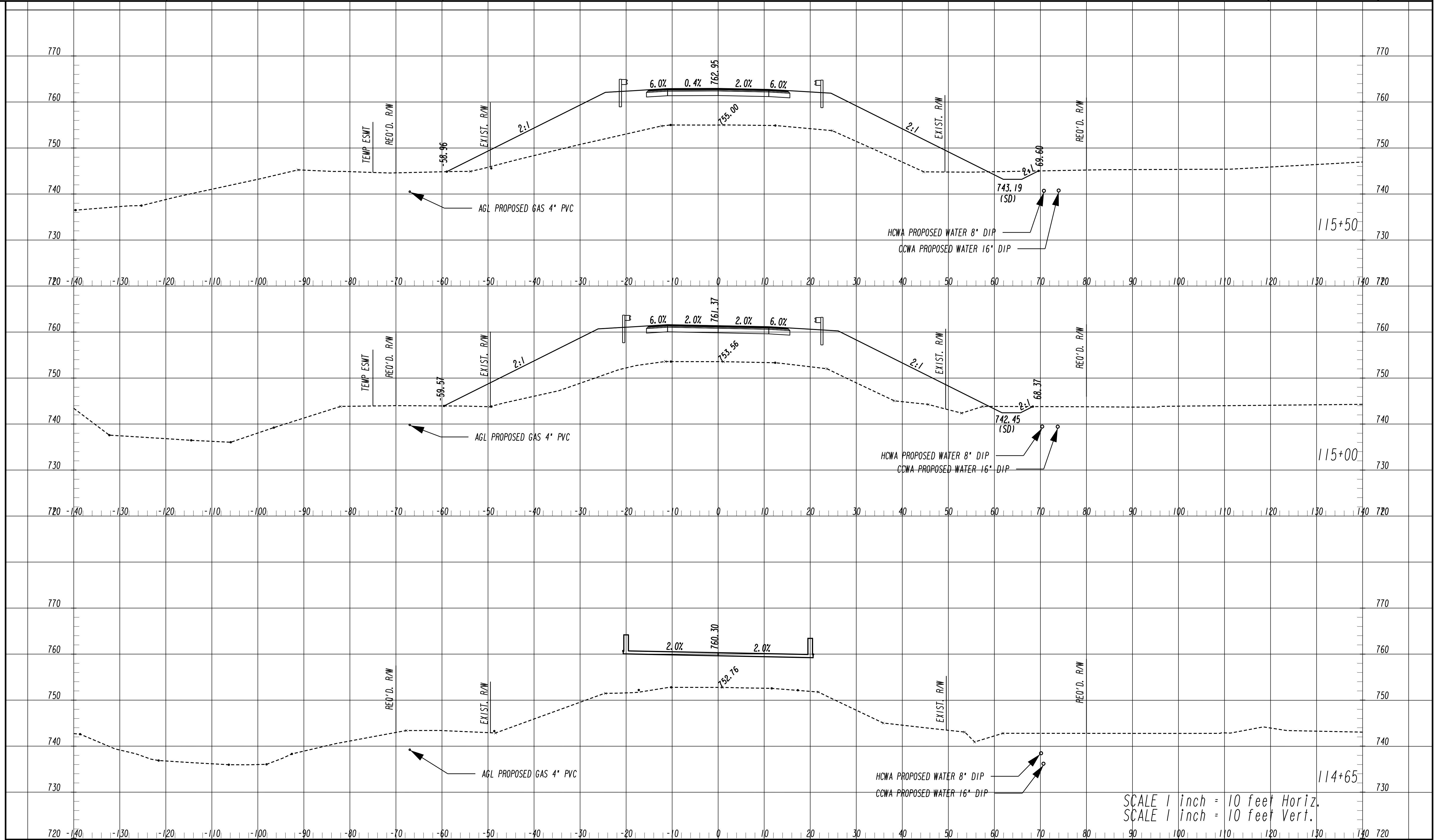
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0005	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH

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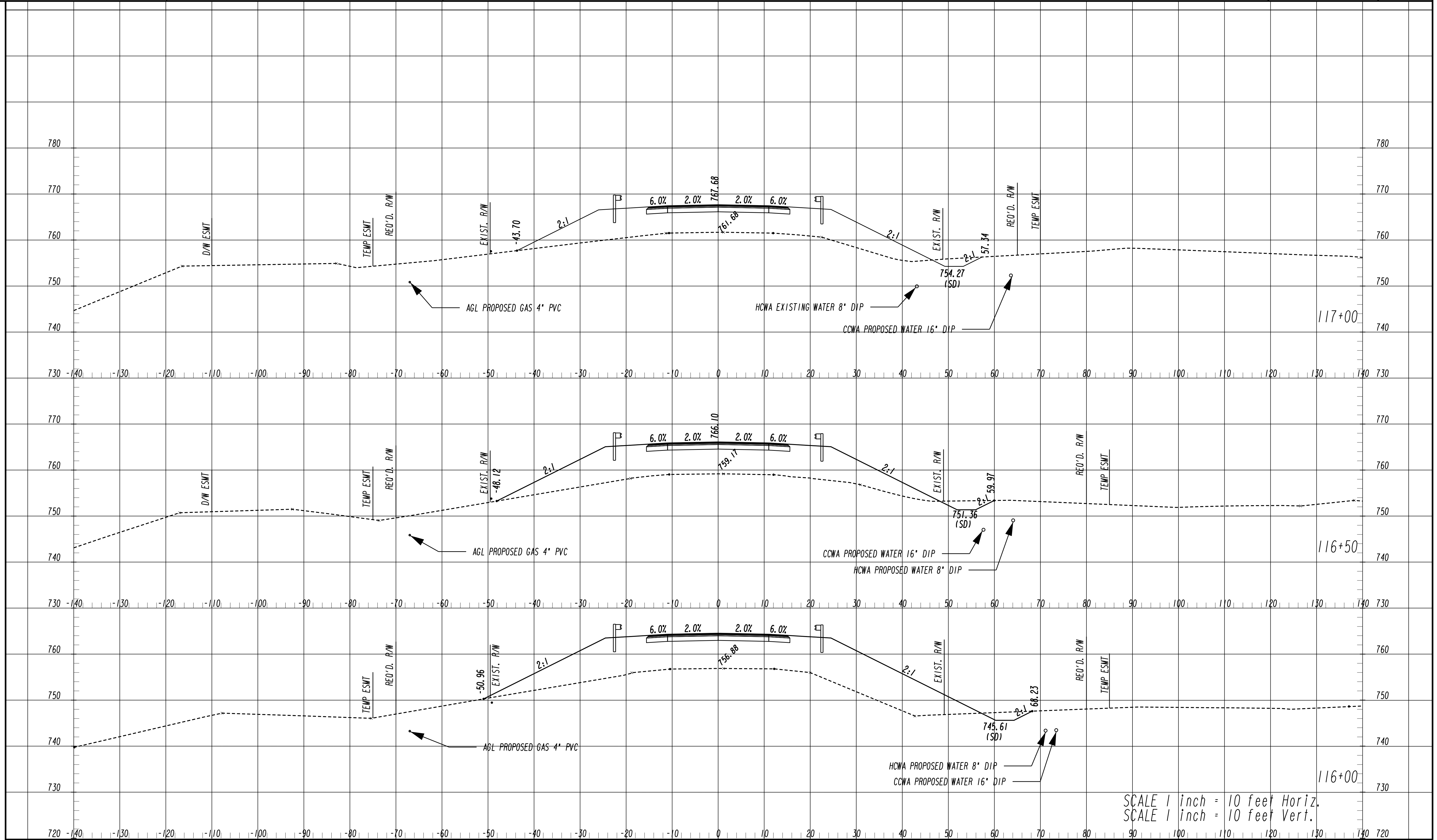
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REVISION DATES	

CROSS SECTIONS

CR661/BLACKHALL RD. AT RUM CREEK

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BACKCHECKED: JSJ	DATE: 10/4/17	23-0006
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VERIFIED: IC	DATE: 10/4/17	



SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH

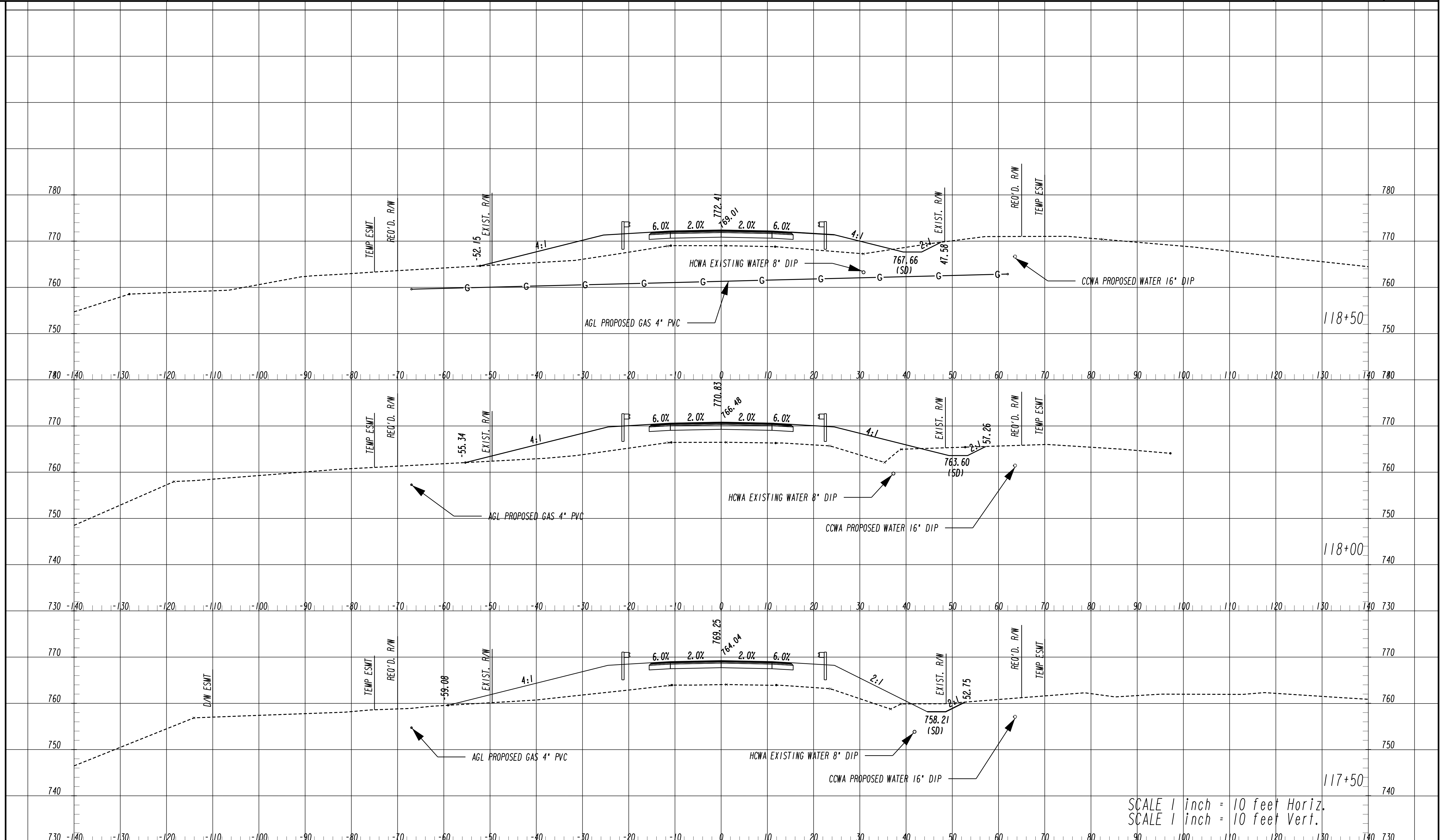
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REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0007	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



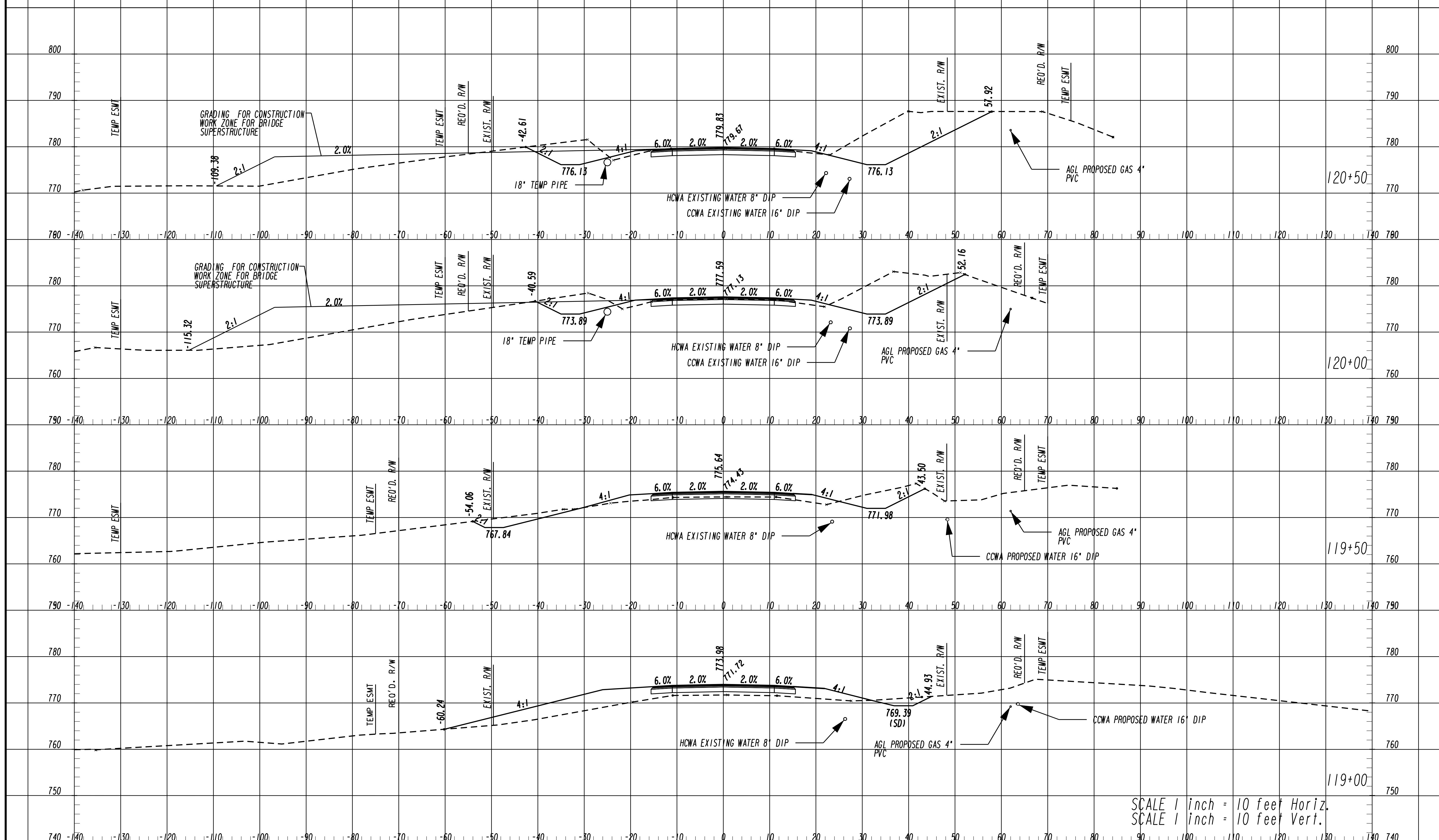
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0008	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



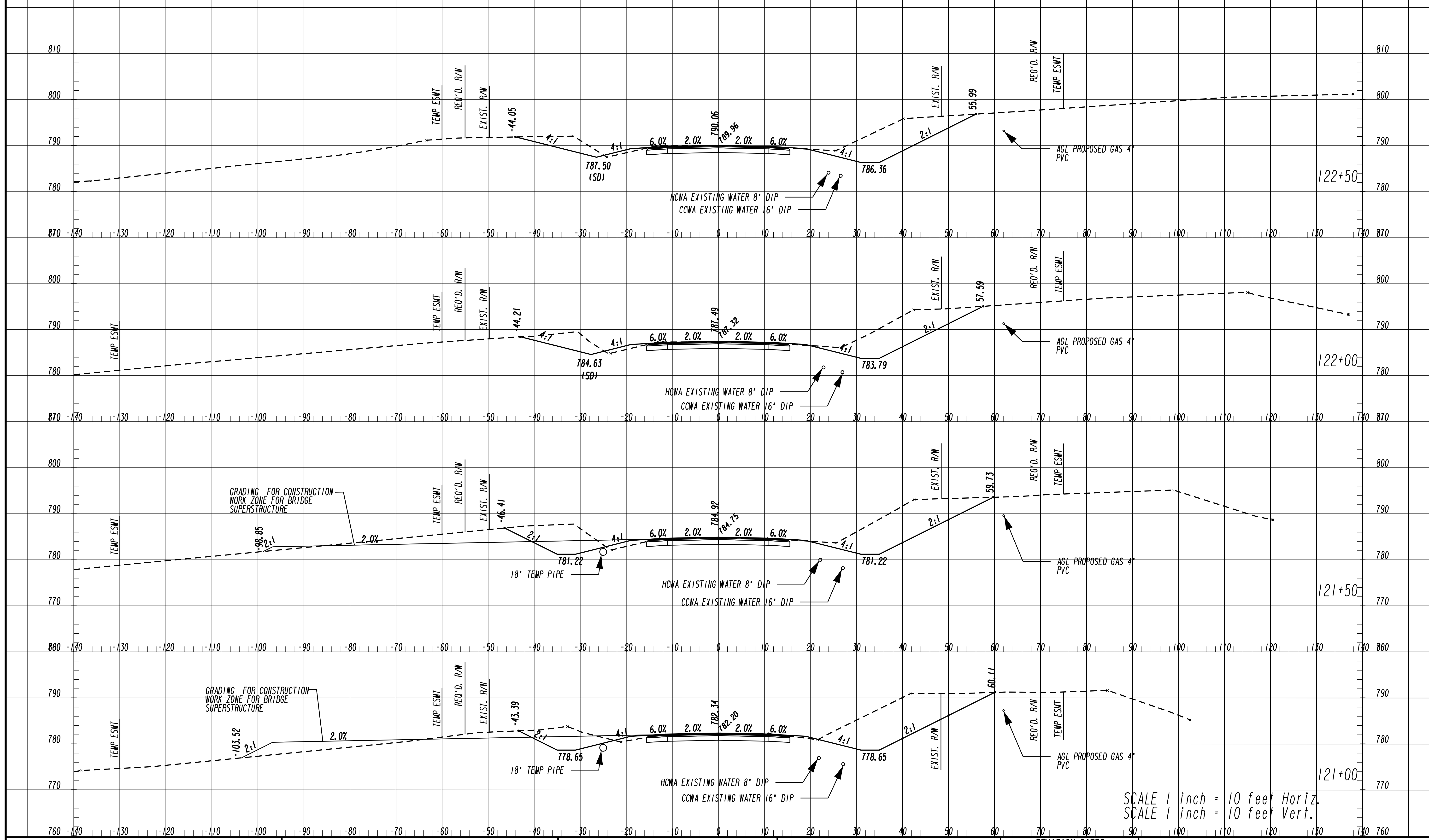
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0009	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



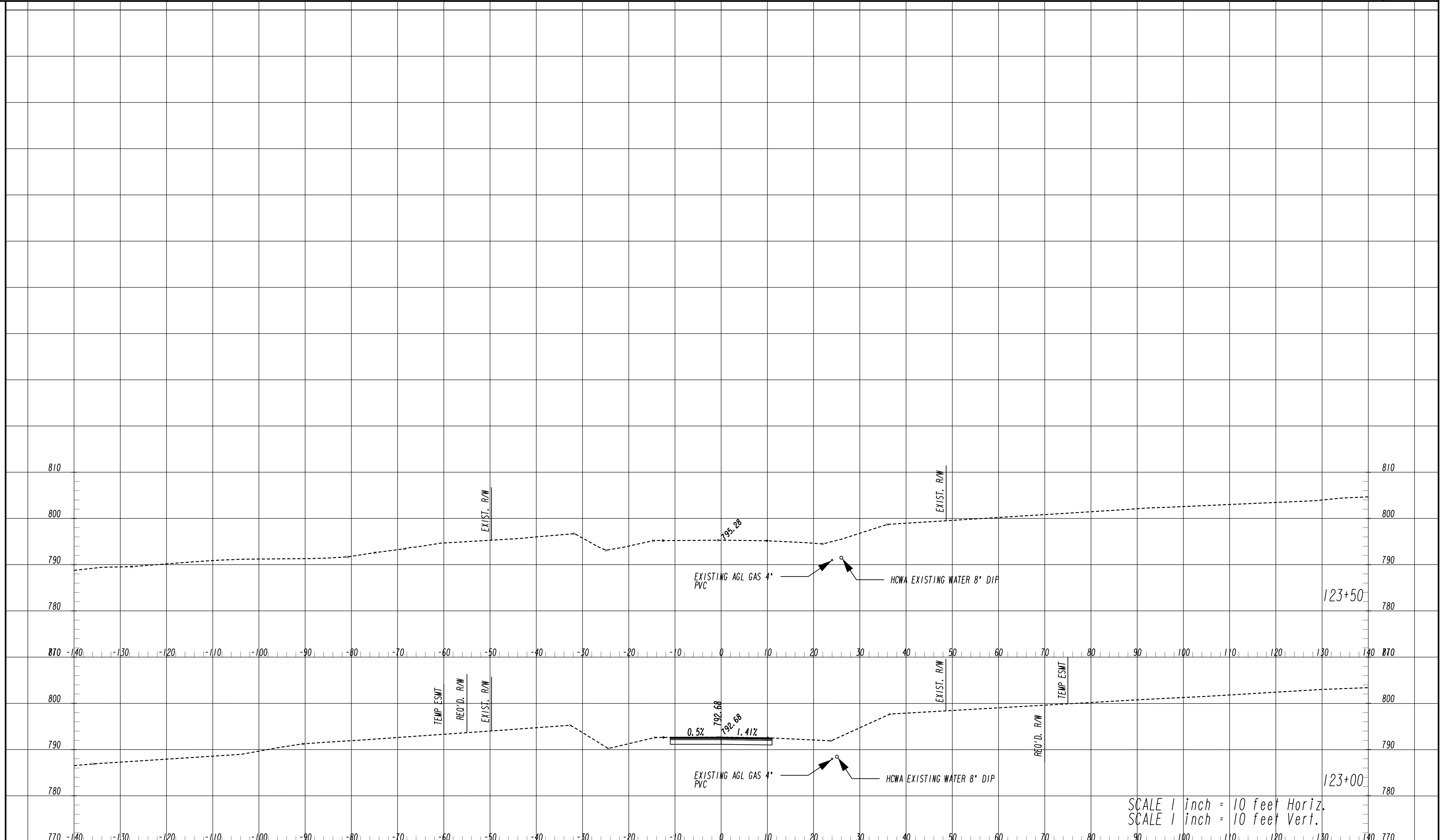
SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH



REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0010	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		



SCALE 1 inch = 10 feet Horiz.
SCALE 1 inch = 10 feet Vert.

SD = SPECIAL DITCH

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REVISION DATES	

CROSS SECTIONS			
CR661/BLACKHALL RD. AT RUM CREEK			
CHECKED: CAE	DATE: 10/4/17	DRAWING No.	
BACKCHECKED: JSJ	DATE: 10/4/17	23-0011	
CORRECTED: JSJ	DATE: 10/4/17		
VERIFIED: IC	DATE: 10/4/17		

EXISTING OVERHEAD	OVERHEAD TO BE REMOVED	PROPOSED OVERHEAD	TYPE OF UTILITY
~W~E~W~E	*~W~E~*~W~	~W~E~W~	ELECTRIC
~W~E~T~W~	*~W~E~T~*~W~	~W~E~T~W~	ELECTRIC/TELECOMMUNICATIONS
~W~E~TV~W~	*~W~E~TV~*~W~	~W~E~TV~W~	ELECTRIC/CABLE TV
~W~E~TC~W~	*~W~E~TC~*~W~	~W~E~TC~W~	ELECTRIC/TRAFFIC CONTROL
~W~E~T~TV~W~	*~W~E~T~TV~*~W~	~W~E~T~TV~W~	ELECTRIC/TELECOMMUNICATIONS/CABLE TV
~W~E~T~TV~TC~W~	*~W~E~T~TV~TC~*~W~	~W~E~T~TV~TC~W~	ELECTRIC/TELECOMMUNICATIONS/CABLE TV/TRAFFIC CONTROL
~W~E~TV~TC~W~	*~W~E~TV~TC~*~W~	~W~E~TV~TC~W~	ELECTRIC/CABLE TV/TRAFFIC CONTROL
~W~E~T~TC~W~	*~W~E~T~TC~*~W~	~W~E~T~TC~W~	ELECTRIC/TELECOMMUNICATIONS/TRAFFIC CONTROL
~W~E~GW~W~	*~W~E~GW~*~W~	~W~E~GW~W~	GUY WIRE
~W~T~W~	*~W~T~*~W~	~W~T~W~	TELECOMMUNICATIONS
~W~T~TC~W~	*~W~T~TC~*~W~	~W~T~TC~W~	TELECOMMUNICATIONS/TRAFFIC CONTROL
~W~T~TV~TC~W~	*~W~T~TV~TC~*~W~	~W~T~TV~TC~W~	TELECOMMUNICATIONS/CABLE TV/TRAFFIC CONTROL
~W~T~TV~TC~W~	*~W~T~TV~TC~*~W~	~W~T~TV~TC~W~	TELECOMMUNICATIONS/CABLE TV
~W~TV~W~	*~W~TV~*~W~	~W~TV~W~	CABLE TV
~W~TV~TC~W~	*~W~TV~TC~*~W~	~W~TV~TC~W~	CABLE TV/TRAFFIC CONTROL
~W~TC~W~	*~W~TC~*~W~	~W~TC~W~	TRAFFIC CONTROL
EXISTING UNDERGROUND	UNDERGROUND TO BE REMOVED	PROPOSED UNDERGROUND	TYPE OF UTILITY
-----E-----	---*---E---*---	-----E-----	ELECTRIC (QL-D)
-----E(C)-----	---*---E(C)---*---	-----E(C)-----	ELECTRIC (QL-C)
-----E(B)-----	---*---E(B)---*---	-----E(B)-----	ELECTRIC (QL-B)
-----T-----	---*---T---*---	-----T-----	TELECOMMUNICATIONS (QL-D)
-----T(C)-----	---*---T(C)---*---	-----T(C)-----	TELECOMMUNICATIONS (QL-C)
-----T(B)-----	---*---T(B)---*---	-----T(B)-----	TELECOMMUNICATIONS (QL-B)
-----TV-----	---*---TV---*---	-----TV-----	CABLE TV (QL-D)
-----TV(C)-----	---*---TV(C)---*---	-----TV(C)-----	CABLE TV (QL-C)
-----TV(B)-----	---*---TV(B)---*---	-----TV(B)-----	CABLE TV (QL-B)
-----W-----	---*---W---*---	-----W-----	WATER (QL-D)
-----W(C)-----	---*---W(C)---*---	-----W(C)-----	WATER (QL-C)
-----W(B)-----	---*---W(B)---*---	-----W(B)-----	WATER (QL-B)
-----**W-----	---*---**W---*---	-----**W-----	WATER FOR LABELED PIPE SIZES (QL-D)
-----**W(C)-----	---*---**W(C)---*---	-----**W(C)-----	WATER FOR LABELED PIPE SIZES (QL-C)
-----**W(B)-----	---*---**W(B)---*---	-----**W(B)-----	WATER FOR LABELED PIPE SIZES (QL-B)
-----NW-----	---*---NW---*---	-----NW-----	NON-POTABLE WATER (QL-D)
-----NW(C)-----	---*---NW(C)---*---	-----NW(C)-----	NON-POTABLE WATER (QL-C)
-----NW(B)-----	---*---NW(B)---*---	-----NW(B)-----	NON-POTABLE WATER (QL-B)
-----**NW-----	---*---**NW---*---	-----**NW-----	NON-POTABLE WATER FOR LABELED PIPE SIZES (QL-D)
-----**NW(C)-----	---*---**NW(C)---*---	-----**NW(C)-----	NON-POTABLE WATER FOR LABELED PIPE SIZES (QL-C)
-----**NW(B)-----	---*---**NW(B)---*---	-----**NW(B)-----	NON-POTABLE WATER FOR LABELED PIPE SIZES (QL-B)
-----STM-----	---*---STM---*---	-----STM-----	STEAM (QL-D)
-----STM(C)-----	---*---STM(C)---*---	-----STM(C)-----	STEAM (QL-C)
-----STM(B)-----	---*---STM(B)---*---	-----STM(B)-----	STEAM (QL-B)
-----**STM-----	---*---**STM---*---	-----**STM-----	STEAM FOR LABELED PIPE SIZES (QL-D)
-----**STM(C)-----	---*---**STM(C)---*---	-----**STM(C)-----	STEAM FOR LABELED PIPE SIZES (QL-C)
-----**STM(B)-----	---*---**STM(B)---*---	-----**STM(B)-----	STEAM FOR LABELED PIPE SIZES (QL-B)
----->SS-----	---*--->SS---*---	----->SS-----	SANITARY SEWER WITH FLOW DIRECTION (QL-D)
----->SS(C)-----	---*--->SS(C)---*---	----->SS(C)-----	SANITARY SEWER WITH FLOW DIRECTION (QL-C)
----->SS(B)-----	---*--->SS(B)---*---	----->SS(B)-----	SANITARY SEWER WITH FLOW DIRECTION (QL-B)
----->>SS-----	---*--->>SS---*---	----->>SS-----	SANITARY SEWER WITH FLOW DIRECTION FOR LABELED PIPE SIZES (QL-D)
----->>SS(C)-----	---*--->>SS(C)---*---	----->>SS(C)-----	SANITARY SEWER WITH FLOW DIRECTION FOR LABELED PIPE SIZES (QL-C)
----->>SS(B)-----	---*--->>SS(B)---*---	----->>SS(B)-----	SANITARY SEWER WITH FLOW DIRECTION FOR LABELED PIPE SIZES (QL-B)
----->SFM-----	---*--->SFM---*---	----->SFM-----	SANITARY SEWER FORCE MAIN WITH FLOW DIRECTION (QL-D)
----->SFM(C)-----	---*--->SFM(C)---*---	----->SFM(C)-----	SANITARY SEWER FORCE MAIN WITH FLOW DIRECTION (QL-C)
----->SFM(B)-----	---*--->SFM(B)---*---	----->SFM(B)-----	SANITARY SEWER FORCE MAIN WITH FLOW DIRECTION (QL-B)
-----G-----	---*---G---*---	-----G-----	GAS (QL-D)
-----G(C)-----	---*---G(C)---*---	-----G(C)-----	GAS (QL-C)
-----G(B)-----	---*---G(B)---*---	-----G(B)-----	GAS (QL-B)
-----**G-----	---*---**G---*---	-----**G-----	GAS FOR LABELED PIPE SIZES (QL-D)
-----**G(C)-----	---*---**G(C)---*---	-----**G(C)-----	GAS FOR LABELED PIPE SIZES (QL-C)
-----**G(B)-----	---*---**G(B)---*---	-----**G(B)-----	GAS FOR LABELED PIPE SIZES (QL-B)
-----P-----	---*---P---*---	-----P-----	PETROLEUM (QL-D)
-----P(C)-----	---*---P(C)---*---	-----P(C)-----	PETROLEUM (QL-C)
-----P(B)-----	---*---P(B)---*---	-----P(B)-----	PETROLEUM (QL-B)
-----**P-----	---*---**P---*---	-----**P-----	PETROLEUM FOR LABELED PIPE SIZES (QL-D)
-----**P(C)-----	---*---**P(C)---*---	-----**P(C)-----	PETROLEUM FOR LABELED PIPE SIZES (QL-C)
-----**P(B)-----	---*---**P(B)---*---	-----**P(B)-----	PETROLEUM FOR LABELED PIPE SIZES (QL-B)
-----TC-----	---*---TC---*---	-----TC-----	TRAFFIC CONTROL (QL-D)
-----TC(C)-----	---*---TC(C)---*---	-----TC(C)-----	TRAFFIC CONTROL (QL-C)
-----TC(B)-----	---*---TC(B)---*---	-----TC(B)-----	TRAFFIC CONTROL (QL-B)
-----UNK(B)-----	---*---UNK(B)---*---	-----UNK(B)-----	UNKNOWN UTILITY FOUND IN SUE INVESTIGATION (QL-B)

UTILITY LEGEND

EXISTING	PROPOSED	TEMPORARY	UTILITY CELLS
			ELECTRIC MANHOLE
			HAND HOLE
			TRANSFORMER
			ELECTRIC METER
			UTILITY POLE/GUY POLE
			LIGHT POLE
			GUY ANCHOR
			ELECTRIC BOX
			MARKER
			TELECOMMUNICATIONS MANHOLE
			TELECOMMUNICATIONS PEDESTAL
			SPLICE BOX
			SUBSCRIBER LOOP CARRIER (aka "SLICK")
			CABINET
			PHONE BOOTH
			CABLE TV PEDESTAL
			CABLE TV MANHOLE
			WATER VALVE
			WATER METER
			WATER MANHOLE
			FIRE HYDRANT ASSEMBLY (INCLUDES ASSOCIATED VALVE)
			BACKFLOW PREVENTER
			PRESSURE INDICATOR VALVE
			AIR RELEASE VALVE
			WELL
			WATER VAULT
			WATER VALVE MARKER
			STAND PIPE
			CLEANOUT
			SANITARY SEWER MANHOLE
			AIR RELEASE VALVE
			GREASE TRAP
			SANITARY SEWER FORCE MAIN VALVE
			VENT
			GAS VALVE
			GAS METER
			GAS MANHOLE
			GAS PRESSURE REGULATOR
			GAS VAULT
			GAS TEST STATION
			PETROLEUM VALVE
			MISC.
			LOS
			TEST HOLE (QL-A ONLY)
			END OF INFORMATION
			QUALITY LEVEL (QL) DELINEATION
			POLE ID
			SANITARY SEWER MANHOLE (SSMH) ID

QUALITY LEVELS AND DEFINITIONS

QL-D DEPICTED ACCORDING TO UTILITY RECORD INFORMATION AND IN-FIELD VISUAL INSPECTION. NO ELECTRONIC DESIGNATING INFORMATION WAS OBTAINED.

QL-C EXISTING UTILITY STRUCTURES HAVE BEEN FIELD LOCATED AND SURVEYED TO ASSIST IN DEPICTING THE UTILITIES SHOWN ON RECORDS. NO ELECTRONIC DESIGNATING INFORMATION WAS OBTAINED.

QL-B INFORMATION WAS OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROPRIATE HORIZONTAL POSITION OF THE SUBSURFACE UTILITIES. QL-B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

QL-A OBTAIN PRECISE HORIZONTAL AND VERTICAL POSITION OF THE UTILITY LINE BY EXCAVATING A TEST HOLE. THE TEST HOLE SHALL BE DONE USING VACUUM EXCAVATION OR COMPARABLE NONDESTRUCTIVE EQUIPMENT IN A MANNER AS TO CAUSE NO DAMAGE TO THE UTILITY LINE. AFTER EXCAVATING A TEST HOLE, A FIELD SURVEY SHALL BE PERFORMED TO DETERMINE THE EXACT LOCATION AND POSITION OF THE UTILITY LINE.

TELEPHONE PAIR SIZE TABLE

TELEPHONE PAIR SIZE	TELEPHONE CABLE DIAMETER
5 - 100	0.50 TO 2.00 IN
101 - 2400	UP TO 3.50 IN

GEORGIA 811
Utilities Protection Center, Inc.

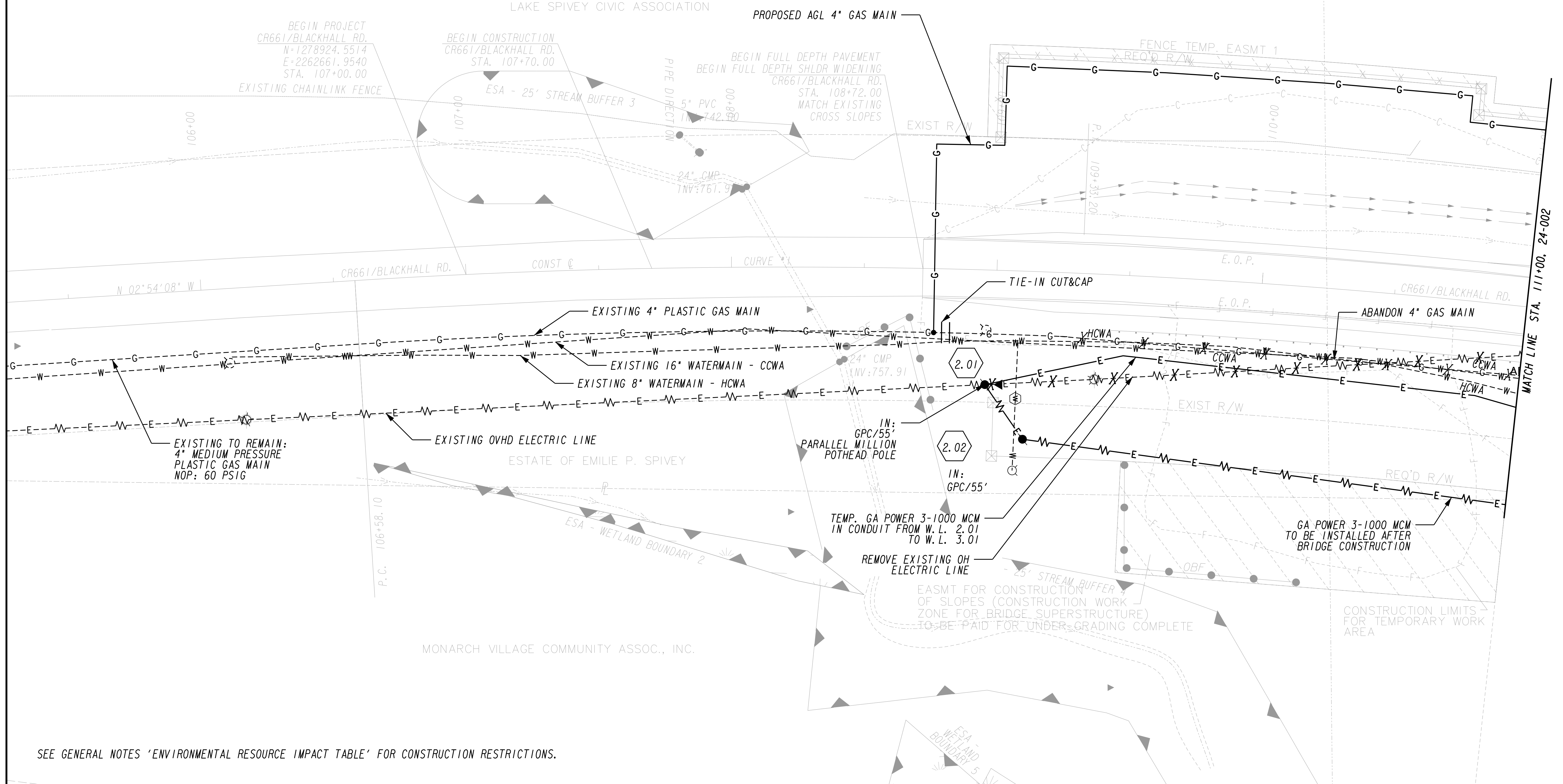
Know what's below.
Call before you dig.

UTILITY OWNER	SERVICE
ATLANTA GAS LIGHT	GAS
AT&T	TELEPHONE
CLAYTON COUNTY WATER AUTHORITY	WATER
HENRY COUNTY WATER AUTHORITY	WATER
GEORGIA POWER	ELECTRICITY

<p>270 Peachtree St. NW, Suite 1500 Atlanta, GA 30303-1283 678.954.5000 - www.chacompanies.com</p>	<p>SCALE IN FEET</p>	<p>REVISION DATES</p> <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>											<p>UTILITY PLANS</p> <p>CR661/BLACKHALL RD. AT RUM CREEK</p> <table border="1"> <tr> <td>CHECKED:</td> <td>DATE:</td> <td rowspan="4">DRAWING No. 24-0000</td> </tr> <tr> <td>BACKCHECKED:</td> <td>DATE:</td> </tr> <tr> <td>CORRECTED:</td> <td>DATE:</td> </tr> <tr> <td>VERIFIED:</td> <td>DATE:</td> </tr> </table>	CHECKED:	DATE:	DRAWING No. 24-0000	BACKCHECKED:	DATE:	CORRECTED:	DATE:	VERIFIED:	DATE:
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VERIFIED:	DATE:																					
<p>10/23/2015 GPLM</p>		<p>02/23/2015 GPLM</p>																				



Curve* 1
 PI Sta= 109+33.20
 N= 1279157.4387
 E= 2262649.8089
 DELTA= 12°04'47.1" (RT)
 D= 02°12'13.26"
 T= 275.10
 L= 548.16
 R= 2600.00
 e=3.2%
 E= 14.51



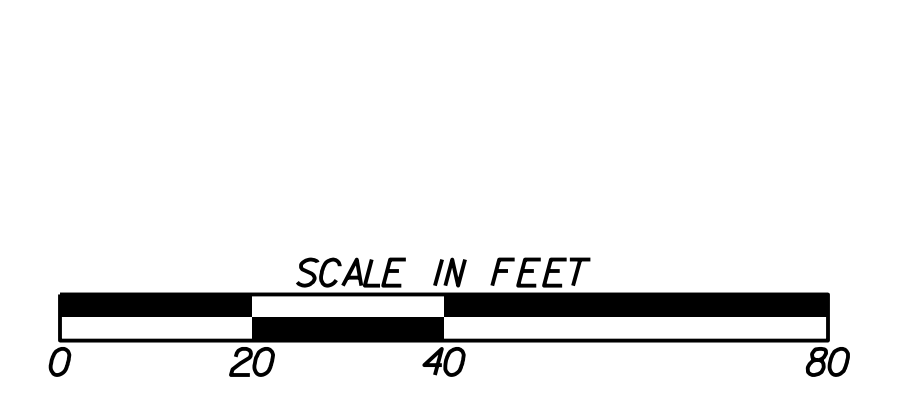
SEE GENERAL NOTES 'ENVIRONMENTAL RESOURCE IMPACT TABLE' FOR CONSTRUCTION RESTRICTIONS.

PROPERTY AND EXISTING R/W LINE	---
REQUIRED R/W LINE	---
CONSTRUCTION LIMITS	---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	---
EASEMENT FOR CONSTR OF SLOPES	---
EASEMENT FOR CONSTR OF DRIVES	---

BEGIN LIMIT OF ACCESS.....BLA	---
END LIMIT OF ACCESS.....ELA	---
LIMIT OF ACCESS	---
REQ'D R/W & LIMIT OF ACCESS	---
FENCE	---
ENVIRONMENTALLY SENSITIVE AREA	---
ORANGE BARRIER FENCE	---

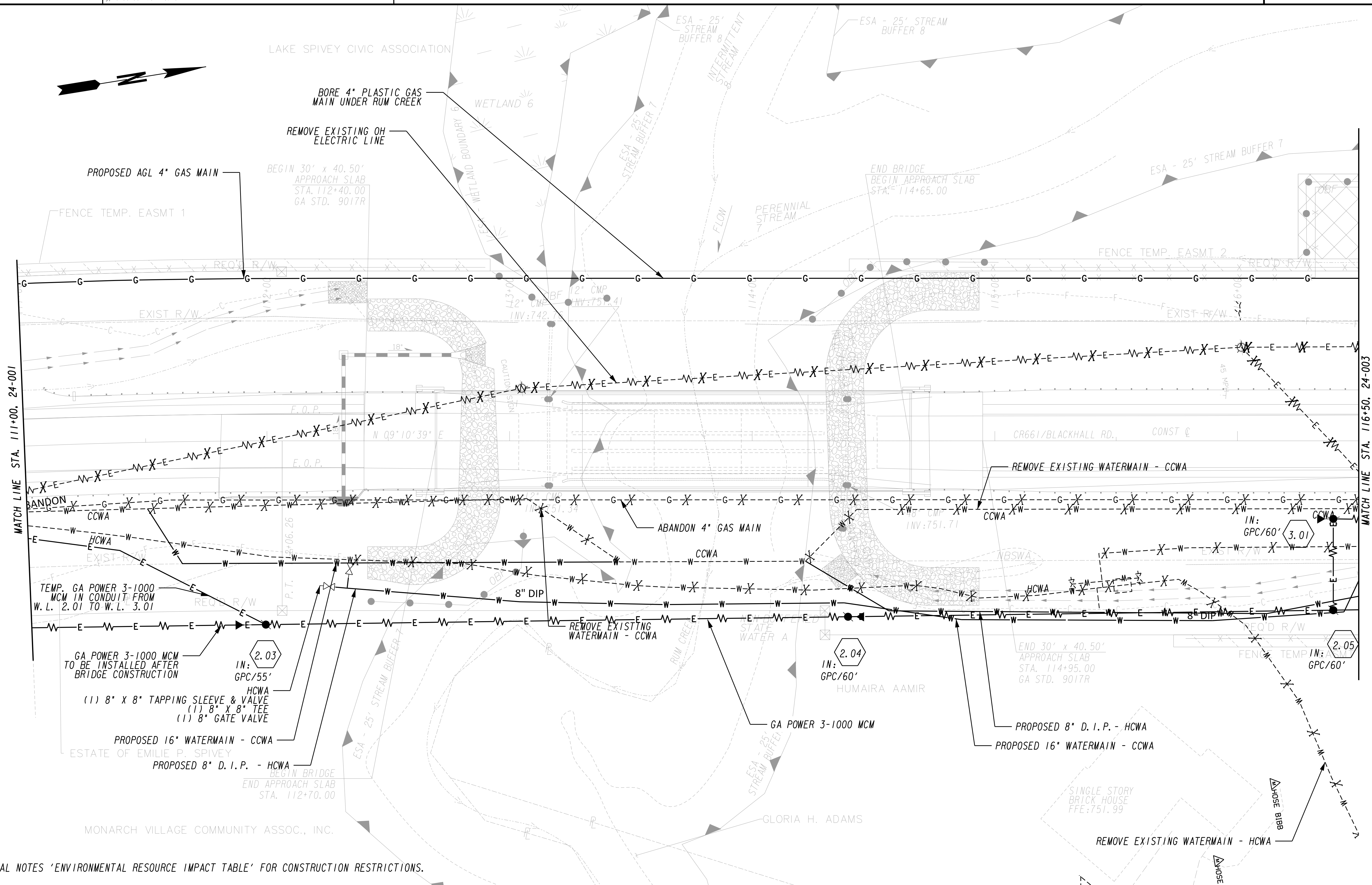
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REVISION DATES	

UTILITY PLANS			
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VERIFIED: IC	DATE: 10/5/17		



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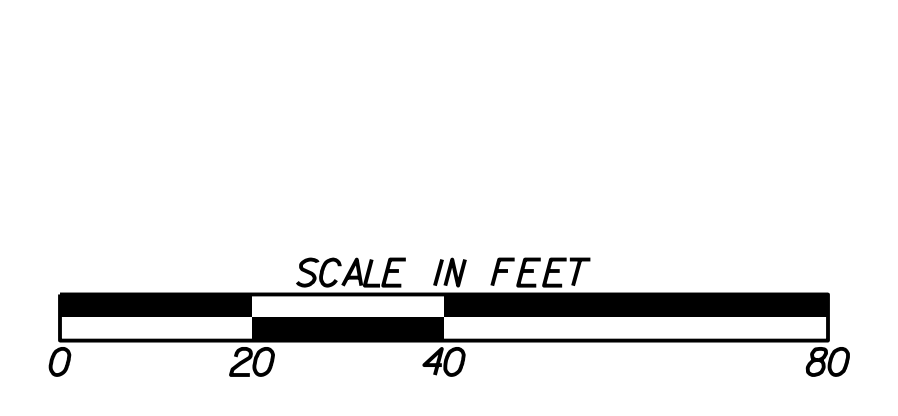
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ENVIRONMENTALLY SENSITIVE AREA	---
ORANGE BARRIER FENCE	---

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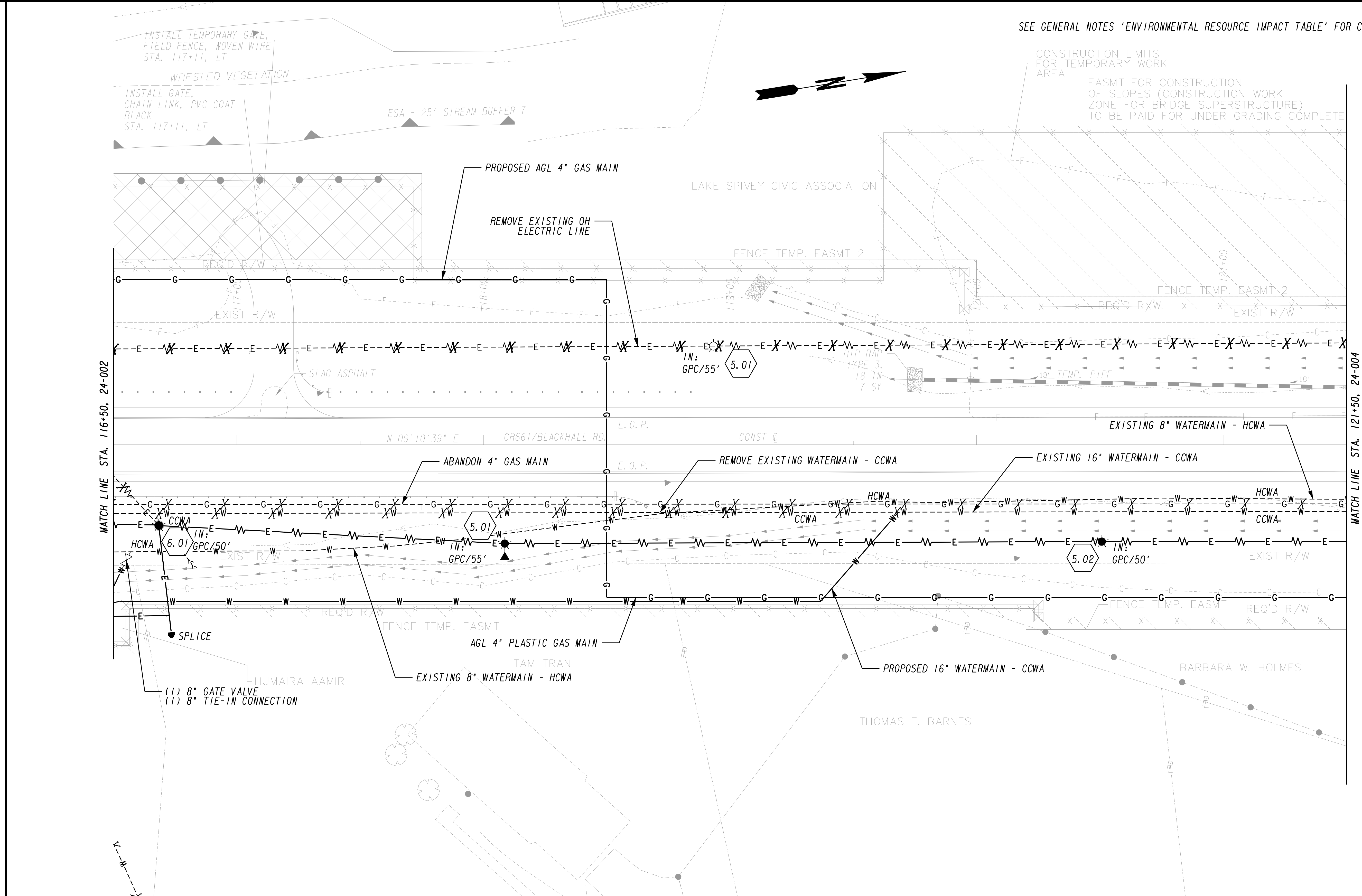
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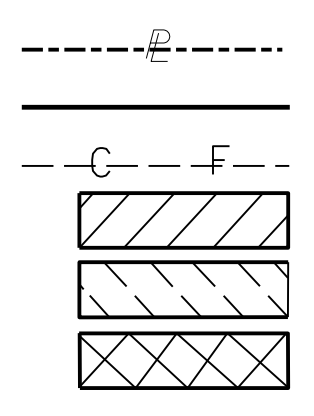
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VERIFIED: IC	DATE: 10/5/17		

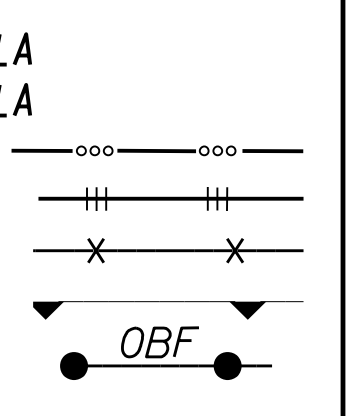
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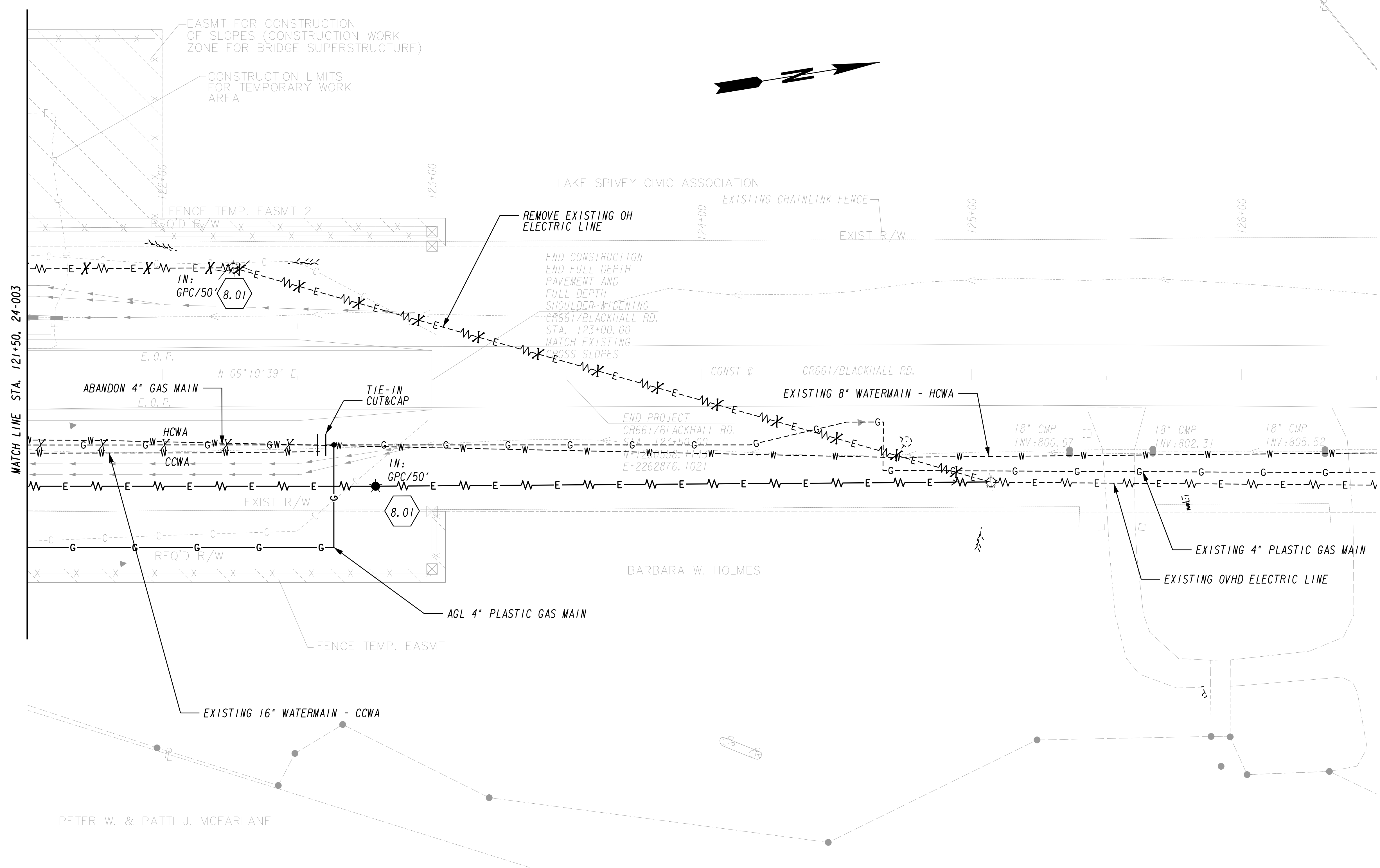


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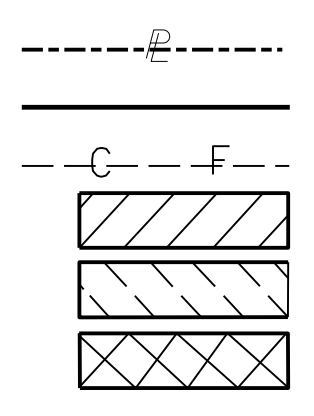


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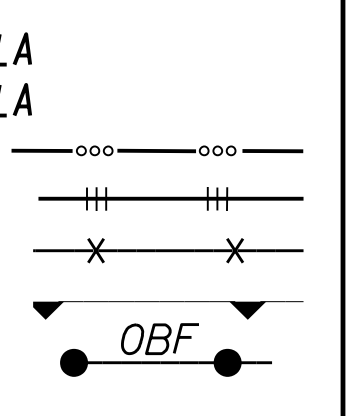
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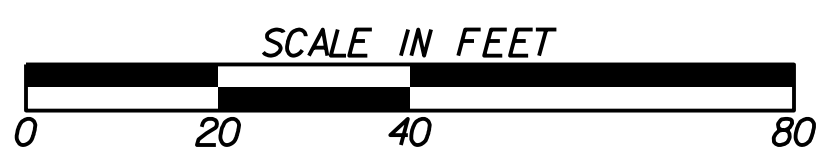
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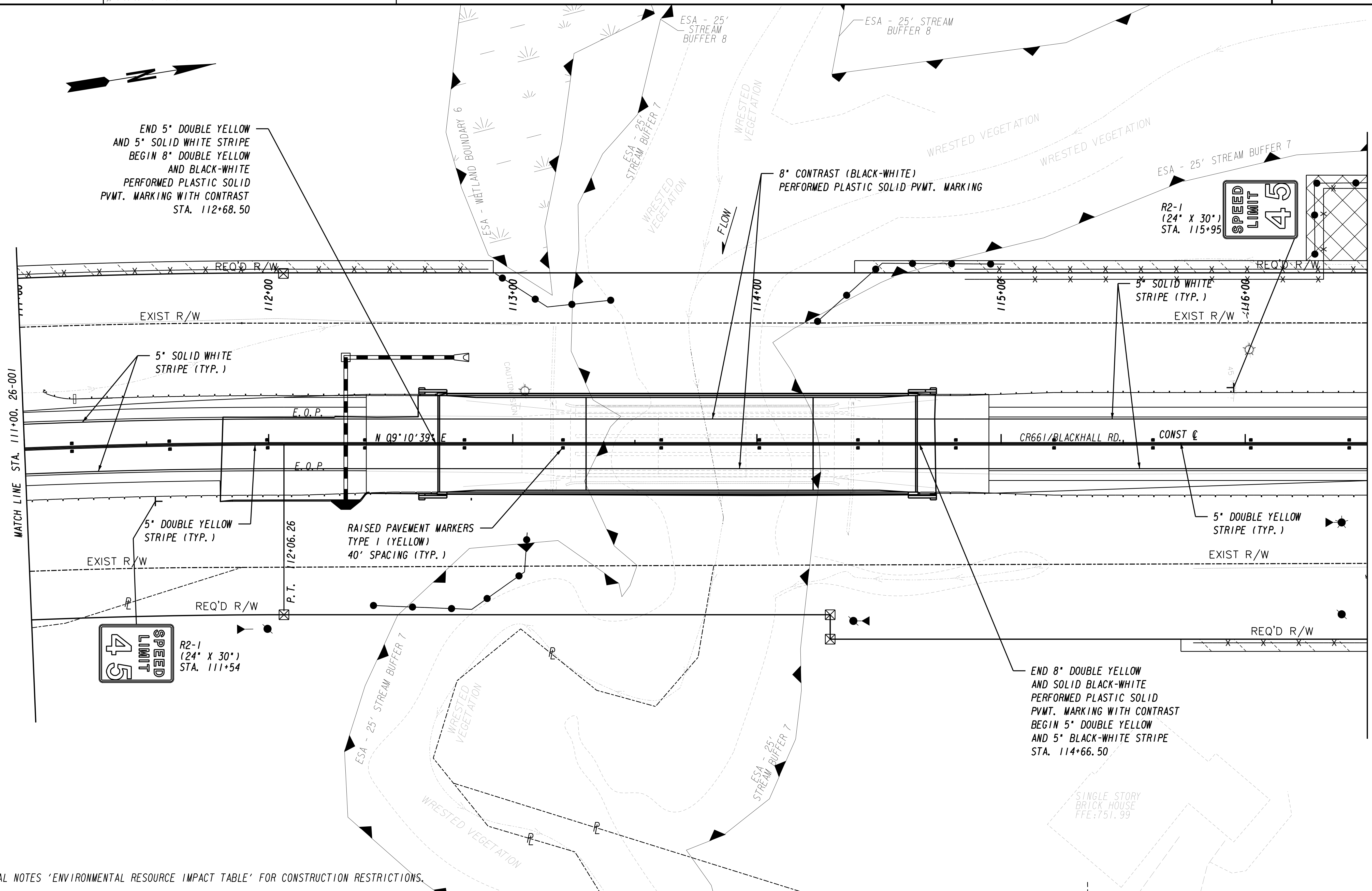


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VERIFIED: IC	DATE: 10/5/17		



SEE GENERAL NOTES 'ENVIRONMENTAL RESOURCE IMPACT TABLE' FOR CONSTRUCTION RESTRICTIONS.

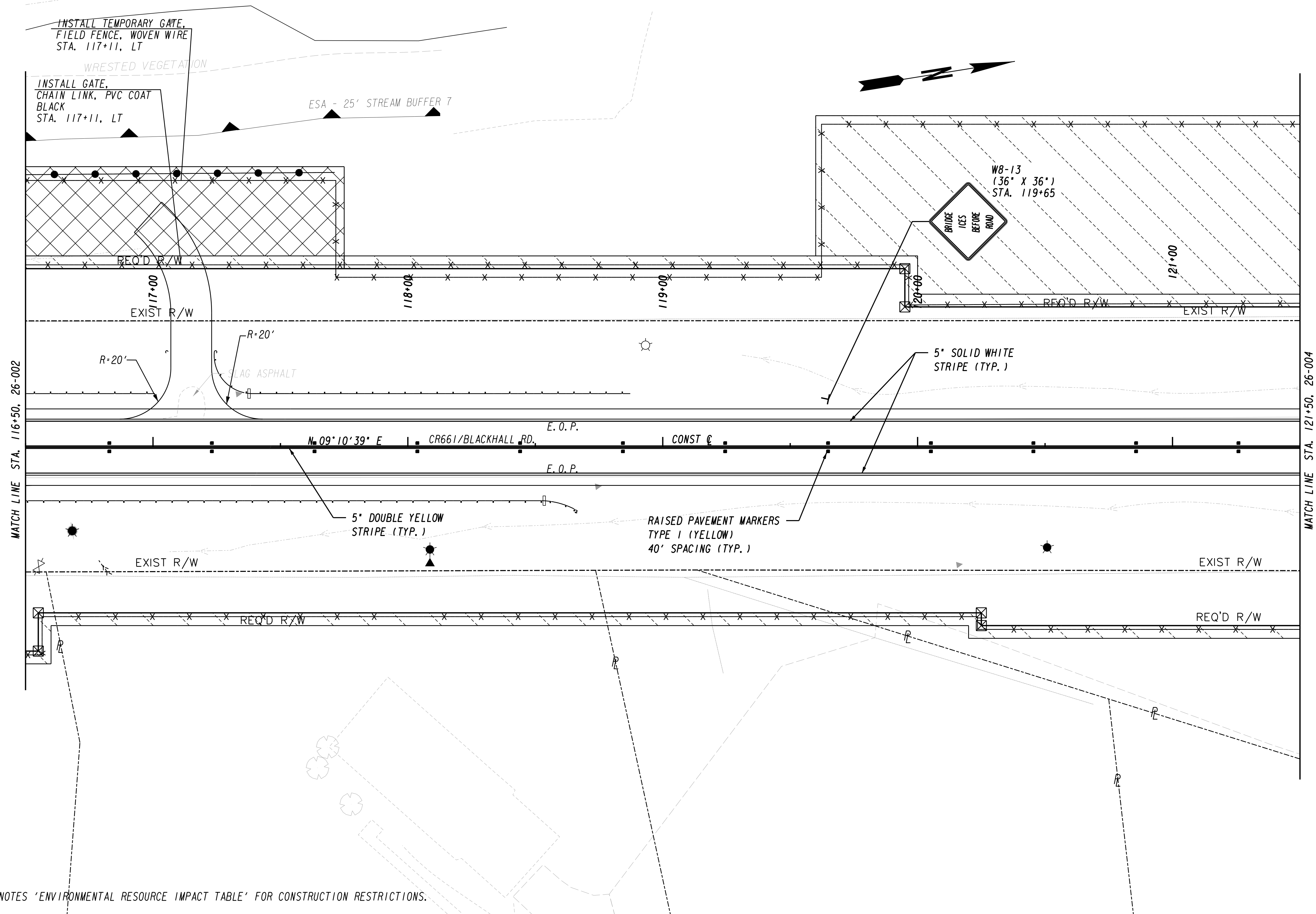
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 EASEMENT FOR CONSTR OF DRIVES

---R---
 ---F---
 ---C---
 ---E---
 ---S---
 ---OBF---
 BEGIN LIMIT OF ACCESS.....BLA
 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS
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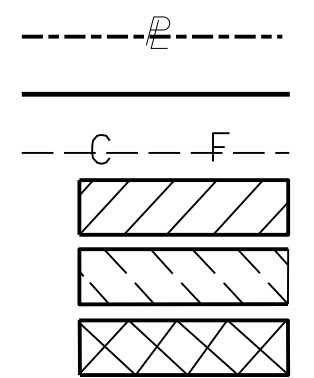
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VERIFIED: IC	DATE: 10/5/17		

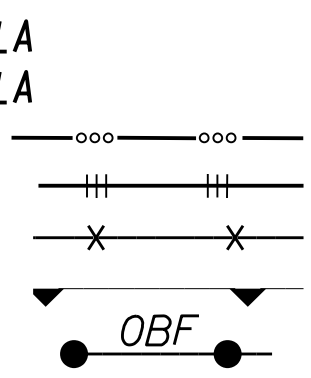


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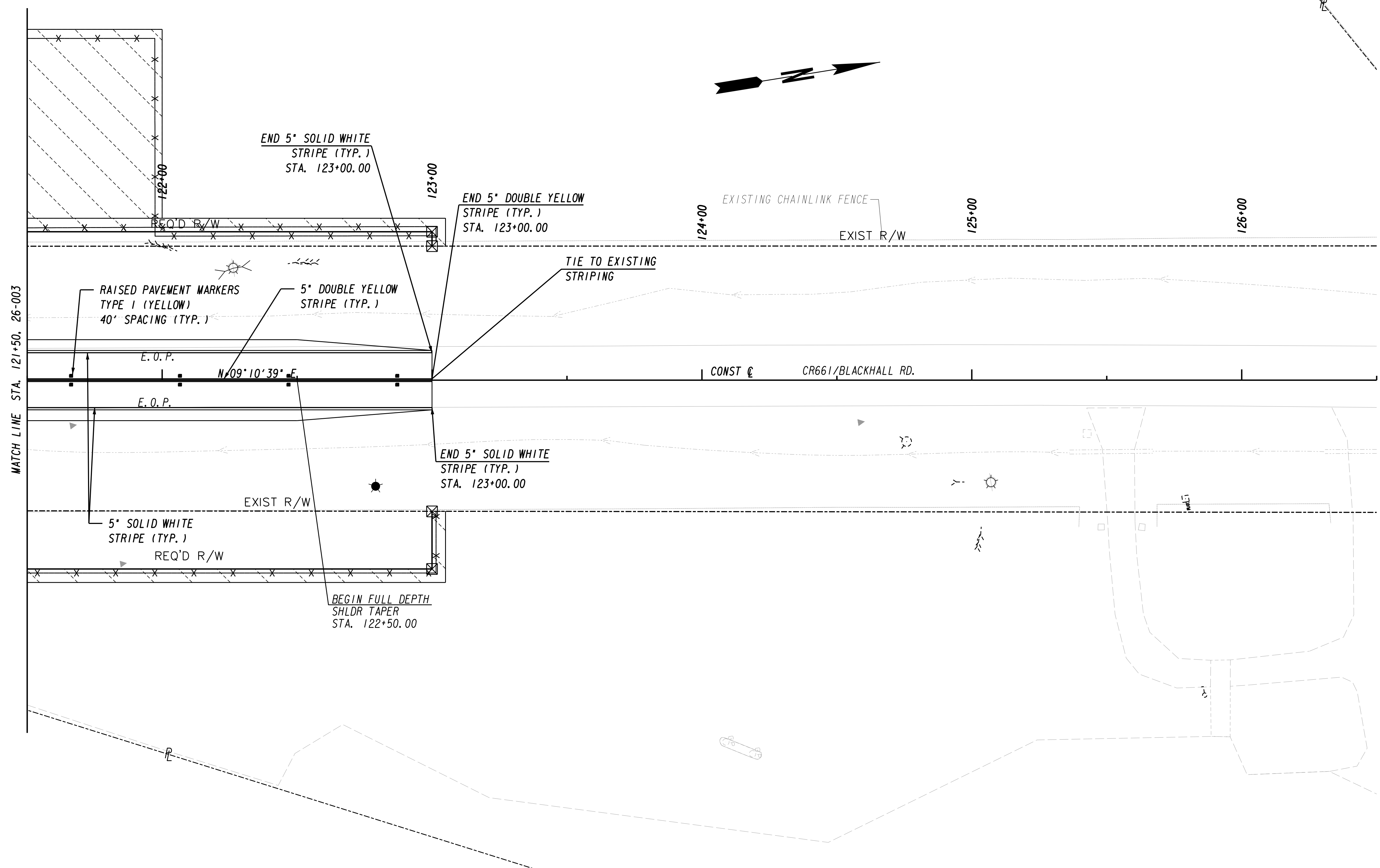
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SIGNING AND MARKING PLANS

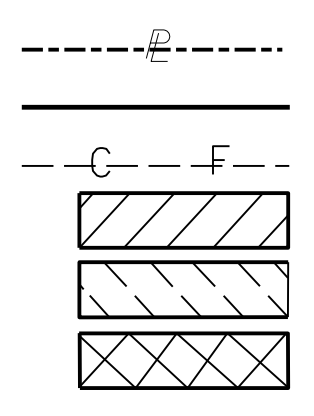
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VERIFIED: IC	DATE: 10/5/17

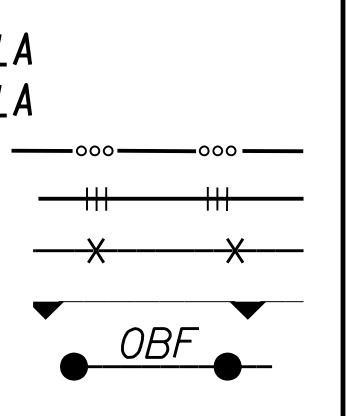
DRAWING No.
26-0003



PROPERTY AND EXISTING R/W LINE
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 & MAINTENANCE OF SLOPES
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SIGNING AND MARKING PLANS

CR661/BLACKHALL RD. AT RUM CREEK

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BACKCHECKED: JSJ	DATE: 10/5/17
CORRECTED: JSJ	DATE: 10/5/17
VERIFIED: TC	DATE: 10/5/17

DRAWING No.
26-0004



NOTE:
1. RED BACKGROUND
2. WHITE TEXT

SPECIAL SIGN #1
TO BE MOUNTED ON FENCE IN LAKE SPIVEY PROPERTY

*.063" Rust-Free Aluminum



NOTE:
1. WHITE BACKGROUND
2. RED TEXT

SPECIAL SIGN #2
TO BE MOUNTED ON FENCE IN LAKE SPIVEY PROPERTY

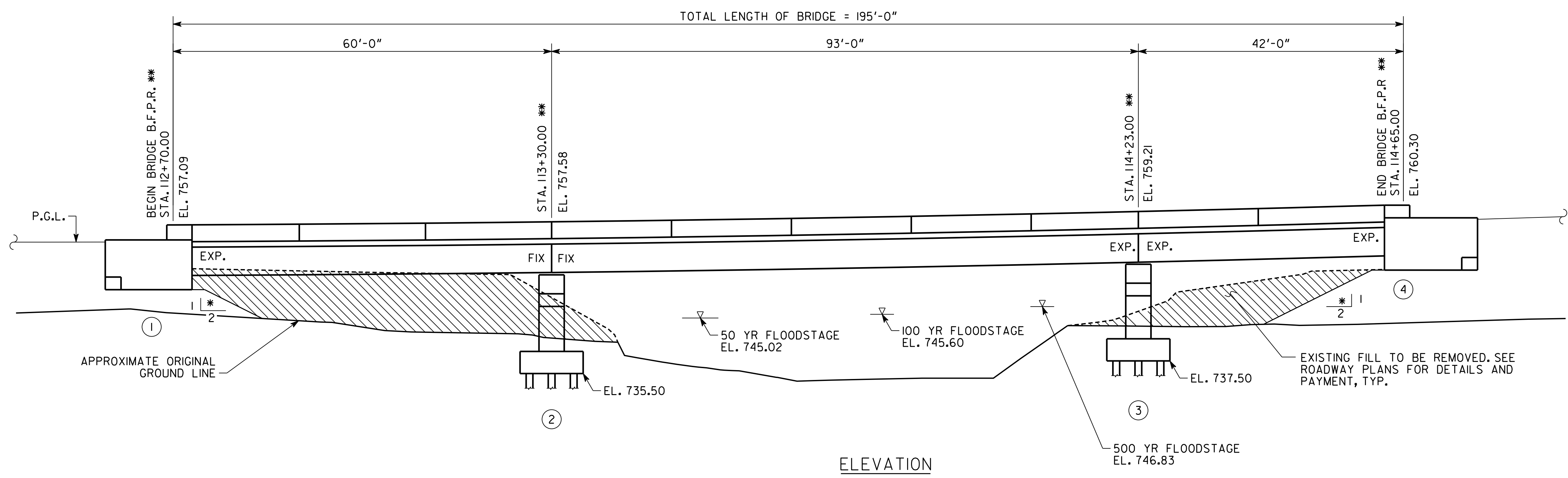
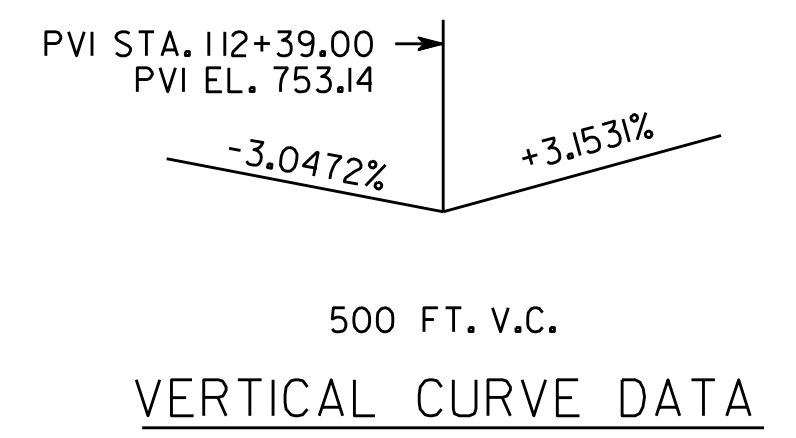
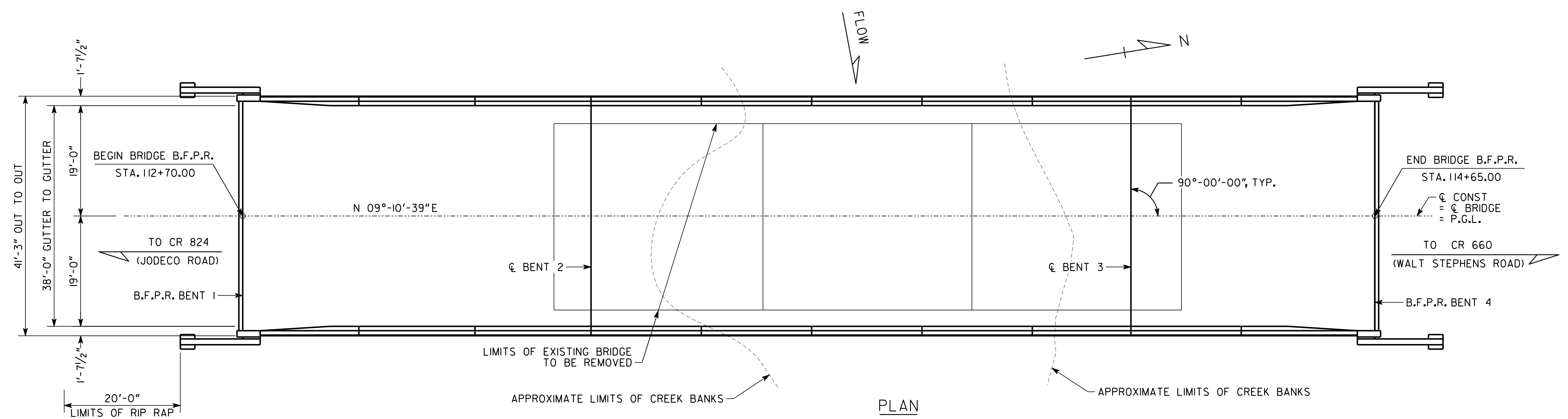
REVISION DATES

NO.	DATE	DESCRIPTION

SIGNING AND MARKING PLANS

CR661/BLACKHALL RD. AT RUM CREEK

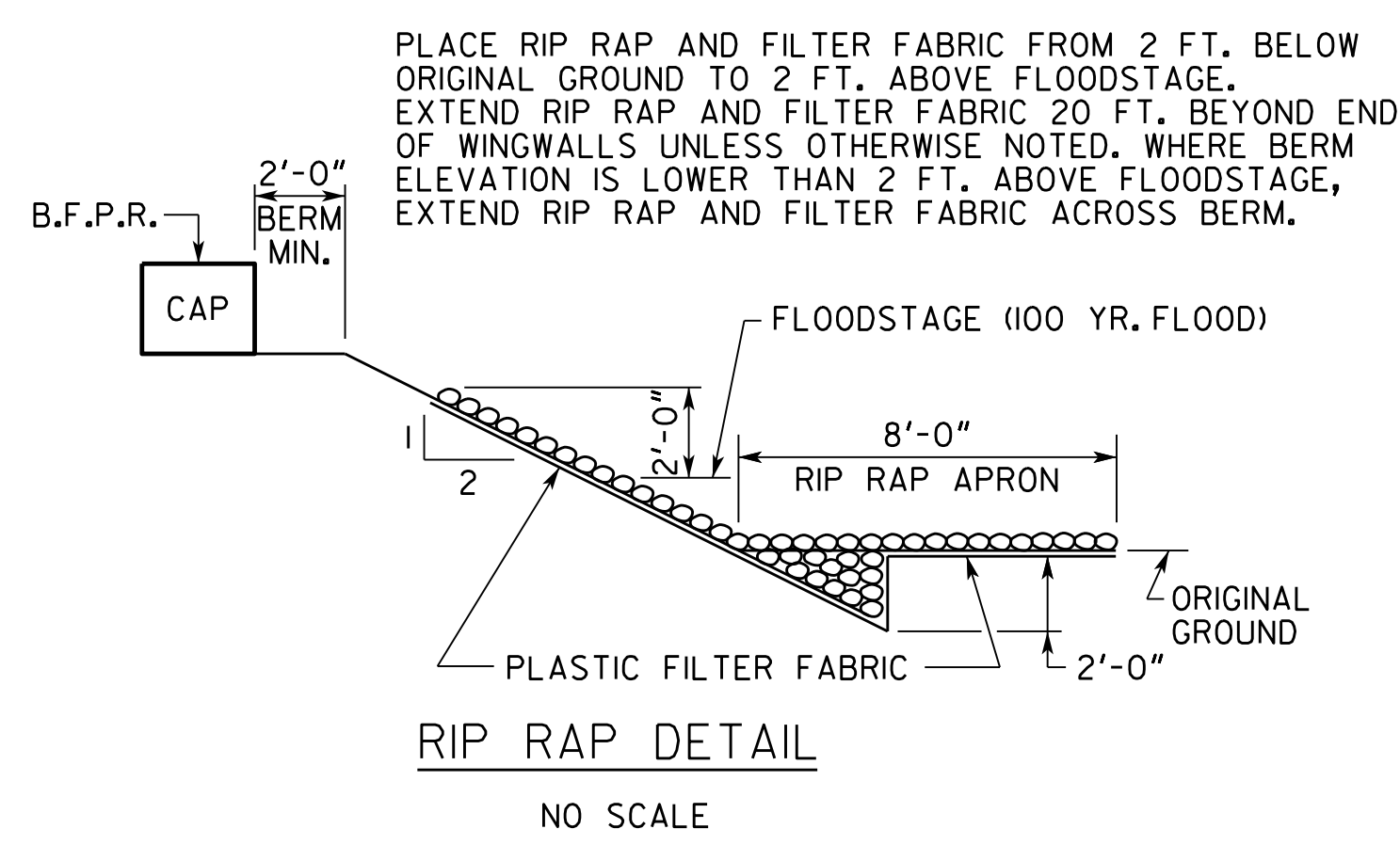
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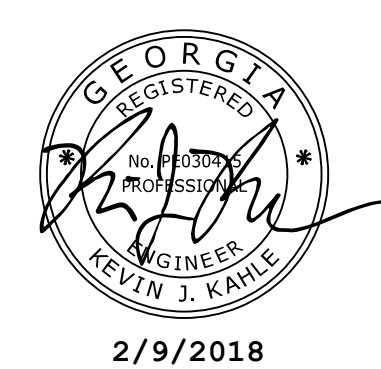
BRIDGE SERIAL NO. 151-0070-0

BRIDGE I.D. NO. 151-09390M-000.63N

PROJECT P.J. NO. 0011691



- NOTES:
1. ALL BENTS ARE PARALLEL.
 2. END BENT PILES NOT SHOWN.
 3. * SLOPE NORMAL TO END BENT.
 4. ** STATIONS AND ELEVATIONS ARE ALONG PROFILE GRADE LINE AT THE INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R. OR ☉ BENTS.



BRIDGE NO. 1

CHA

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GEORGIA
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

PLAN AND ELEVATION

CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

SCALE: 1" = 10'-0" (UNLESS OTHERWISE NOTED) FEBRUARY 2018

DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
DRAWN LCY	DESIGN GROUP DLW	APPROVED WMD

DRAWING NO. 35-0001	BRIDGE SHEET 1 OF 18
------------------------	-------------------------

1 INCH WHEN PRINTED FULL SIZE

4:04:43 PM 2/6/2018

5791

X.DGN

BRIDGE CONSISTS OF

- 1 - 60'-0" BULB TEE, 54 IN, PSC DECK-BEAM SPAN ----- SPECIAL DESIGN
- 1 - 93'-0" BULB TEE, 54 IN, PSC DECK-BEAM SPAN ----- SPECIAL DESIGN
- 1 - 42'-0" BULB TEE, 54 IN, PSC DECK-BEAM SPAN ----- SPECIAL DESIGN
- 2 - STEEL H PILE END BENTS ----- SPECIAL DESIGN
- 2 - CONCRETE INTERMEDIATE BENTS ----- SPECIAL DESIGN
- 4 - END POST AND GUARDRAIL ATTACHMENT DETAIL ----- GA. STD. 3054 (9-30-02)
(L = 4'-0"; W = 1'-1"; H = 2'-8")
- BAR BENDING DETAILS ----- GA. STD. 3901 (8-69)
- TYPICAL FILL DETAIL AT END OF BRIDGE ----- GA. STD. 9037 (9-99)

DRAINAGE DATA

DRAINAGE AREA----- 11.5 SQUARE MILES

FLOOD FREQUENCY	TOTAL DISCHARGE	MEAN VELOCITY	AREA OF OPENING UNDER FLOODSTAGE	BACKWATER
50 YEAR	3,050 CFS	4.40 FPS	693.1 SQ FT	0.06 FT
100 YEAR	3,530 CFS	4.48 FPS	787.6 SQ FT	0.06 FT
500 YEAR	4,830 CFS	4.91 FPS	983.5 SQ FT	0.01 FT

TRAFFIC DATA

- TRAFFIC ----- ADT = 6,550 (2019)
ADT = 8,300 (2039)
DHV = 830 (2039)
- DESIGN SPEED ----- 45 MPH
- TRUCKS ----- 4 %
- 24 HR TRUCKS ----- 5 %
- DIRECTIONAL ----- 60 %

UTILITIES

NO UTILITIES ON BRIDGE

GENERAL NOTES

- SPECIFICATIONS - GEORGIA STANDARD SPECIFICATIONS, 2013 EDITION AND 2016 SUPPLEMENTAL SPECIFICATIONS AS MODIFIED BY CONTRACT DOCUMENTS.
- REINFORCING STEEL - PLACE AND TIE ALL REINFORCING STEEL IN ACCORDANCE WITH THE GEORGIA DOT SPECIFICATIONS. DO NOT WELD REINFORCING STEEL. MAINTAIN 2" CLEARANCE ON ALL REINFORCEMENT UNLESS OTHERWISE NOTED.
- CHAMFER - CHAMFER ALL EXPOSED CONCRETE EDGES 3/4" UNLESS OTHERWISE NOTED.
- TRAFFIC CONTROLS - ROAD TO BE CLOSED DURING BRIDGE CONSTRUCTION IN ACCORDANCE WITH SPECIAL PROVISIONS IN SECTION 150.11 AND SECTION 108. SEE ROADWAY PLANS FOR DETOUR, TRAFFIC CONTROLS AND TRAFFIC CONTROL PAYMENT.
- EXISTING BRIDGE PLANS - ORIGINAL BRIDGE PLANS MAY BE OBTAINED ON THE GEORGIA DOT WEBSITE AT:

HTTP://WWW.DOT.GA.GOV/BS/PROJECTS/PROJECTSEARCH
- THE ORIGINAL BRIDGE WAS BUILT UNDER PROJECT NUMBER S-2368(1) (PROJECT ID NO. H003967).
- EPOXY RESIN ADHESIVE - APPLY EPOXY RESIN ADHESIVE TYPE II TO HARDENED CONCRETE SURFACES JUST PRIOR TO POURING THE BLOCK-OUT POURS, SEE SECTION 886 OF THE GEORGIA DOT SPECIFICATIONS. INCLUDE THE COST OF EPOXY ADHESIVE AND ITS APPLICATION IN THE OVERALL BID SUBMITTED. OMIT THIS APPLICATION AT THE POUR STRIPS WITH UHPC.

- WAITING PERIOD - NONE REQUIRED.
- FOUNDATION BACKFILL MATERIAL - PLACE 1'-0" OF TYPE II FOUNDATION BACKFILL MATERIAL UNDER EACH FOOTING AT BENTS 2 AND 3. THE QUANTITY IS BASED ON THE PLAN FOOTING DIMENSIONS PLUS 2'-0". THE USE OF BACKFILL MATERIAL MAY BE ELIMINATED BY THE ENGINEER IF THE FOOTING IS DRY.
- PLAN DRIVING OBJECTIVE - SEE SUBSTRUCTURE DETAILS.
- DRIVING RESISTANCE - DETERMINE DRIVING RESISTANCE FOR PILES USING DYNAMIC PILE TESTING IN ACCORDANCE WITH SPECIAL PROVISION 520. DYNAMIC PILE TESTING SHALL BE REQUIRED FOR ONE PILE AT EACH OF BENTS 2 AND 4.
- DYNAMIC PILE TESTING - PERFORM PILE TESTING USING THE PILE DRIVING ANALYZER (PDA) IN ACCORDANCE WITH SPECIAL PROVISION SECTION 523. NOTIFY THE GEOTECHNICAL BUREAU OF THE GEORGIA DOT OFFICE OF MATERIALS AND TESTING AT 404-608-4720 TWO WEEKS PRIOR TO DRIVING PILES.
- WAVE EQUATION - PERFORM WAVE EQUATION ANALYSIS (WEAP) IN ACCORDANCE WITH SPECIAL PROVISION 520. PROVIDE RESULTS OF THE WEAP TO THE GEOTECHNICAL BUREAU OF THE GEORGIA DOT OFFICE OF MATERIALS AND TESTING FOR REVIEW AND APPROVAL TWO WEEKS PRIOR TO DRIVING PILES.
- STEEL H-PILES - USE STEEL FOR H-PILES THAT MEETS THE REQUIREMENTS OF ASTM A 709 GR 50.
- PILE POINTS - REINFORCE ALL PILE TIPS AT ALL BENTS IN ACCORDANCE WITH SECTIONS 520 AND 855 OF THE GEORGIA DOT SPECIFICATIONS.
- SMOOTH DOWEL BARS - PLACE SMOOTH DOWEL BARS IN FORMED 3" DIAMETER X 12" DEEP HOLES AND GROUT IN PLACE SIMILAR TO ANCHOR BOLTS, SEE SUB-SECTION 501.3.05.B.3 OF THE GEORGIA DOT SPECIFICATIONS. STIRRUPS MAY BE SHIFTED SLIGHTLY TO CLEAR FORMED HOLES.
- POUR STRIP - CONCRETE FOR THE POUR STRIP SHALL BE ULTRA HIGH PERFORMANCE CONCRETE (UHPC). SEE SPECIAL PROVISION 500 FOR ADDITIONAL REQUIREMENTS, MEASUREMENT, AND PAYMENT.
- GROOVED CONCRETE - GROOVE THE ENTIRE LENGTH OF THE BRIDGE TRANSVERSELY AS PER SUB-SECTION 500.3.05.T.9.C OF THE GEORGIA DOT SPECIFICATIONS.
- RIDING QUALITY - THE FINISHED BRIDGE DECK AND APPROACH SLABS SHALL MEET THE RIDE QUALITY REQUIREMENTS AS SPECIFIED IN SUB-SECTION 500.3.06.E OF THE GEORGIA DOT SPECIFICATIONS FOR STATE ROUTES WITH FOUR LANES OR MORE.
- WELDING - ALL WELDING ON GEORGIA DOT PROJECTS SHALL BE PERFORMED BY CERTIFIED WELDERS THAT HAVE IN THEIR POSSESSION A CURRENT WELDING CERTIFICATION CARD ISSUED BY THE OFFICE OF MATERIALS AND TESTING. USE ONLY E70XX (EXCLUDING E7014 AND E7024) LOW HYDROGEN ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING.
- BRIDGE REMOVAL - REMOVE EXISTING BRIDGE AS PER SUB-SECTION 540.3.05 OF THE GEORGIA DOT SPECIFICATIONS.
- SALVAGE MATERIAL - NO MATERIAL REMOVED FROM THE EXISTING STRUCTURE SHALL BE SALVAGED FOR USE BY THE GEORGIA DOT.
- 24 HOUR CONCRETE - SUPERSTRUCTURE CONCRETE INCLUDING ENDWALLS, EDGE BEAMS, SLAB BLOCK-OUTS, AND ENDPOSTS SHALL UTILIZE 24 HOUR CONCRETE. INCLUDE COSTS FOR 24 HOUR CONCRETE IN SUPERSTRUCTURE IN PRICE BID FOR "LUMP-SUPERSTR CONCRETE, CLASS D". TWENTY-FOUR HOUR ACCELERATED STRENGTH CONCRETE SHALL BE ACCORDING TO SECTION 504 OF THE SPECIFICATIONS. IN ADDITION TO THE REQUIREMENTS OF SECTION 504, THE MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE 4,000 PSI FOR SUPERSTRUCTURE AND 3,500 PSI FOR SUBSTRUCTURE.
- OPEN TO TRAFFIC - DO NOT OPEN BRIDGE TO TRAFFIC UNTIL BARRIER AND BARRIER TRANSITION CONCRETE MEETS THE 28 DAY COMPRESSIVE STRENGTH FOR CLASS "D" CONCRETE AND HAS CURED A MINIMUM OF 5 DAYS.
- INCIDENTAL ITEMS - INCLUDE THE COST INCIDENTAL TO THE WORK THAT IS NOT SPECIFICALLY COVERED BY THE GEORGIA STANDARD SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND/OR SPECIAL PROVISIONS IN THE OVERALL BID SUBMITTED. THIS INCLUDES THE COST OF WATERPROOFING, JOINT FILLERS, AND OTHER INCIDENTAL ITEMS NECESSARY TO COMPLETE THE WORK.


DESIGN DATA

- SPECIFICATIONS ----- AASHTO LRFD 7TH EDITION, 2014
(DESIGNED FOR SEISMIC PERFORMANCE ZONE 2, SD1 = 0.182)
- DESIGN VEHICLE LIVE LOAD ----- HL-93
- FUTURE PAVING ALLOWANCE ----- 30 LBS PER SQ FT
- CONCRETE: SUPERSTRUCTURE (OMITTED POUR STRIPS AND BLOCK-OUTS) - CLASS D, $f_c = 4,000$ PSI
- BARRIER ----- CLASS D, $f_c = 4,000$ PSI
- PSC BEAMS ----- CLASS AAA, $f_c =$ SEE BEAM SHEETS
- PSC BEAM ALLOWABLE TENSION ----- SEE BEAM SHEETS
- SUBSTRUCTURE ----- 24 HOUR CONCRETE, $f_c = 3,500$ PSI
- SUBSTRUCTURE (PRECAST)----- CLASS AA-1, $f_c = 4,500$ PSI
- POUR STRIPS ----- UHPC, SEE SPECIAL PROVISION
- BLOCK-OUT (ENDWALLS/EDGE BEAMS/ENDPOSTS)----- 24 HOUR CONCRETE, $f_c = 4,000$ PSI
- REINFORCEMENT STEEL: ----- GRADE 60, $f_y = 60,000$ PSI
- PRETENSIONING STRANDS: ----- $f_p = 270,000$ PSI
- STEEL H-PILES: ----- GRADE 50, $f_y = 50,000$ PSI

03/20/05 AM 8/27/2016

5/5/5

BRIDGE NO. 1



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GENERAL NOTES (SHEET 1 OF 2)
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 001691

NO SCALE FEBRUARY 2018

DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
DRAWN LCY	DESIGN GROUP DLW	APPROVED WMD

DRAWING NO. 35-0002	DATE 07-06-18
BRIDGE SHEET 2 OF 18	BY CHA

SUMMARY OF QUANTITIES

PAY ITEM NUMBER	QUANTITY	UNIT	PAY ITEM
207-0203	12	CY	FOUND BK FILL MATL, TP II
211-0300	79	CY	BRIDGE EXCAVATION, STREAM CROSSING
500-0100	780	SY	GROOVED CONCRETE
500-1011	LUMP	LS	SUPERSTR CONCRETE, CL D, BR NO - I (273) ▲
500-2100	378	LF	CONCRETE BARRIER
500-5000	LUMP	LS	ULTRA HIGH PERFORMANCE CONCRETE, BR NO - I (11)
501-2001	3200	LB	STR STEEL
504-0600	40	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC ▲
507-9030	958	LF	PSC BEAMS, AASHTO, BULB TEE, 54 IN, BR NO - I
511-1000	4714	LB	BAR REINF STEEL ▲
511-3000	LUMP	LS	SUPERSTR REINF STEEL, BR NO - I (67982)
520-0589	30	EA	H-PILE POINTS, HP 14 X 89
520-1151	1040	LF	PILING IN PLACE, STEEL H, HP 14 X 89
520-4151	1	EA	LOAD TEST, STEEL H, HP 14 X 89 (IF REQD)
523-1100	2	EA	DYNAMIC PILE TEST ▲
540-1101	LUMP	LS	REMOVAL OF EXISTING BR, STA NO - 113+76.5
603-2024	703	SY	STN DUMPED RIP RAP, TP I, 24 IN
603-7000	703	SY	PLASTIC FILTER FABRIC
999-0025	LUMP	LS	COMPOSITE DECK-BEAM UNITS, BR NO - I <u>ALTERNATE 1</u> ▲
504-0600	99	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC
511-1000	25694	LB	BAR REINF STEEL <u>ALTERNATE 2 (PRECAST)</u> ▲
500-3650	68	CY	CLASS AA-1 CONCRETE
504-0600	31	CY	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC
511-1000	26218	LB	BAR REINF STEEL

03/28/08 AM

8/27/2018

5/5/13

BRIDGE NO. 1



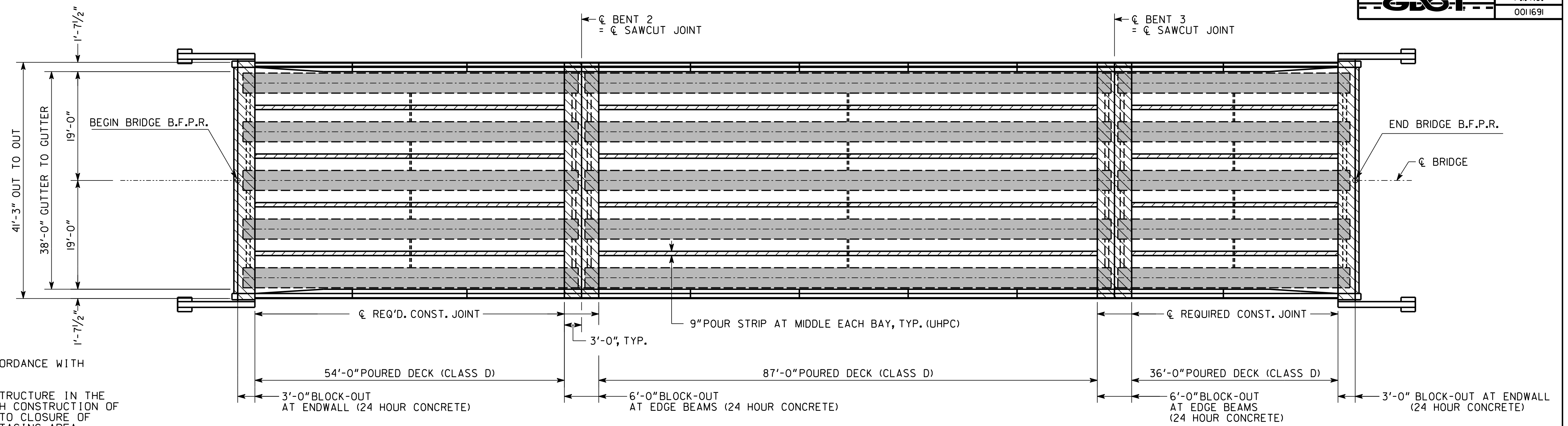
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DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

GENERAL NOTES (SHEET 2 OF 2)
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

DRAWING NO. 35-0003	BY CHA	REVISIONS TEST LOCATION	DATE 07-06-18	DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
BRIDGE SHEET 3 OF 18	CHA	TEST LOCATION	08-10-18	DRAWN JVB	DESIGN GROUP DLW	APPROVED WMD

NO SCALE FEBRUARY 2018

1 INCH WHEN PRINTED FULL SIZE X.DGN



CONSTRUCTION SEQUENCE

PRE-CLOSURE

1. PREPARE AND SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH SPECIFICATIONS AND SPECIAL PROVISIONS.
2. BEGIN CONSTRUCTION OF THE BRIDGE SUPERSTRUCTURE IN THE DESIGNATED STAGING AREAS CONCURRENT WITH CONSTRUCTION OF THE NEW SUBSTRUCTURES OR AT TIME PRIOR TO CLOSURE OF BLACKHALL ROAD. SEE ROADWAY PLANS FOR STAGING AREA LOCATIONS.
3. INSTALL FOUNDATION SYSTEM SUPPORTING FALSE BENTS PER APPROVED SHOP DRAWINGS. LAYOUT, FORM AND POUR FALSE BENTS IN DESIGNATED STAGING AREAS (SEE CONSTRUCTION SEQUENCE SHEET 2 OF 2).
4. PLACE BEARINGS AND SHIM PLATES ON FALSE BENTS.
5. ERECT BULB TEE BEAMS ON FALSE BENTS. INSTALL TEMPORARY BRACING AS REQUIRED TO ENSURE BEAMS REMAIN STABLE AND UPRIGHT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STABILITY AND STRUCTURAL INTEGRITY OF THE BEAMS. BEAMS DAMAGED DURING TRANSPORT OR ERECTION WILL BE REPLACED AT NO COST TO THE DEPARTMENT.
6. INSTALL STAY-IN-PLACE METAL DECK FORMS AND DECK OVERHANG FORMS.
7. PLACE DECK REINFORCEMENT, OMITTING REINFORCEMENT LOCATED IN THE BLOCK-OUTS, POUR STRIPS, EDGE BEAMS AND ENDWALLS. CONSTRUCT BULKHEADS AND BLOCK-OUTS AS REQUIRED TO FORM THE LONGITUDINAL POUR STRIPS, END SPAN BLOCK-OUTS AND LIFTING DEVICE ACCESS.
8. SET UP SCREED, POUR BRIDGE DECK AND CURE AS PER SUB-SECTION 500.3.05 OF THE GEORGIA DOT SPECIFICATIONS.

STAGE I

1. CLOSE ROADWAY PER PLANS AND SPECIFICATIONS.
2. REMOVE EXISTING BRIDGE AND EXCAVATE AS REQUIRED.
3. CONSTRUCT NEW SUBSTRUCTURES ACCORDING TO PLANS.

STAGE II

1. ONCE DECK CONCRETE ACHIEVES A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, REMOVE OVERHANG FORMWORK, BULKHEADS AND BLOCK-OUT FORMS IN THE DECK. CUT THE METAL DECK FORMS LONGITUDINALLY ALONG THE LENGTH OF THE DECK POUR STRIPS SO THAT THE DECK-BEAM UNITS MAY BE SEPARATED. CARE SHALL BE EXERCISED TO AVOID CUTTING OR DAMAGING REINFORCEMENT WITHIN THE POUR STRIPS.
2. ONCE PERMANENT SUBSTRUCTURES ARE COMPLETED, SECURE DECK-BEAM UNIT BY ATTACHING CRANE RIGGING. REMOVE ANY TEMPORARY BRACING AND LIFT THE DECK-BEAM UNIT FROM THE FALSE BENTS. RELOCATE SHIM PLATES AND BEARINGS FROM FALSE BENTS TO THE PERMANENT BRIDGE SUBSTRUCTURES.
3. MOVE THE DECK-BEAM UNIT FROM THE STAGING AREA TO THE PROPOSED BRIDGE AND ERECT IN FINAL LOCATION ATOP BEARINGS AND SHIM PLATES ON COMPLETED PERMANENT SUBSTRUCTURES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEANS AND METHODS FOR RELOCATING THE DECK-BEAM UNITS FROM THE STAGING AREAS TO THE FINAL LOCATION ON THE NEW SUBSTRUCTURE.
4. INSTALL DIAPHRAGMS TO DECK-BEAM UNITS BEFORE RELEASING FROM CRANE(S). PROVIDE TEMPORARY BRACING FOR THE FIRST DECK-BEAM UNIT IN EACH SPAN.
5. REPEAT STEPS 2 THRU 4 FOR THE REMAINING DECK-BEAM UNITS.

STAGE III

1. AFTER ALL DECK-BEAM UNITS ARE RELOCATED AND DIAPHRAGMS ARE ERECTED, CONSTRUCT ENDWALL AND EDGE BEAM REINFORCEMENT AND FORMWORK. PLACE REMAINING DECK REINFORCEMENT IN POUR STRIPS, EDGE BEAM AND ENDWALL BLOCK-OUTS.
2. POUR ENDWALLS, EDGE BEAMS AND DECK BLOCK-OUTS WITH 24-HOUR CONCRETE AS PER PLANS. INSTALL SAWCUT JOINTS AT CENTERLINE OF BENTS 2 AND 3.
3. POUR CLOSURE POUR STRIPS WITH UHPC. UHPC SHALL BE CURED FOR A MINIMUM OF 48 HOURS AFTER THE COMPLETION OF POURING OPERATION AND REACH A COMPRESSIVE STRENGTH OF 14 KSI PRIOR TO PLACEMENT OF EQUIPMENT ON THE BRIDGE.
4. POUR BARRIER WALLS, TRANSITIONS AND END POSTS.
5. GRIND AND GROOVE DECK.
6. CONSTRUCT APPROACH SLABS, COMPLETE ROADWAY TIE-INS AND OPEN TO TRAFFIC.

THE AFOREMENTIONED SEQUENCE SHALL BE COORDINATED WITH ROADWAY OPERATION, SEE ROADWAY PLANS. IN LIEU OF THE ABOVE CONSTRUCTION SEQUENCE, THE CONTRACTOR MAY SUBMIT A PROPOSED CONSTRUCTION SEQUENCE FOR APPROVAL.

SPAN 1

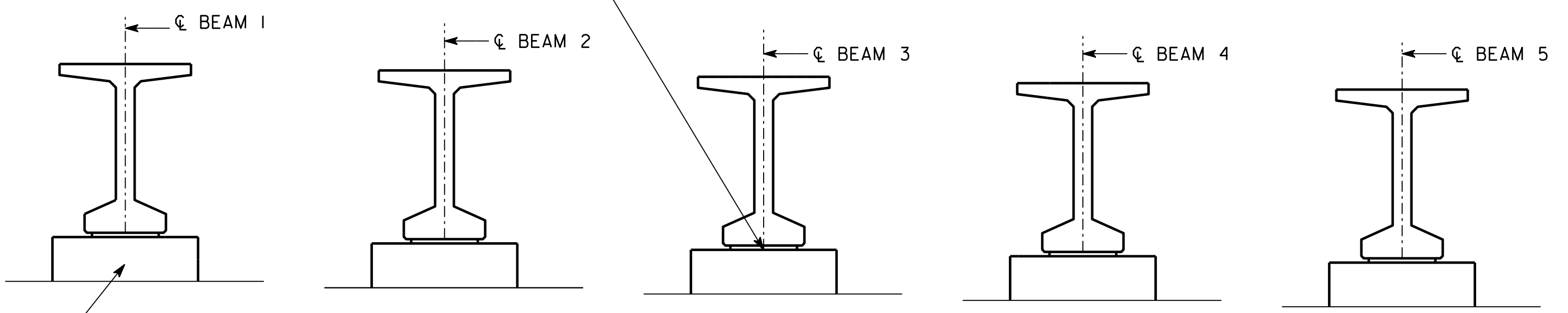
SPAN 2

SPAN 3

PLAN

NOTES:

- UHPC = ULTRA HIGH PERFORMANCE CONCRETE
- INDICATES 24 HOUR CLASS D CONCRETE
- INDICATES ULTRA HIGH PERFORMANCE CONCRETE



FALSE BENT, TYP.

⊙ - EL. X IS AN UNKNOWN ELEVATION THAT CONTRACTOR SHALL ESTABLISH ON SITE. EL. X IS THE TOP OF FALSE BENT CAP ELEVATION AT THE INTERSECTION OF BEAM 3 AND BEARING BENT 1

⊙ - EL. Y IS AN UNKNOWN ELEVATION THAT CONTRACTOR SHALL ESTABLISH ON SITE. EL. Y IS THE TOP OF FALSE BENT CAP ELEVATION AT THE INTERSECTION OF BEAM 3 AND BEARING BENT 2AH

SOUTH STAGING AREA					
FALSE BENTS	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
⊙ BRNG BT 1	X + 0.34'	X + 0.17'	X	X - 0.17'	X - 0.34'
⊙ BRNG BT 2BK	X + 0.80'	X + 0.63'	X + 0.46'	X + 0.29'	X + 0.12'

NORTH STAGING AREA					
FALSE BENTS	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
⊙ BRNG BT 2AH	Y + 0.34'	Y + 0.17'	Y	Y - 0.17'	Y - 0.34'
⊙ BRNG BT 3BK	Y + 1.94'	Y + 1.77'	Y + 1.60'	Y + 1.43'	Y + 1.26'
⊙ BRNG BT 3AH	Y + 2.19'	Y + 2.02'	Y + 1.85'	Y + 1.68'	Y + 1.51'
⊙ BRNG BT 4	Y + 3.22'	Y + 3.05'	Y + 2.88'	Y + 2.71'	Y + 2.54'

FALSE BENTS LAYOUT

(LOOKING AHEAD)
BENT 1 SHOWN
(BENTS 2BK, 2AH, 3BK, 3AH AND 4 SIMILAR)

BRIDGE NO. 1



GEORGIA

DEPARTMENT OF TRANSPORTATION
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CONSTRUCTION SEQUENCE (SHEET 1 OF 2)
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

DRAWING NO. 35-0004	DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
BRIDGE SHEET 4 OF 18	DRAWN LCY/VO	DESIGN GROUP DLW	APPROVED WMD

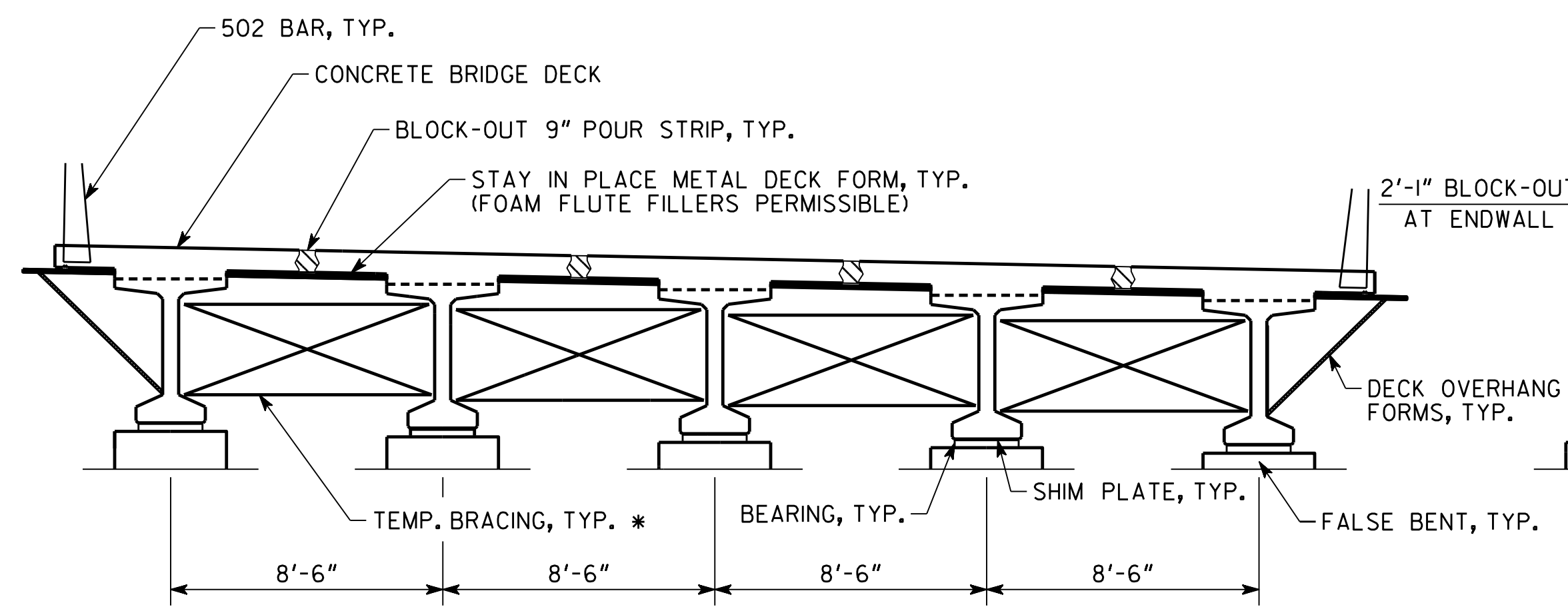
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8/27/2018

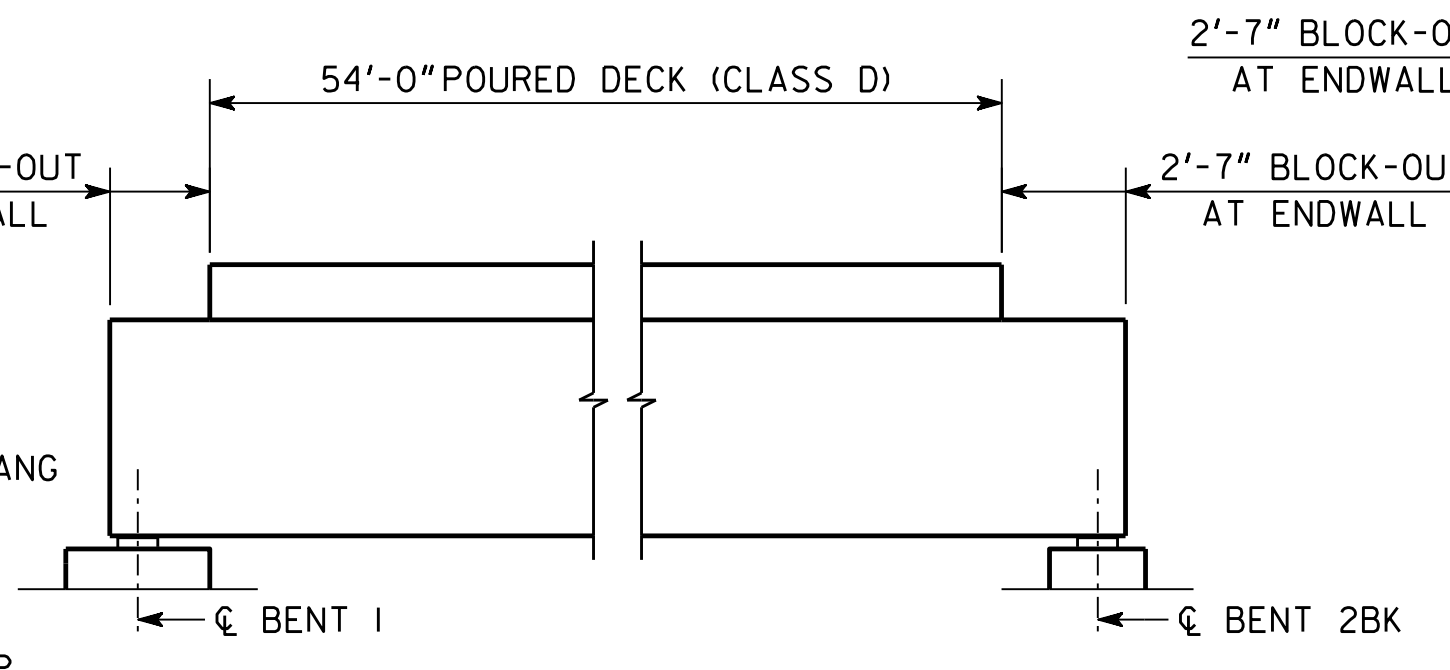
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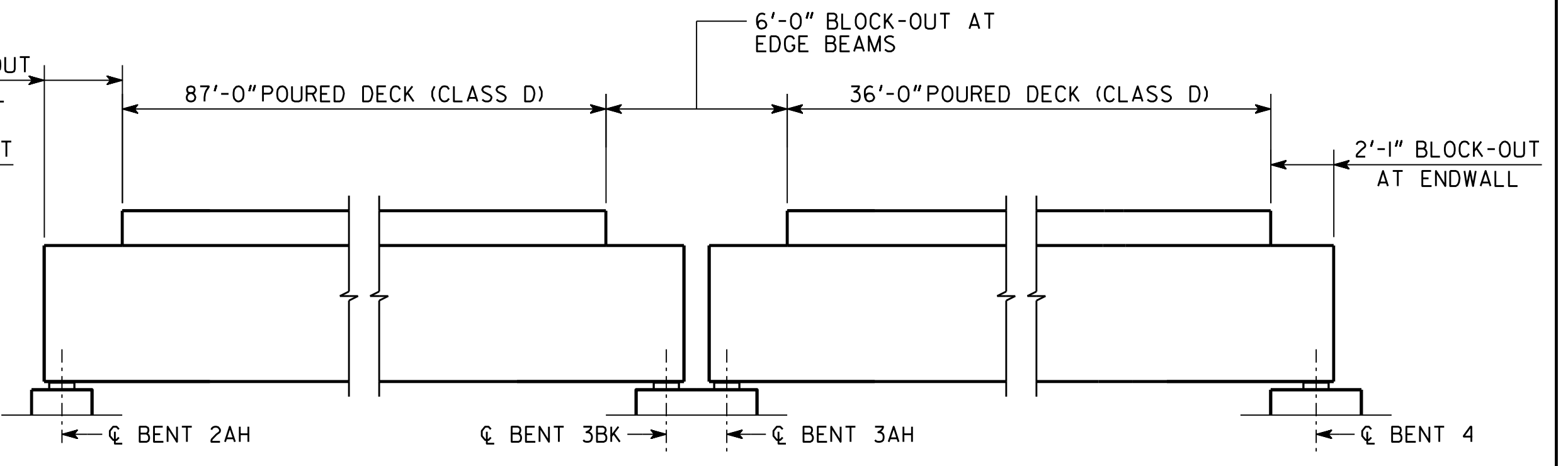


PRE-CLOSURE

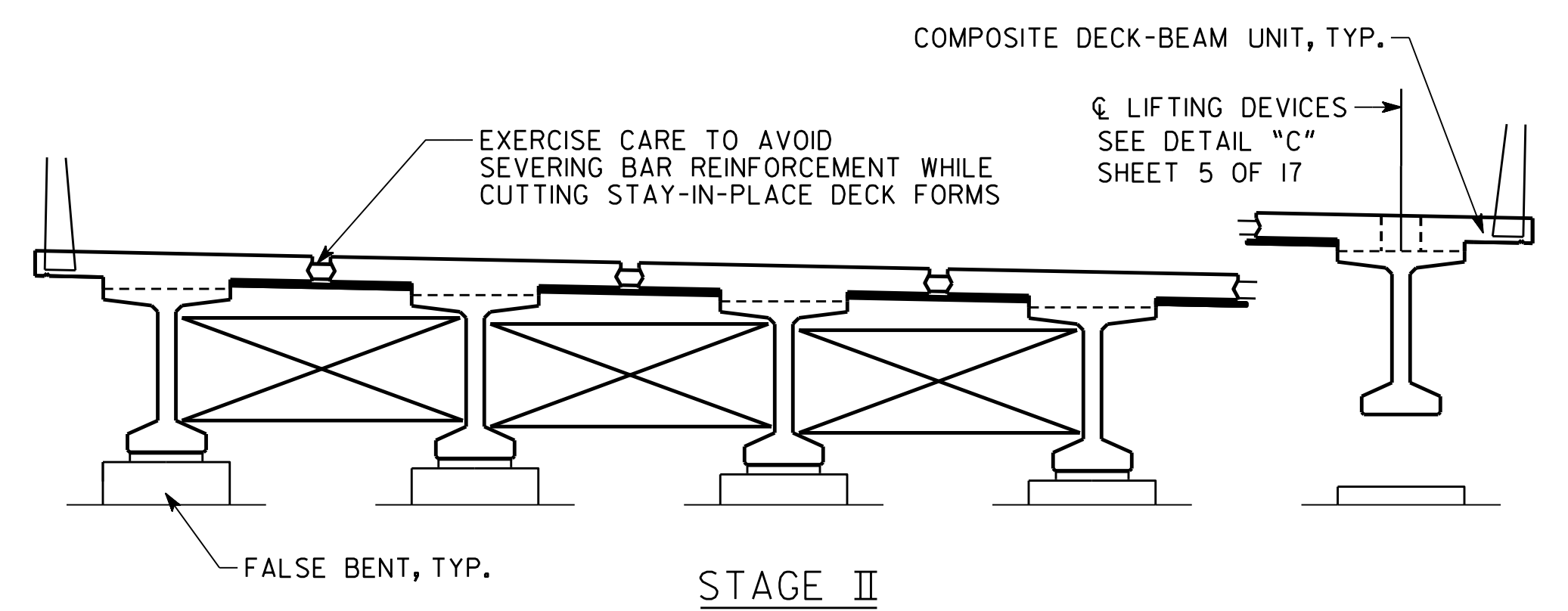
* -THE CONTRACTOR SHALL PROVIDE BRACING BETWEEN BEAMS UNTIL THE DECK-BEAM UNITS ARE ERECTED AT THEIR FINAL LOCATION. ALL COSTS FOR DESIGNING, PROVIDING, INSTALLING AND REMOVING BRACING SHALL BE INCLUDED IN PRICE BID FOR LUMP- "COMPOSITE DECK BEAM UNITS WITH UHPC, BR NO- 1".



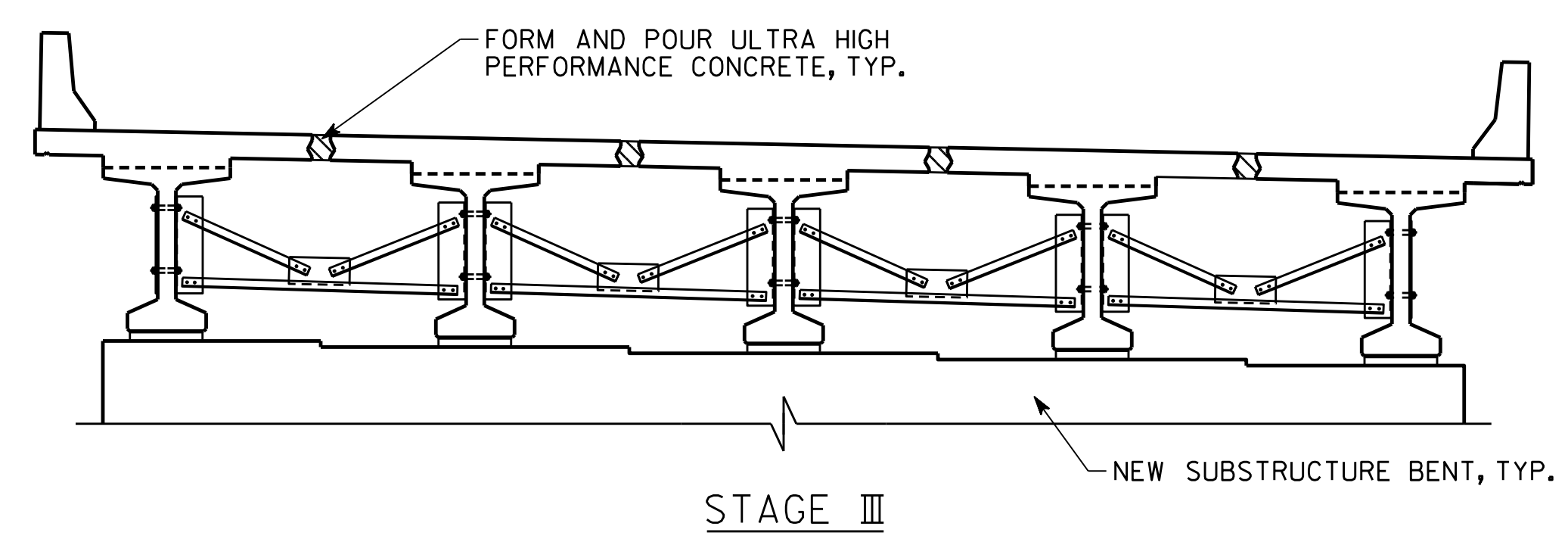
ELEVATION VIEW
SPAN 1 AT SOUTH STAGING AREA



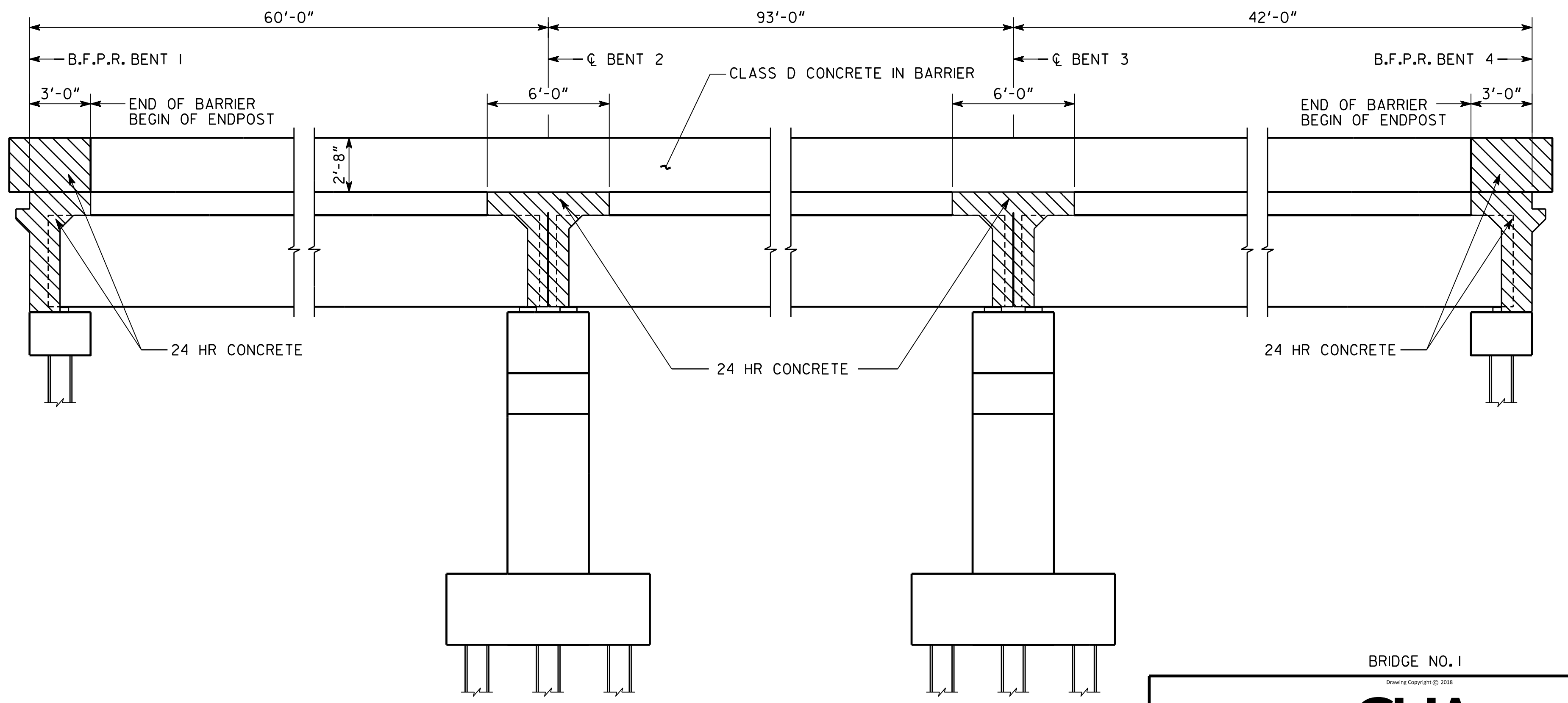
ELEVATION VIEW
SPANS 2 AND 3
AT NORTH STAGING AREA



STAGE II



STAGE III



ELEVATION VIEW
FINAL NEW SUBSTRUCTURE

BRIDGE NO. 1
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ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

CONSTRUCTION SEQUENCE (SHEET 2 OF 2)
CR 661(BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

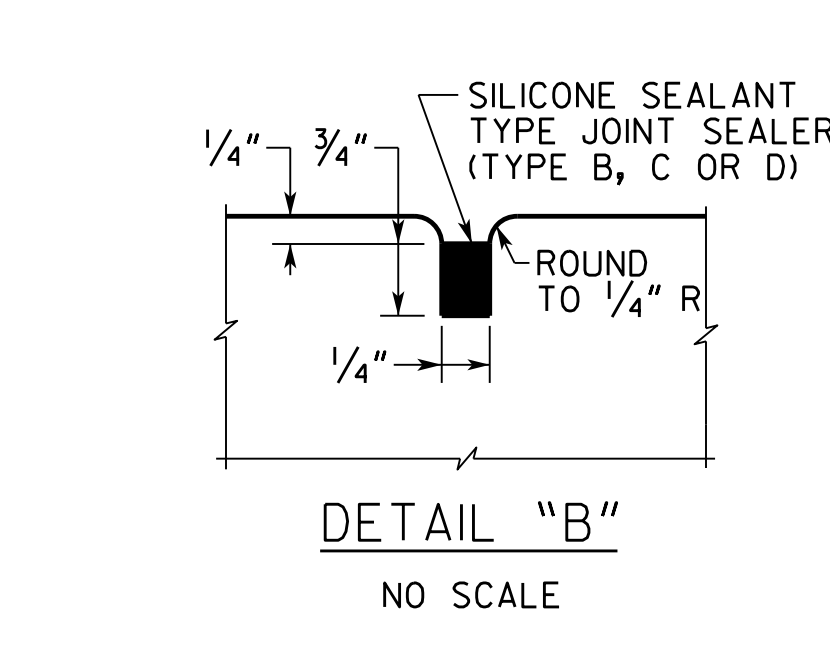
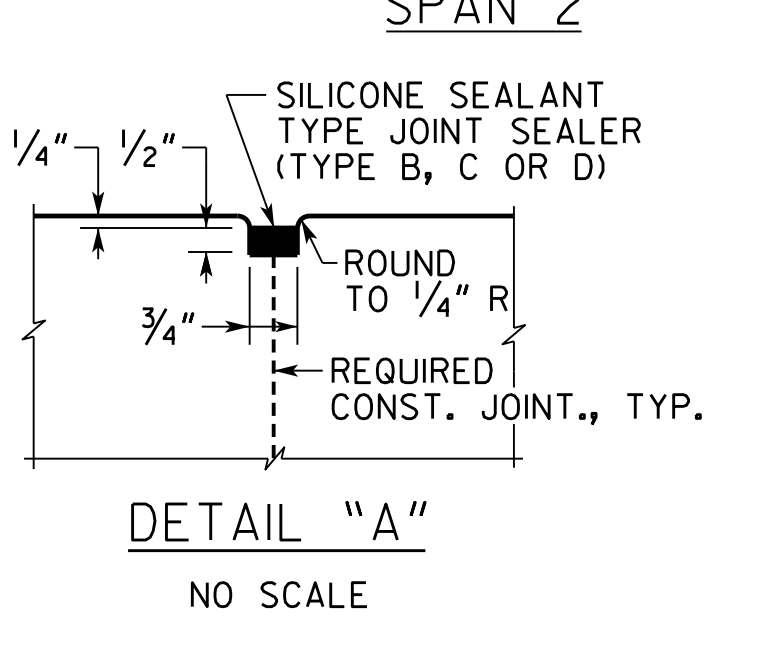
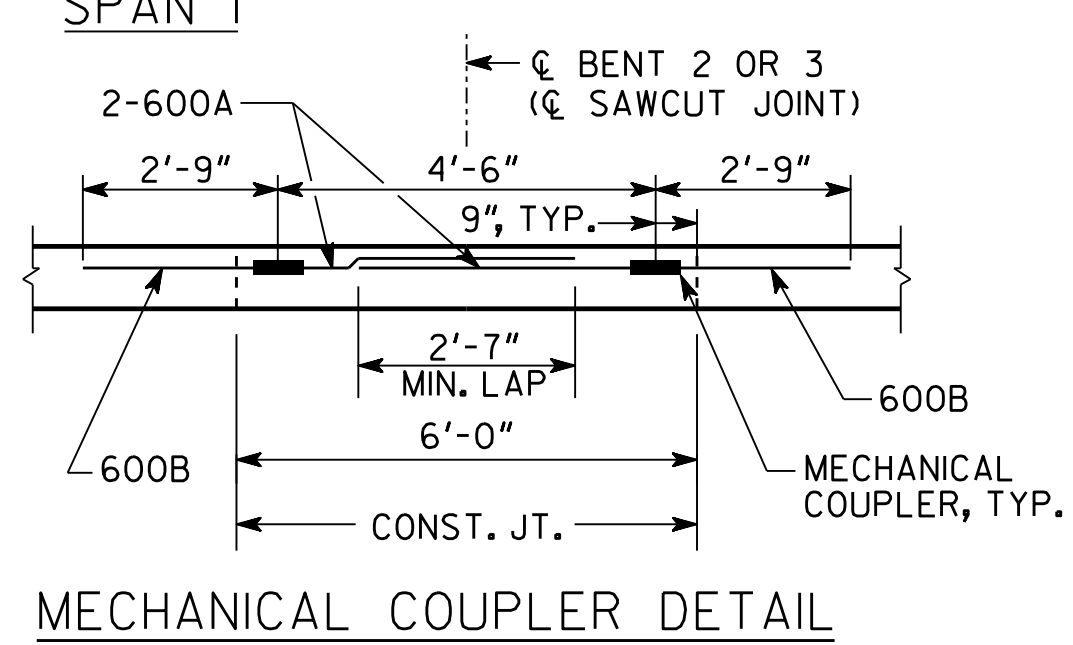
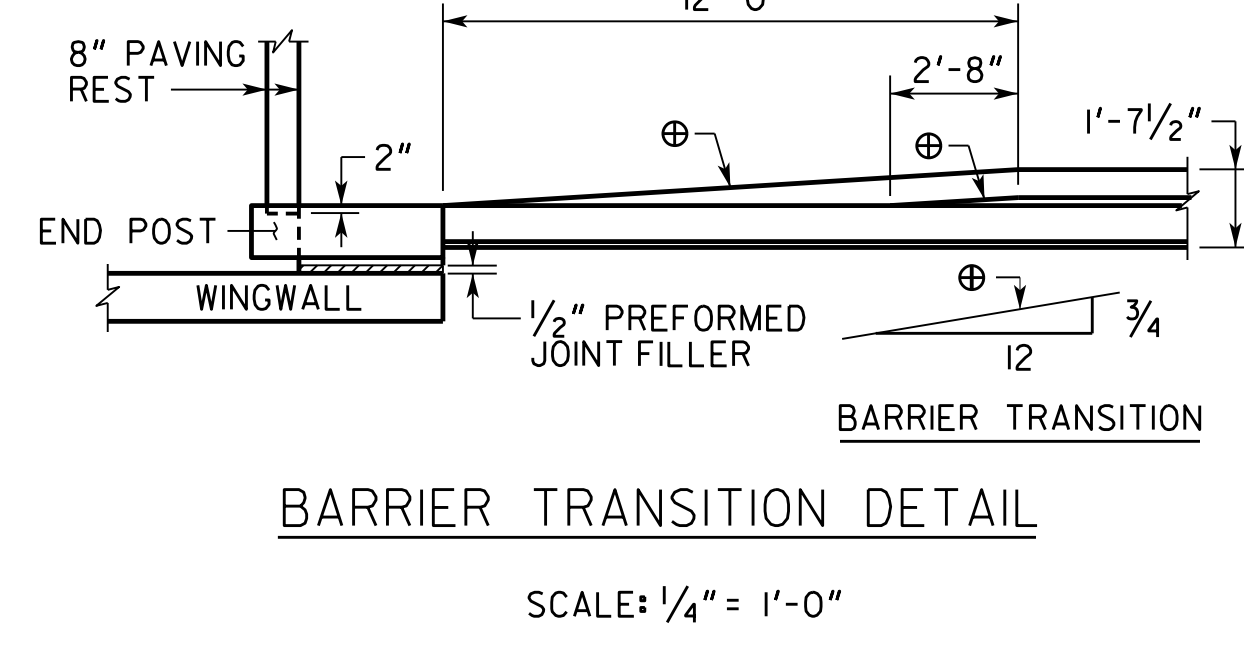
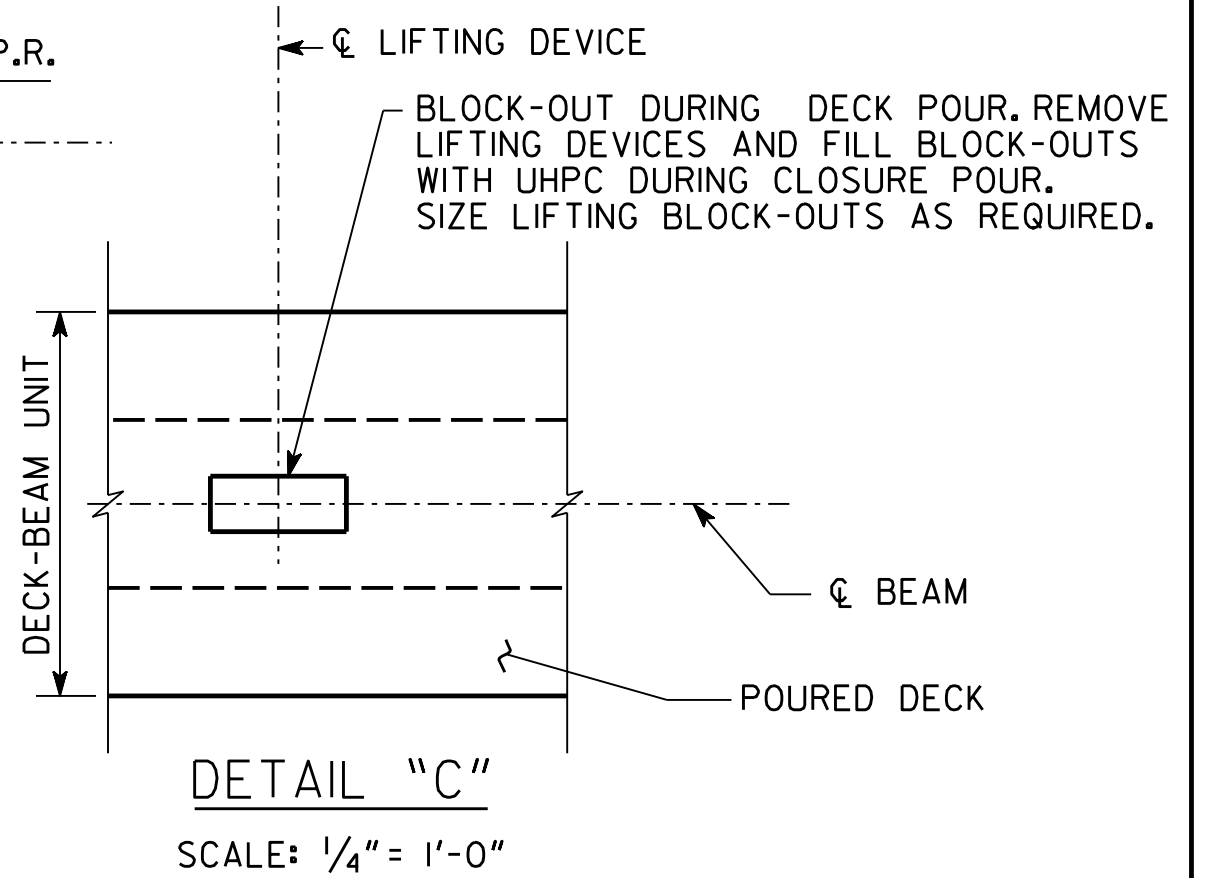
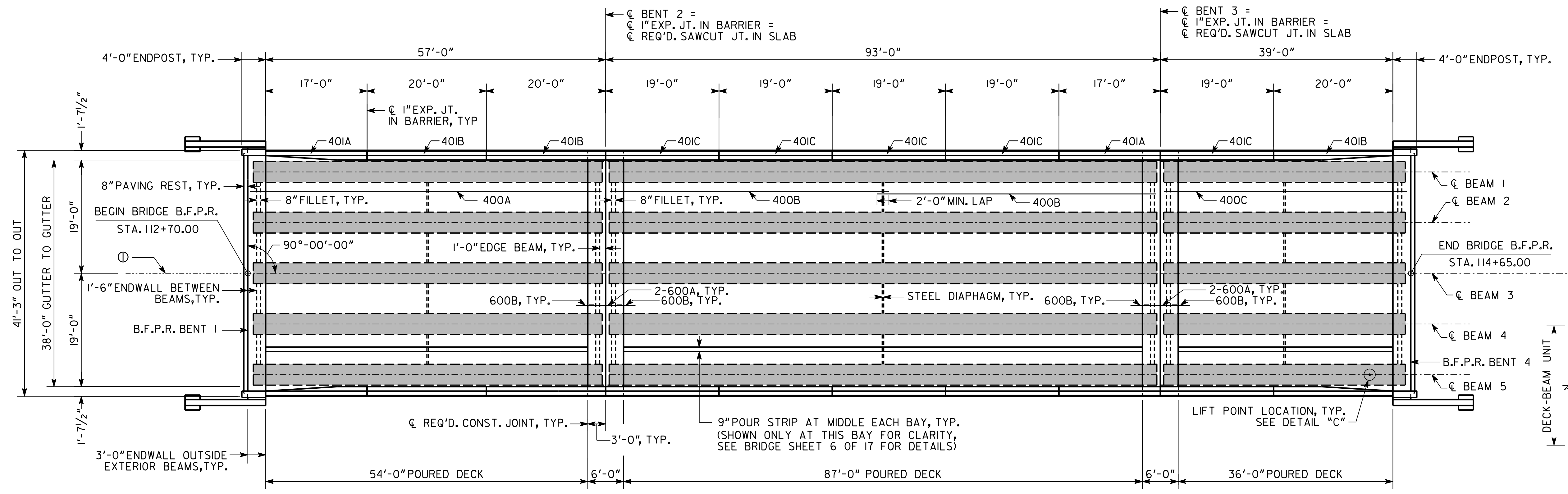
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DESIGNED VO	CHECKED KJK	DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG	
DRAWN JVB	DESIGN GROUP DLW	DRAWN JVB	DESIGN GROUP DLW	APPROVED WMD	

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- NOTES:
- LIFTING DEVICES SHALL BE DESIGNED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL. MINIMUM SUBMITTAL REQUIREMENTS INCLUDE LOOP CAPACITY, EMBEDMENT SUFFICIENT TO DEVELOP THE LIFTING FORCE, AND COMPOSITE DECK-BEAM STABILITY VERIFICATION. ALL SUBMITTALS SHALL BE SIGNED AND SEALED BY A LICENSED GEORGIA PROFESSIONAL ENGINEER.
 - REMOVE THE LIFTING DEVICES AFTER ALL DECK-BEAMS ARE RELOCATED.
 - USE MECHANICAL COUPLERS TO CONNECT BARS 600A AND 600B AT CONST. JOINTS (SEE SPECIAL PROVISION 511). INCLUDE THE COST OF MECHANICAL COUPLERS IN THE PRICE BID FOR "LUMP - SUPERSTR. REINF STEEL".
 - ⊙ - ⌀ BRIDGE, DETAILS SYMMETRICAL ABOUT ⌀ BRIDGE UNLESS NOTED.

SUPERSTRUCTURE QUANTITIES				
ITEM	SPAN 1	SPAN 2	SPAN 3	TOTAL
LUMP-SUPERSTR. CONCRETE CU. YDS, CLASS "D"	60.0	104.0	39.2	203.2
TWENTY-FOUR HOUR ACCELERATED CONC, CY	26.4	16.7	26.2	69.3
LUMP-SUPERSTR. REINF. STEEL, LBS.	21,717	29,762	16,503	67,982

ENDPOST CONCRETE AND BAR REINFORCEMENT STEEL ARE INCLUDED IN END SPANS. BARS 600A AND 600B INCLUDED IN END SPANS QUANTITIES. 600A BARS ARE CONTINUOUS ACROSS INTERMEDIATE BENTS 2 AND 3.

BRIDGE NO. 1



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GEORGIA DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

DECK PLAN

CR 661 (BLACKHALL ROAD) OVER RUM CREEK HENRY COUNTY 0011691

SCALE: 1" = 10'-0" (UNLESS OTHERWISE NOTED) FEBRUARY 2018

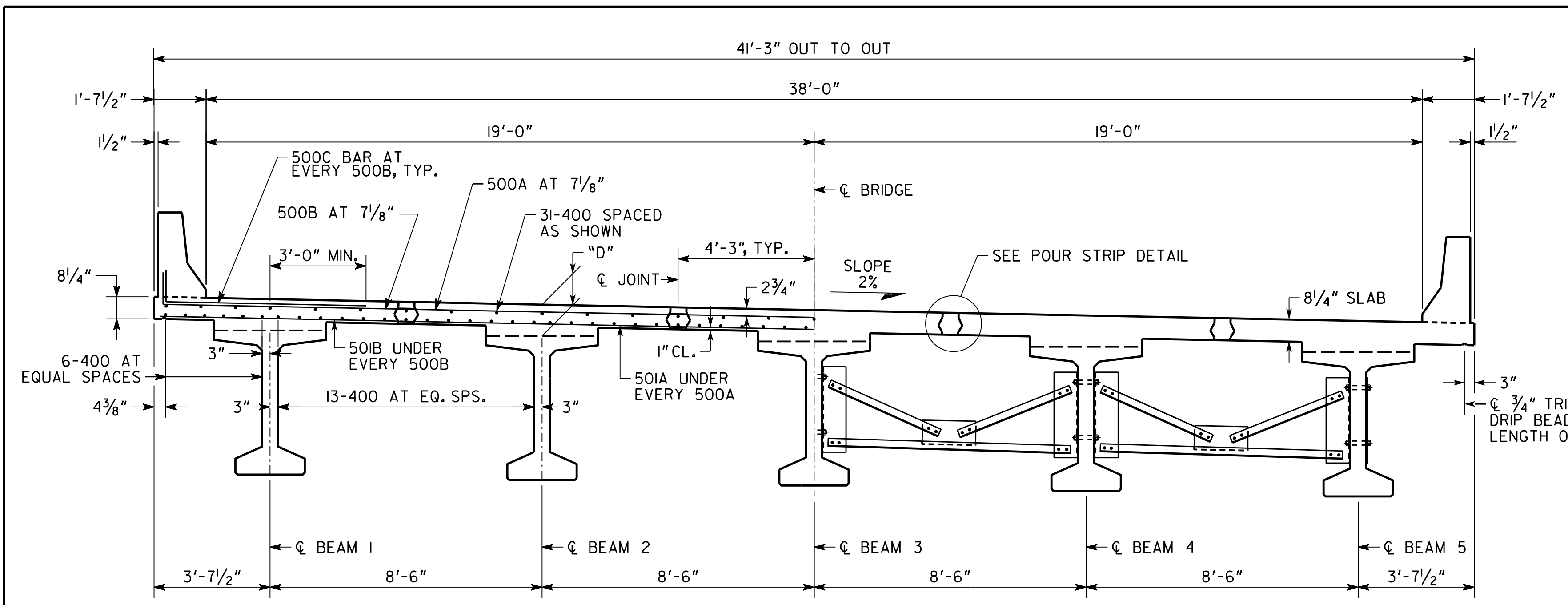
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BRIDGE SHEET 6 OF 18	DRAWN LCY/VO	DESIGN GROUP DLW	APPROVED WMD

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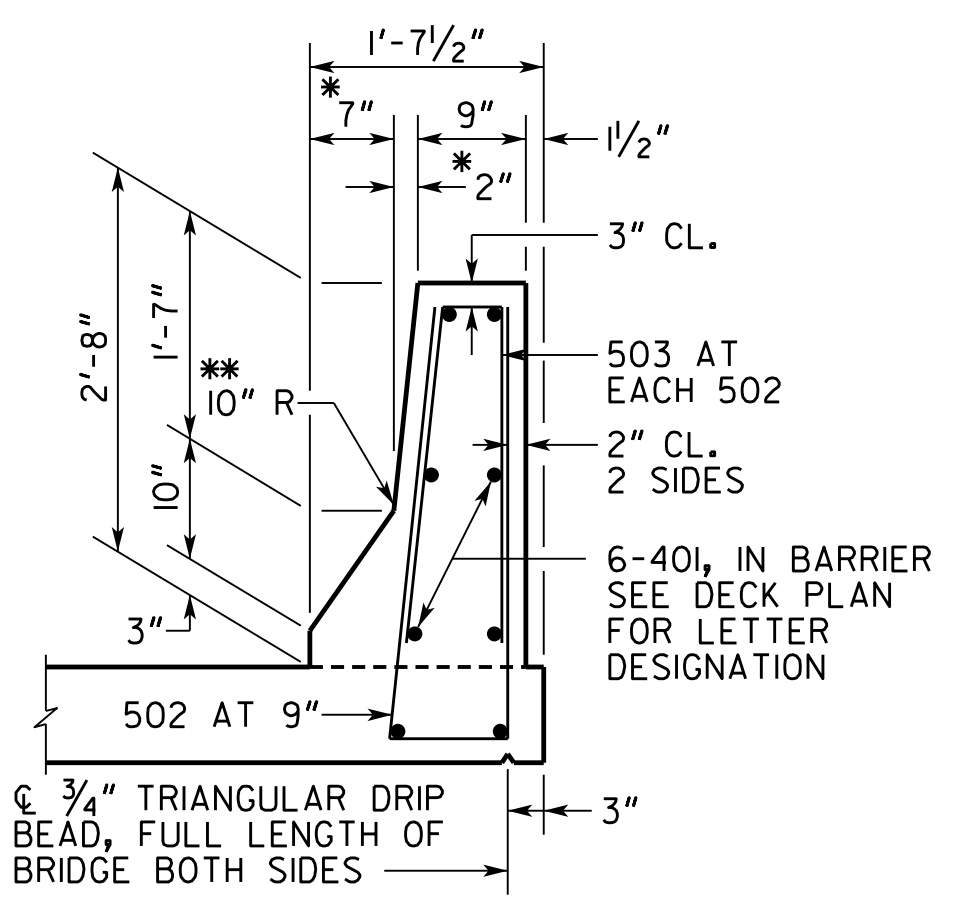
HALF SECTION THRU SLAB
(LOOKING AHEAD)

HALF SECTION THRU DIAPHRAGM
(LOOKING AHEAD)

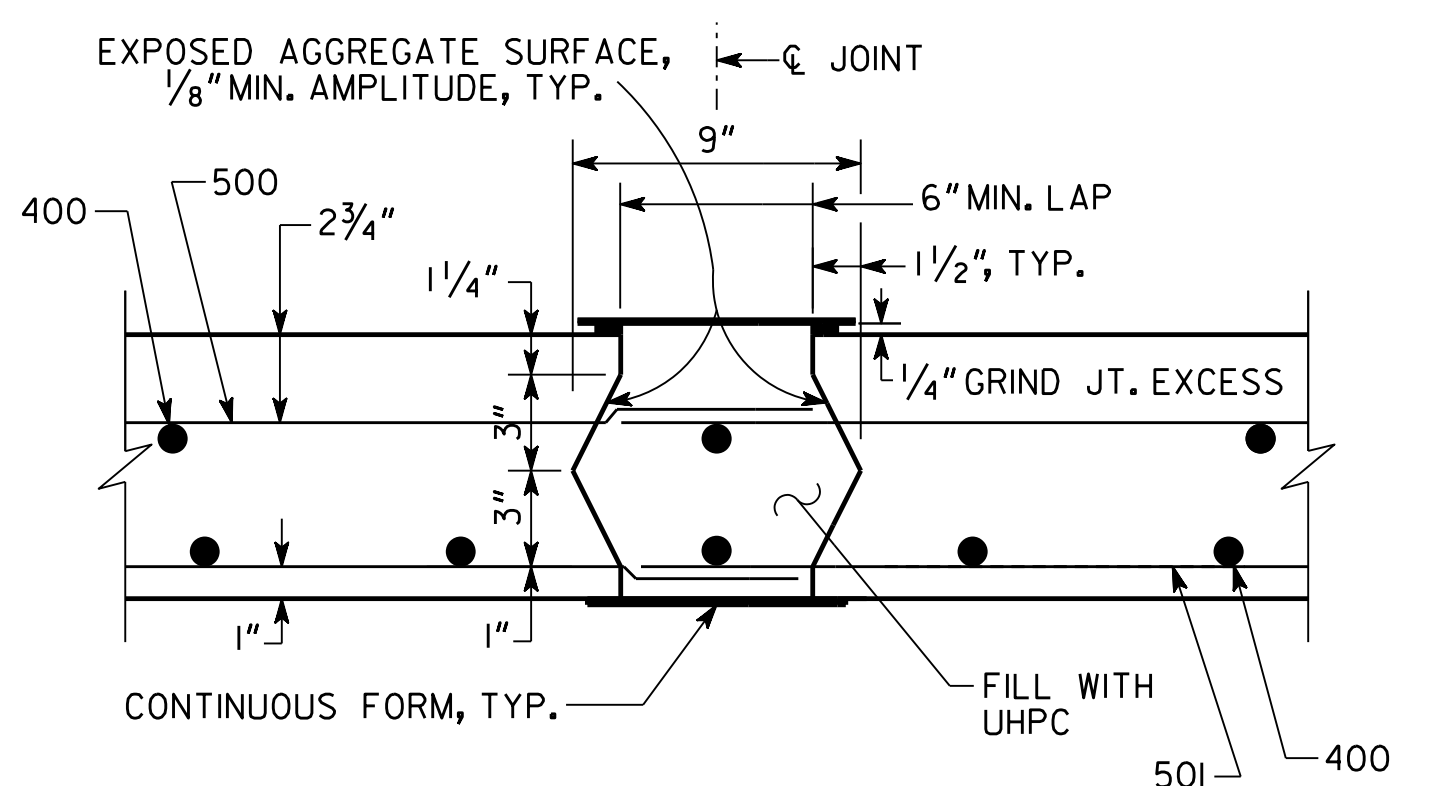
DIMENSIONS "D" IS MEASURED FROM TOP OF SLAB TO TOP OF BEAMS AT CENTERLINE BEARING. VARY "D" BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE. MAINTAIN A CONSTANT SLAB THICKNESS OF 8 1/4"

	SPAN 1	SPAN 2	SPAN 3
"D"	11 5/8"	1'-2"	11"

* TAPERS TO 0" AT END POST.
** AT CONTRACTOR'S OPTION, REPLACE 10" RADIUS WITH STRAIGHT INTERSECTING SLOPES.



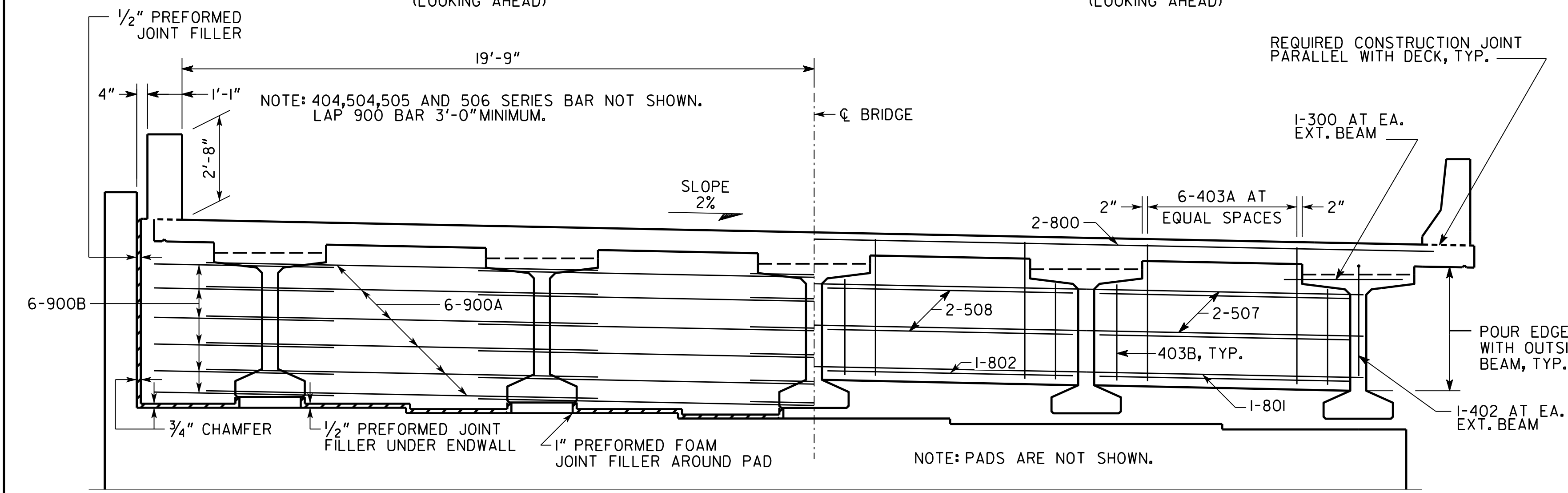
BARRIER DETAIL
SCALE: 3/4" = 1'-0"



POUR STRIP DETAIL
NO SCALE

ULTRA HIGH PERFORMANCE CONCRETE (UHPC)

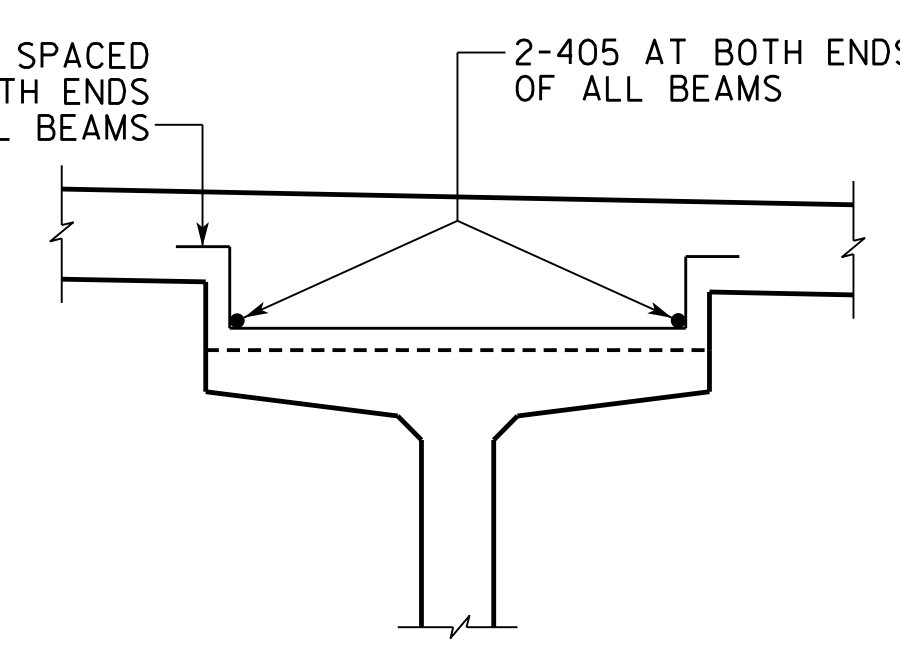
- SUBMIT UHPC OPERATION PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 30 DAYS PRIOR TO BRIDGE CONSTRUCTION.
- PROVIDE MOCK FORM AT LEAST 8'-0" X 6" X 8 1/4" THICK AND DEMONSTRATE MIXING AND PLACING OF UHPC INTO FORM PRIOR TO FIELD CONSTRUCTION.
- DETAIL HEADERS TO CONTAIN UHPC DURING FIELD PLACEMENT.
- START PLACEMENT OF UHPC AT THE LOWEST POINT OF BRIDGE. LIMIT FLOW OF UHPC TO A MAXIMUM DISTANCE OF 10'-0".
- ALL UHPC CLOSURE POURS FOR ENTIRE BRIDGE SHALL BE DONE IN ONE CONTINUOUS OPERATION WITHOUT CONSTRUCTION JOINTS.
- INCLUDE THE COST OF UHPC AND PLACEMENT IN THE PRICE BID FOR "ULTRA HIGH PERFORMANCE CONCRETE".



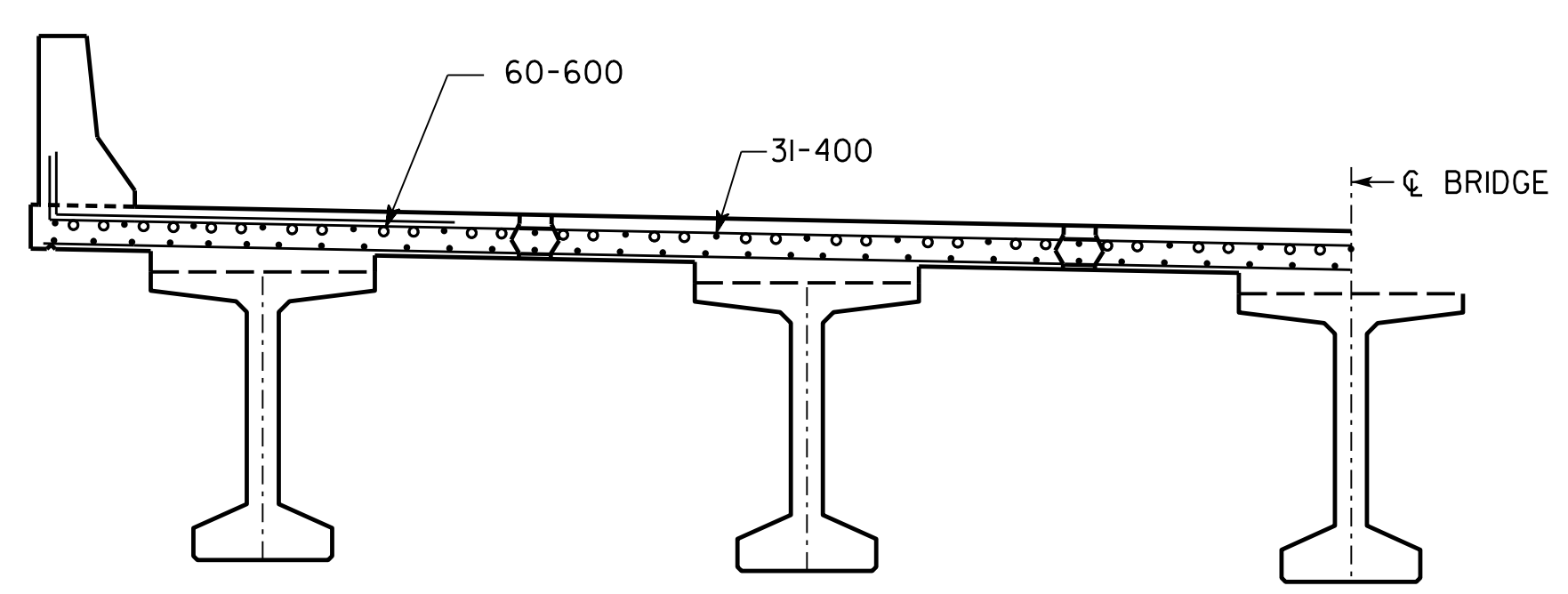
HALF SECTION THRU ENDWALL
(LOOKING AHEAD)

HALF SECTION THRU EDGE BEAM
(LOOKING AHEAD)

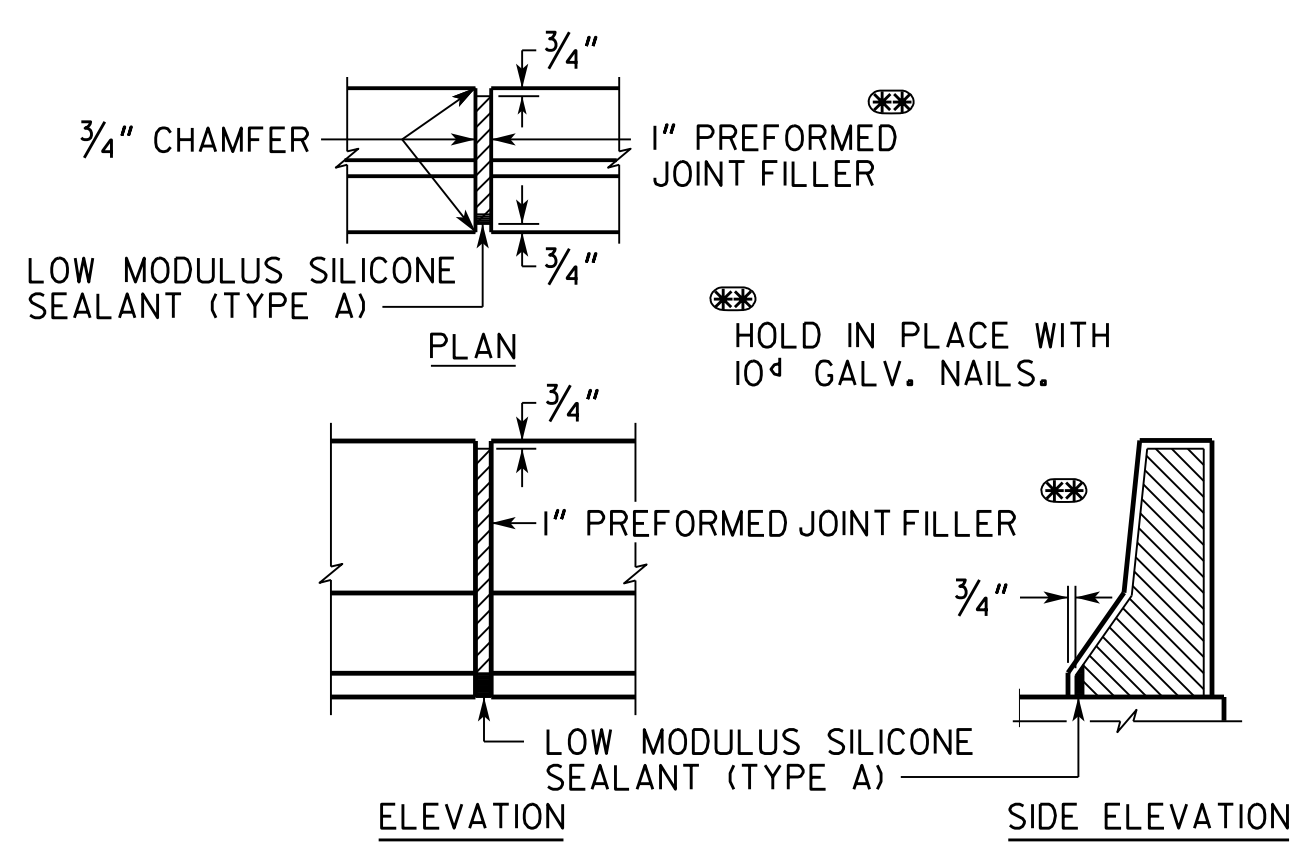
24-406 BARS SPACED AT 12" AT BOTH ENDS OF ALL BEAMS
2-405 AT BOTH ENDS OF ALL BEAMS



REBAR DETAIL IN COPING
SPAN 2 ONLY
SCALE: 3/4" = 1'-0"



SECTION THRU SLAB AT INTERMEDIATE BENT
(LOOKING AHEAD)



DETAILS OF 1" EXPANSION JOINT IN BARRIER
SCALE: 1/2" = 1'-0"

BRIDGE NO. 1



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DECK SECTION
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

SCALE: 3/8" = 1'-0" (UNLESS OTHERWISE NOTED) FEBRUARY 2018

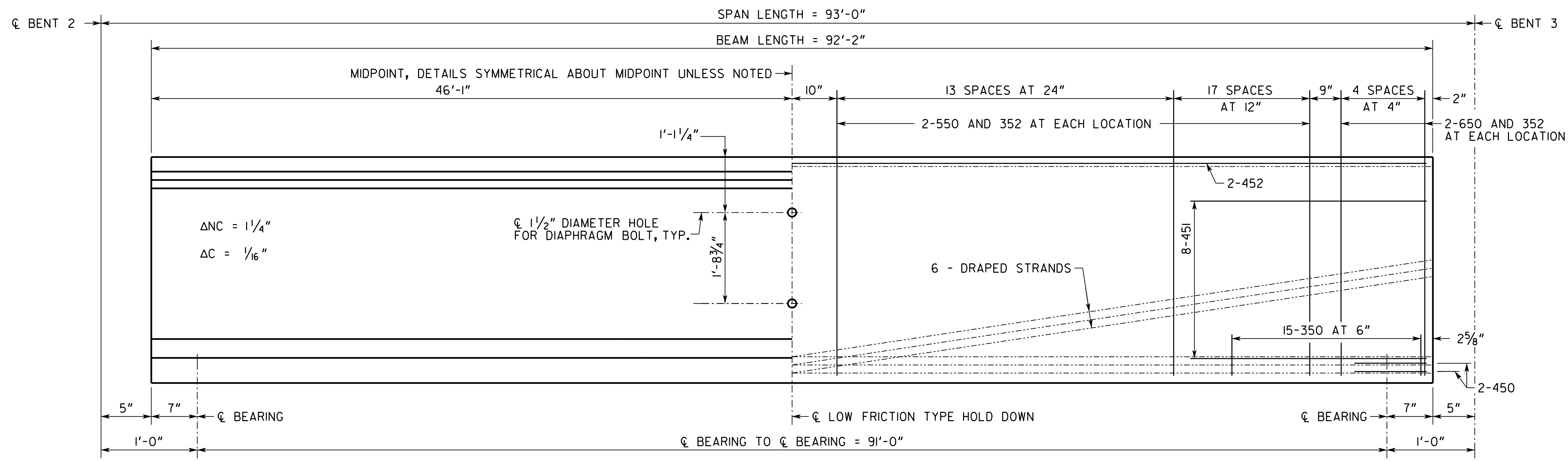
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BRIDGE SHEET 7 OF 18	DESIGN GROUP DLW	DRAWN LCY/VO	APPROVED WMD

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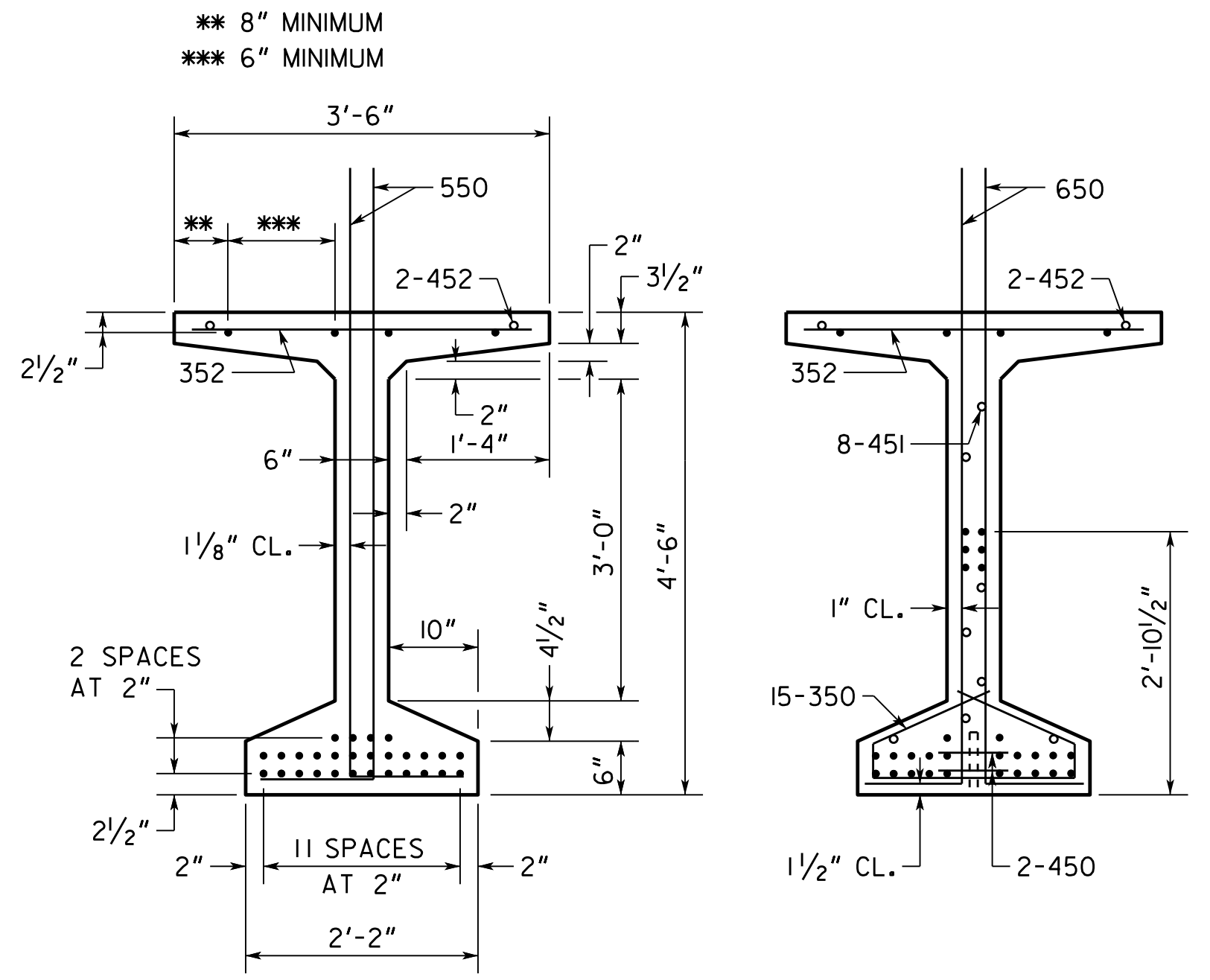
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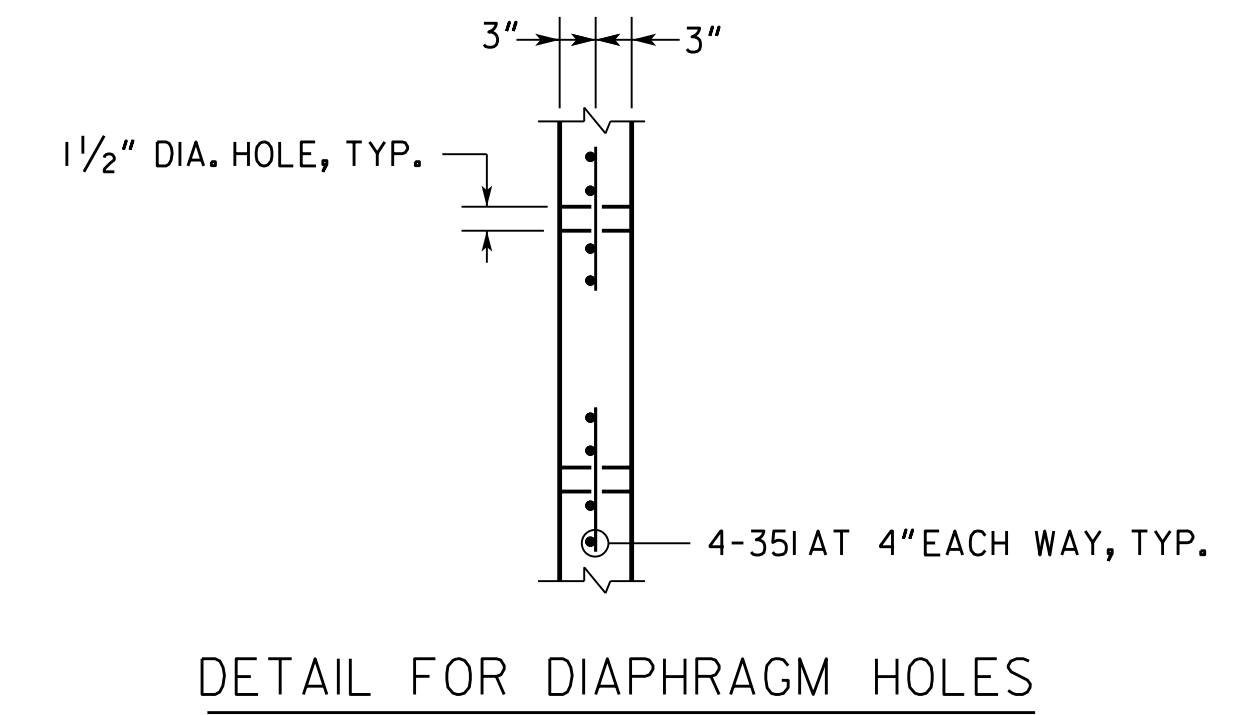
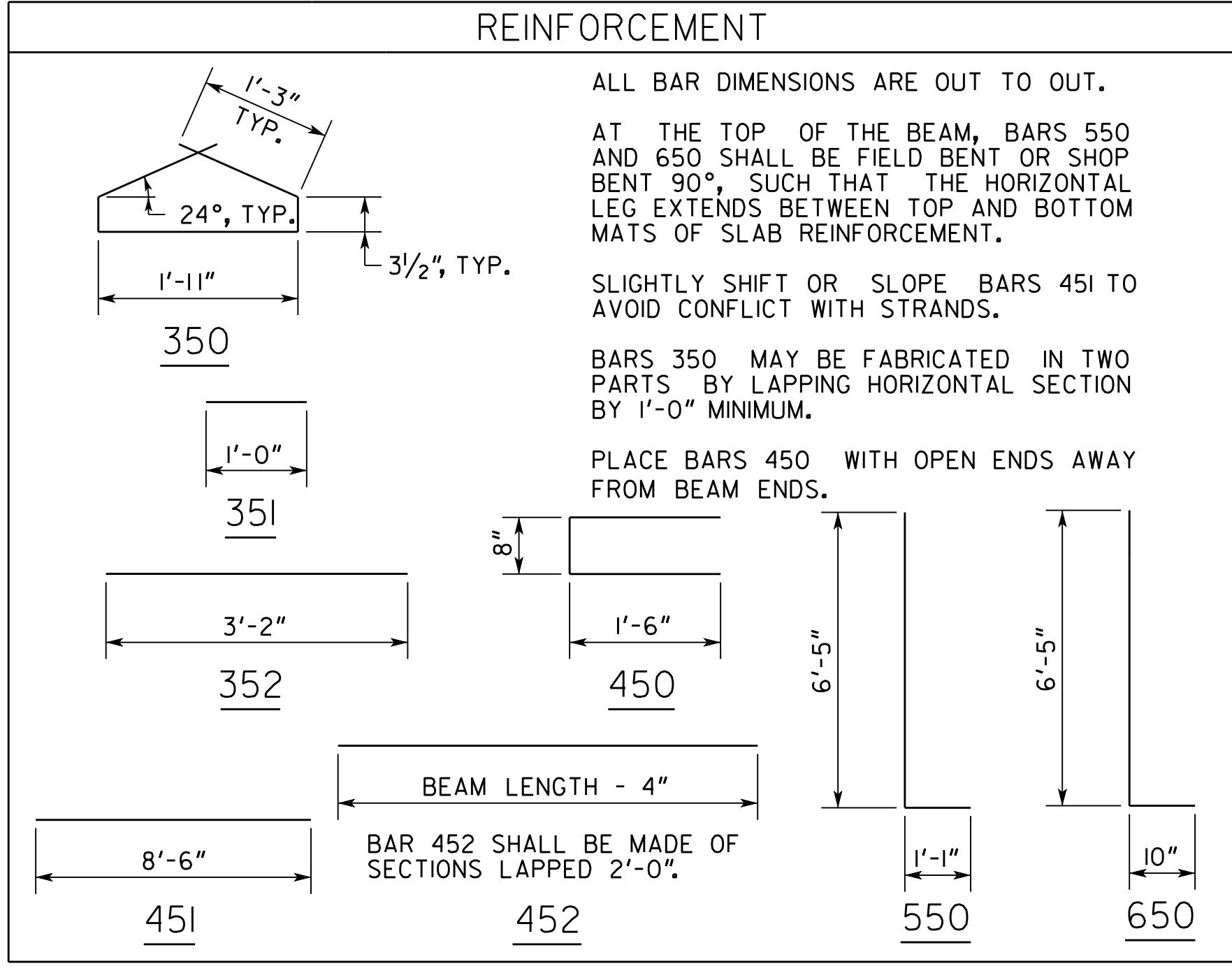
ELEVATION

NOTES

1. BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AT ALL TIMES AND SHALL BE PICKED UP WITHIN 6'-9" FROM THEIR ENDS. DISREGARDING THIS REQUIREMENT COULD LEAD TO COLLAPSE OF THE BEAM. PICK-UPS SHALL BE EMBEDDED TO WITHIN 4" OF THE BOTTOM OF THE BEAM. DETAILS OF PICK-UPS SHALL BE INCLUDED IN THE SHOP DRAWINGS.
2. CHAMFER EDGES OF BEAMS 1/2", 3/4" OR 1".
3. HORIZONTAL DIMENSIONS ARE IN PLACE DIMENSIONS. THE BEAM LENGTH INCLUDES THE 1/8" EPOXY MORTAR AT EACH END. SHOP DRAWINGS SHALL ADJUST HORIZONTAL DIMENSIONS FOR GRADE AND FABRICATION EFFECTS SUCH AS SHRINKAGE AND ELASTIC SHORTENING.
4. AT C BEARING, FORM A 1 3/4" DIAMETER X 7" DEEP HOLE AT THE FIXED ENDS AND A 6" X 1 3/4" X 7" DEEP SLOT AT THE EXPANSION ENDS FOR A 1 1/2" DIAMETER SMOOTH DOWEL. SEE PLAN AND ELEVATION SHEET FOR LOCATION OF FIXED AND EXPANSION ENDS.
5. TOPS OF BEAMS SHALL BE ROUGH FLOATED AT APPROXIMATELY THE TIME OF INITIAL SET. ENTIRE TOP SHALL BE SCRUBBED TRANSVERSELY WITH A COARSE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING TO THE SLAB. ROUGHENED SURFACE SHALL HAVE AN AMPLITUDE OF APPROXIMATELY 1/4". CONCRETE FINS OR PROJECTIONS SHALL BE REMOVED TO PRODUCE A VERTICAL FACE AT THE EDGE OF THE BEAM.
6. NON-COMPOSITE DEAD LOAD DEFLECTION (Δ_{NC}) AT THE MIDPOINT IS DUE TO THE WEIGHT OF THE SLAB AND COPING.
7. COMPOSITE DEAD LOAD DEFLECTION (Δ_C) AT THE MIDPOINT IS DUE TO THE WEIGHT OF BARRIER.
8. STRANDS SHALL MEET ALL REQUIREMENTS OF ASTM A 416 GRADE 270.
9. PRESTRESSING DATA IS AS FOLLOWS:
 - A. USE 32 - 0.6" DIAMETER LOW-RELAXATION ($A = 0.217 \text{ SQ IN}$) STRANDS. PRETENSION TOP FOUR (4) STRANDS TO 10,000 LBS EACH. PRETENSION BOTTOM STRANDS TO 43,943 LBS EACH.
 - B. PRETENSIONED STRANDS SHALL BE RELEASED AFTER THE CONCRETE HAS REACHED A MINIMUM STRENGTH (f'_c) OF 6,500 PSI.
 - C. INCLUDING THE TOP STRANDS, THE TOTAL JACKING FORCE OF PRETENSIONING IS 1,270,404 LBS.
 - D. INCLUDING THE TOP STRANDS, THE NET PRESTRESSING FORCE OF THE STRANDS AFTER ALL LOSSES IS 990,407 LBS.
10. CONCRETE STRENGTH (f'_c) = 7,000 PSI.
11. ALLOWABLE PSC BEAM TENSION = 503 PSI.
12. LIFTING DEVICE SHALL BE DESIGNED TO CARRY THE DEAD LOAD OF BEAM AND DECK.



SECTION AT MIDPOINT **SECTION AT END**



DETAIL FOR DIAPHRAGM HOLES

BRIDGE NO. 1
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 GEORGIA
DEPARTMENT OF TRANSPORTATION
 ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES
 BULB TEE, 54 IN PSC BEAM - SPAN 2
 CR 661 (BLACKHALL ROAD) OVER RUM CREEK
 HENRY COUNTY 0011691
 NO SCALE FEBRUARY 2018

DESIGNED	VO	CHECKED	KJK	REVIEWED	DLC/SKG
DRAWN	LCY	DESIGN GROUP	DLW	APPROVED	WMD

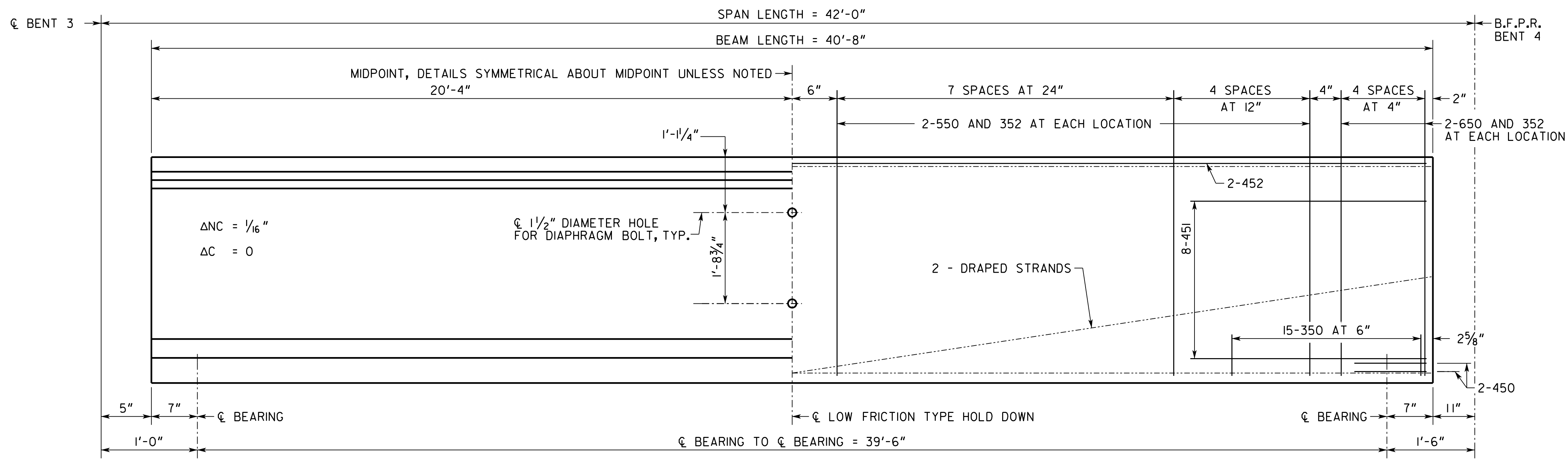
DRAWING NO.	35-0010
BRIDGE SHEET	10 OF 18

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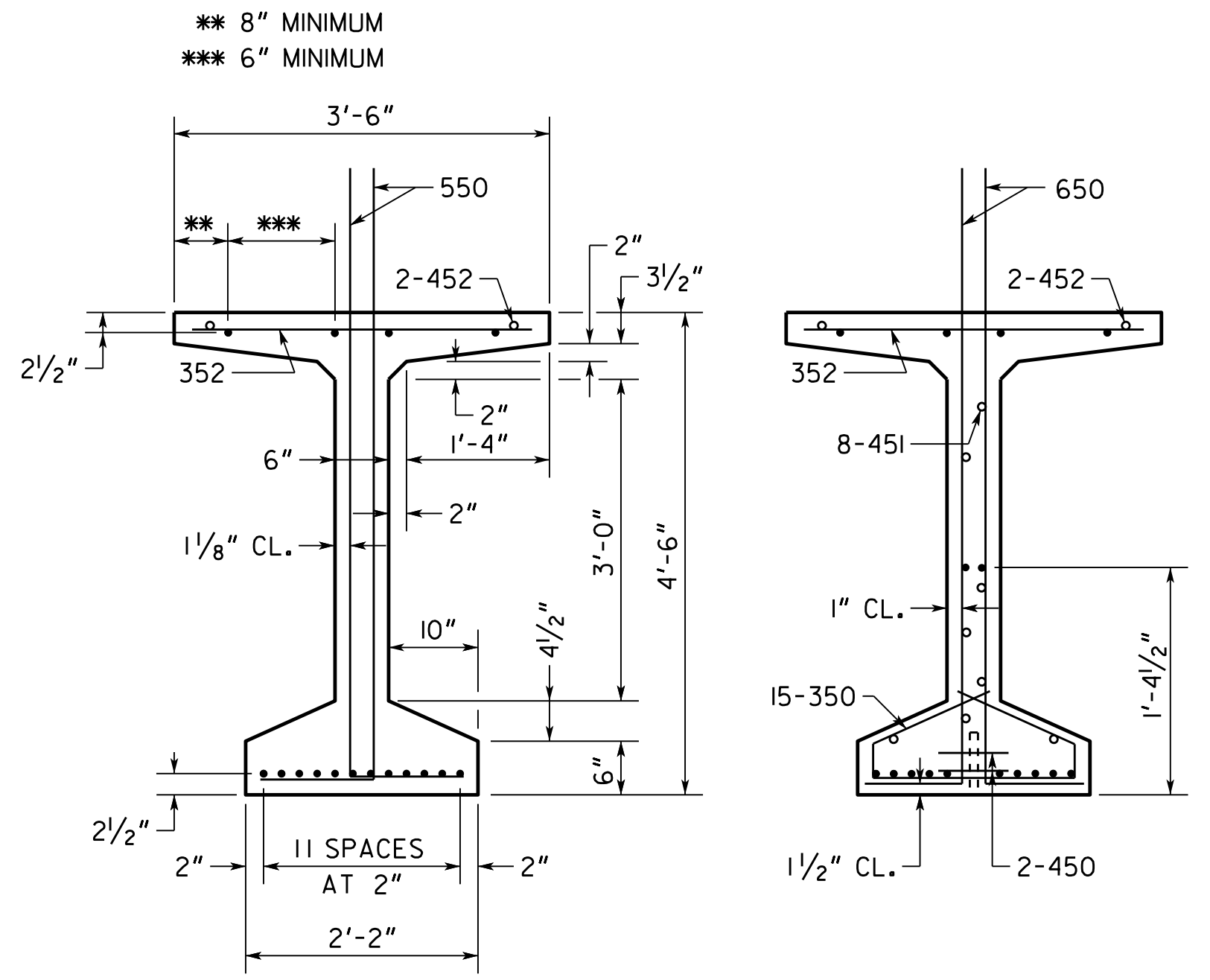
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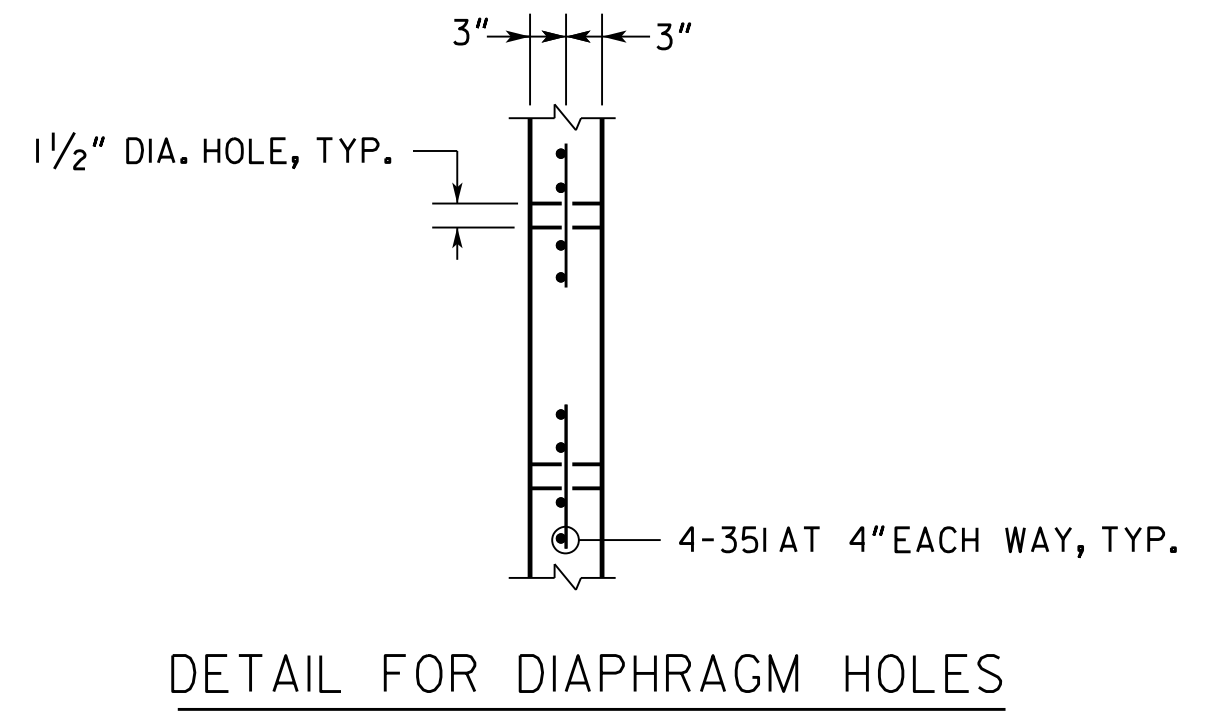
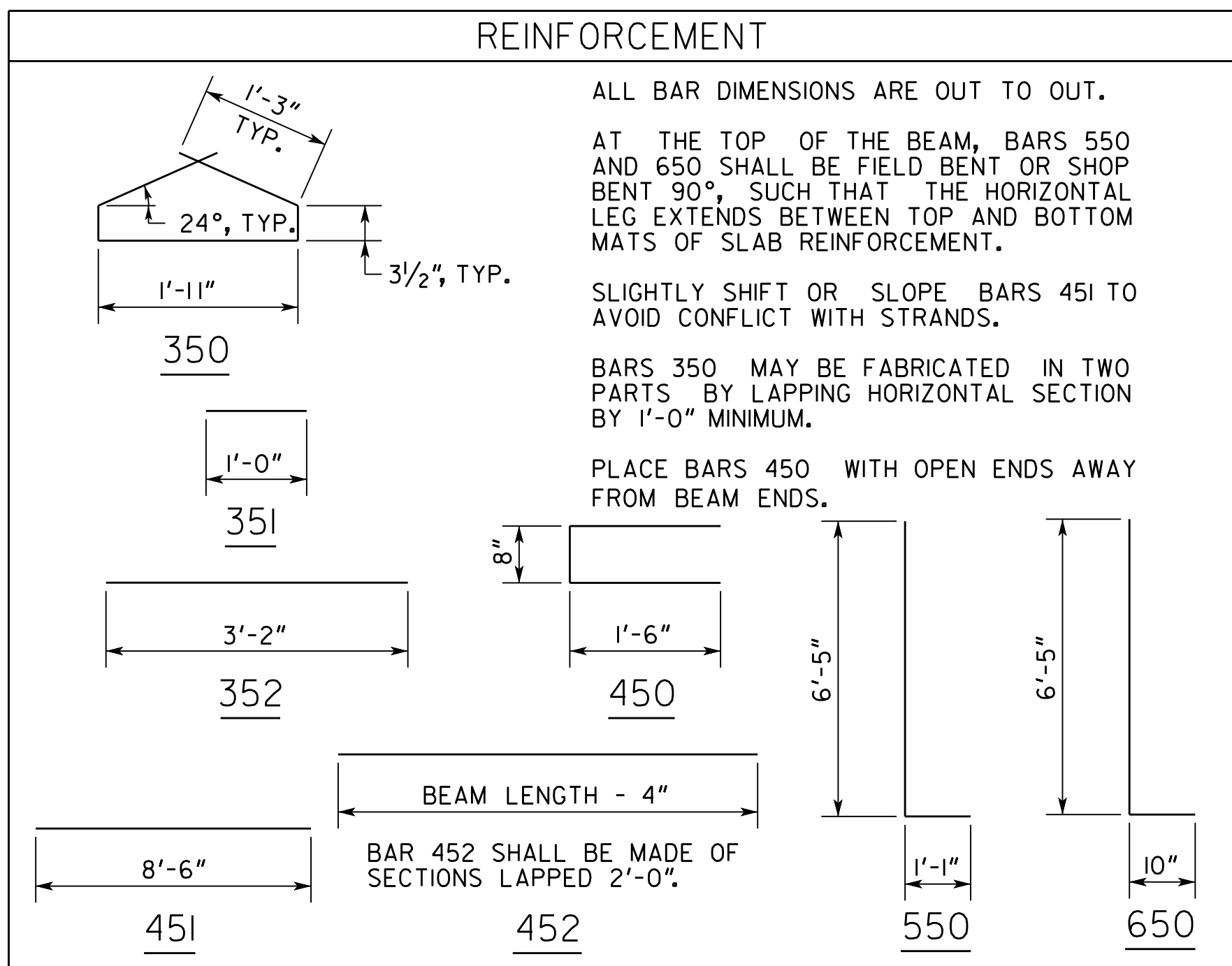
ELEVATION



SECTION AT MIDPOINT SECTION AT END

NOTES

1. BEAMS SHALL BE MAINTAINED IN AN UPRIGHT POSITION AT ALL TIMES AND SHALL BE PICKED UP WITHIN 6'-9" FROM THEIR ENDS. DISREGARDING THIS REQUIREMENT COULD LEAD TO COLLAPSE OF THE BEAM. PICK-UPS SHALL BE EMBEDDED TO WITHIN 4" OF THE BOTTOM OF THE BEAM. DETAILS OF PICK-UPS SHALL BE INCLUDED IN THE SHOP DRAWINGS.
2. CHAMFER EDGES OF BEAMS 1/2", 3/4" OR 1".
3. HORIZONTAL DIMENSIONS ARE IN PLACE DIMENSIONS. THE BEAM LENGTH INCLUDES THE 1/8" EPOXY MORTAR AT EACH END. SHOP DRAWINGS SHALL ADJUST HORIZONTAL DIMENSIONS FOR GRADE AND FABRICATION EFFECTS SUCH AS SHRINKAGE AND ELASTIC SHORTENING.
4. AT ϕ BEARING, FORM A 1 3/4" DIAMETER X 7" DEEP HOLE AT THE FIXED ENDS AND A 6" X 1 3/4" X 7" DEEP SLOT AT THE EXPANSION ENDS FOR A 1 1/2" DIAMETER SMOOTH DOWEL. SEE PLAN AND ELEVATION SHEET FOR LOCATION OF FIXED AND EXPANSION ENDS.
5. TOPS OF BEAMS SHALL BE ROUGH FLOATED AT APPROXIMATELY THE TIME OF INITIAL SET. ENTIRE TOP SHALL BE SCRUBBED TRANSVERSELY WITH A COARSE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING TO THE SLAB. ROUGHENED SURFACE SHALL HAVE AN AMPLITUDE OF APPROXIMATELY 1/4". CONCRETE FINS OR PROJECTIONS SHALL BE REMOVED TO PRODUCE A VERTICAL FACE AT THE EDGE OF THE BEAM.
6. NON-COMPOSITE DEAD LOAD DEFLECTION (Δ_{NC}) AT THE MIDPOINT IS DUE TO THE WEIGHT OF THE SLAB AND COPING.
7. COMPOSITE DEAD LOAD DEFLECTION (Δ_C) AT THE MIDPOINT IS DUE TO THE WEIGHT OF BARRIER.
8. STRANDS SHALL MEET ALL REQUIREMENTS OF ASTM A 416 GRADE 270.
9. PRESTRESSING DATA IS AS FOLLOWS:
 - A. USE 16 - 0.6" DIAMETER LOW-RELAXATION ($A = 0.217$ SQ IN) STRANDS. PRETENSION TOP FOUR (4) STRANDS TO 10,000 LBS EACH. PRETENSION BOTTOM STRANDS TO 43,943 LBS EACH.
 - B. PRETENSIONED STRANDS SHALL BE RELEASED AFTER THE CONCRETE HAS REACHED A MINIMUM STRENGTH (f'_c) OF 4,500 PSI.
 - C. INCLUDING THE TOP STRANDS, THE TOTAL JACKING FORCE OF PRETENSIONING IS 567,316 LBS.
 - D. INCLUDING THE TOP STRANDS, THE NET PRESTRESSING FORCE OF THE STRANDS AFTER ALL LOSSES IS 455,611 LBS.
10. CONCRETE STRENGTH (f'_c) = 5,000 PSI.
11. ALLOWABLE PSC BEAM TENSION = 425 PSI.
12. LIFTING DEVICE SHALL BE DESIGNED TO CARRY THE DEAD LOAD OF BEAM AND DECK.



DETAIL FOR DIAPHRAGM HOLES

BRIDGE NO. 1



GEORGIA DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

BULB TEE, 54 IN PSC BEAM - SPAN 3
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

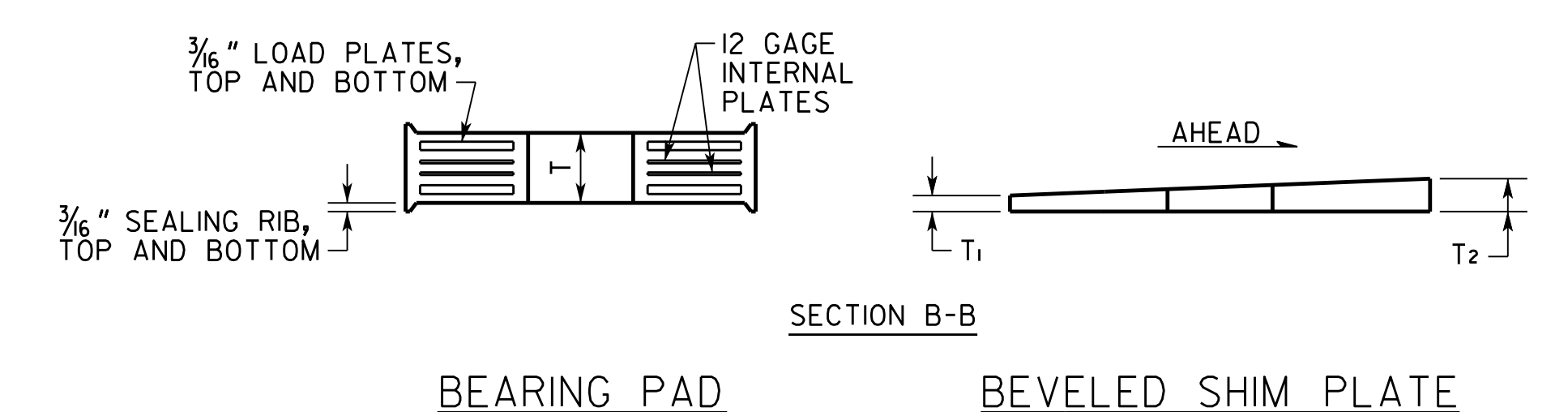
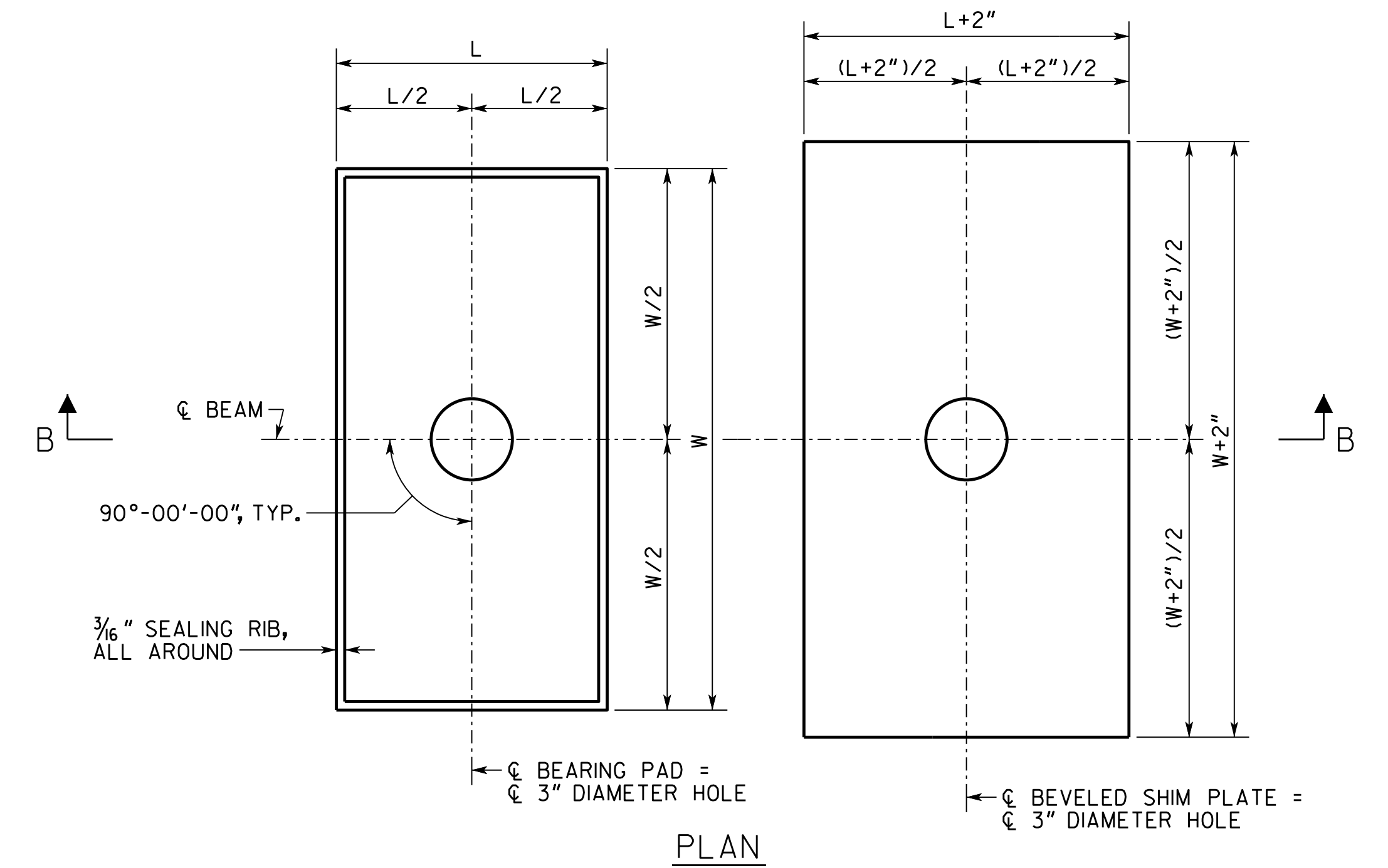
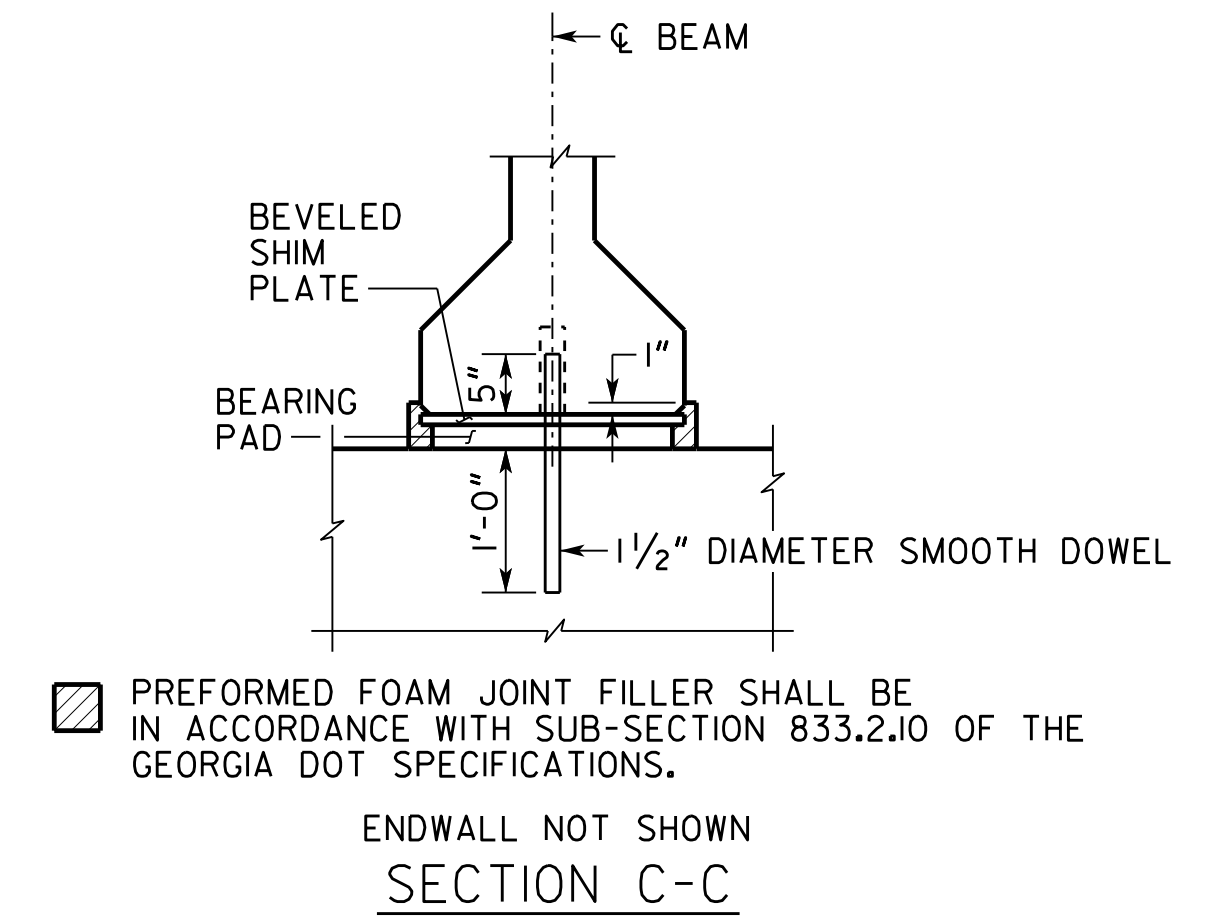
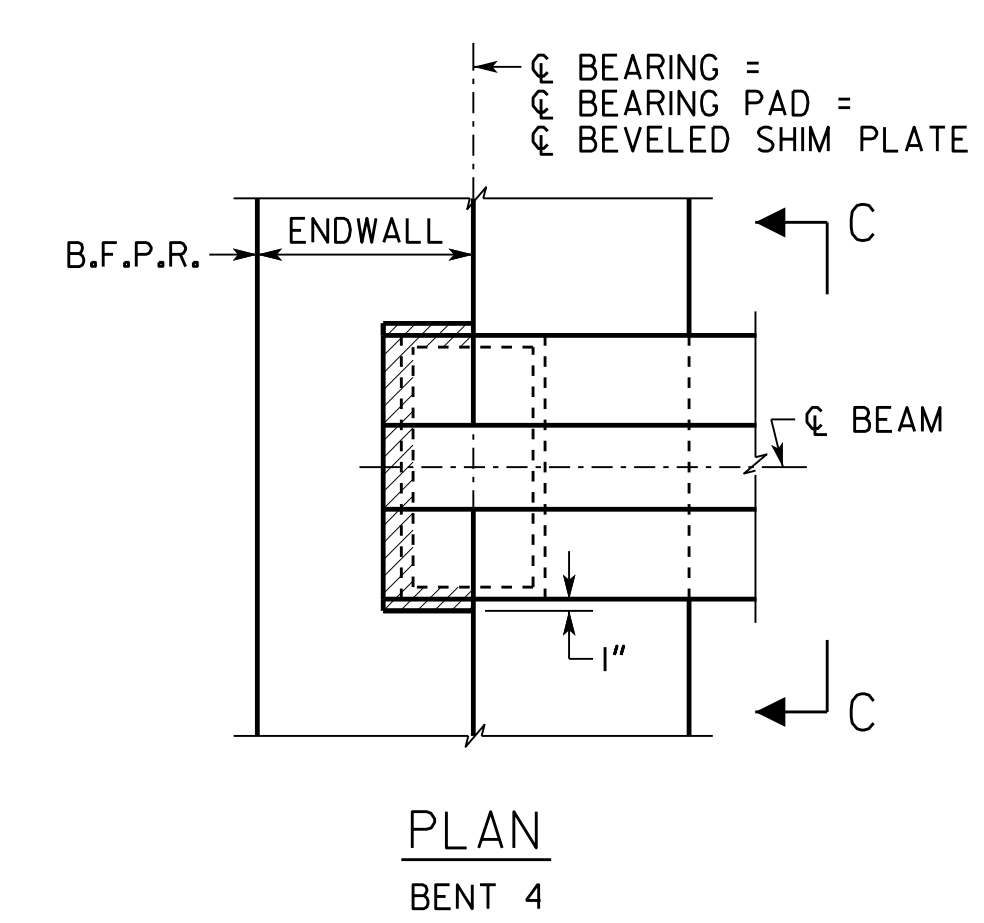
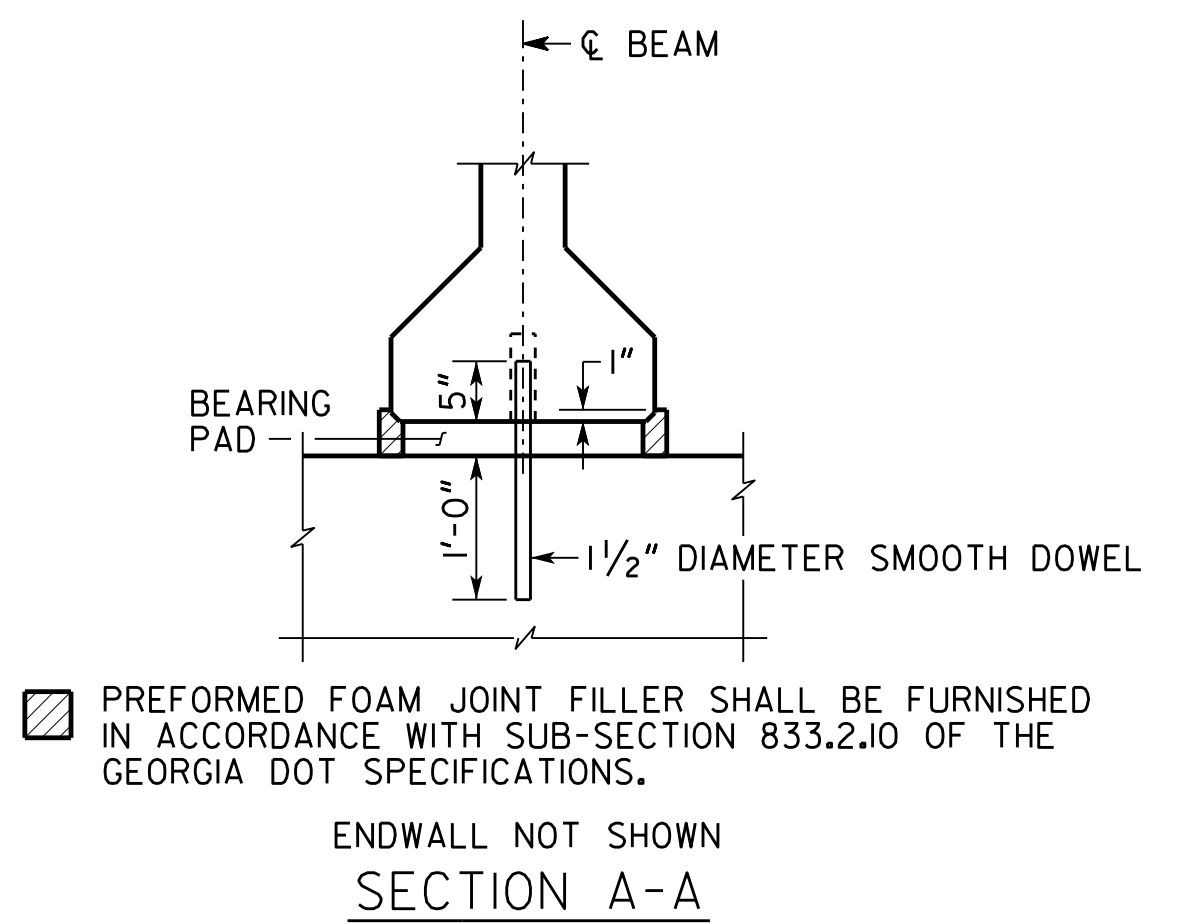
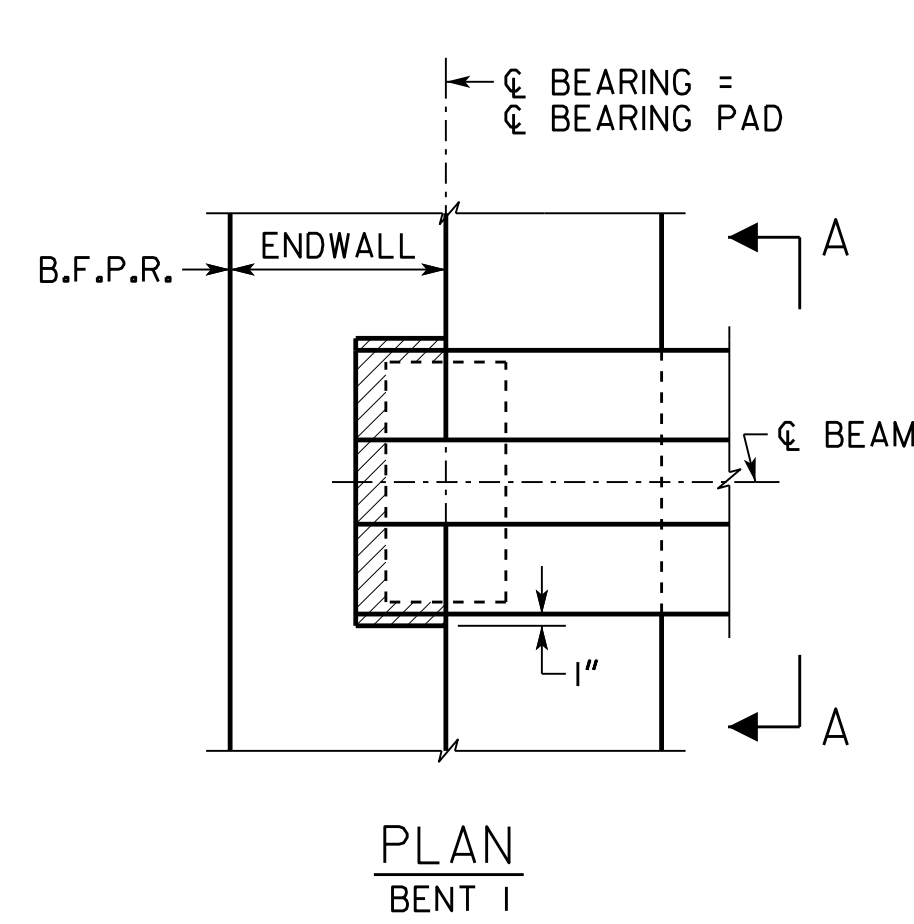
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BRIDGE SHEET 11 OF 18	DRAWN LCY	DESIGN GROUP DLW	APPROVED WMD

1/4" = 1" WHEN PRINTED FULL SIZE

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NOTES

- BEARING PADS HAVE BEEN DESIGNED ACCORDING TO AASHTO BRIDGE DESIGN SPECIFICATIONS, SECTION 14.7.6 METHOD A AND SHALL BE FURNISHED IN ACCORDANCE WITH AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 18, BEARING DEVICES.
- 1/2" DIAMETER SMOOTH DOWELS SHALL BE ASTM A 709 GRADE 50.
- BEARING PADS SHALL BE MADE OF 60 DUROMETER HARDNESS NEOPRENE, GRADE 2 OR HIGHER.
- 3" DIAMETER HOLE IN BEARING PADS MAY BE FORMED OR DRILLED.
- BEARING PADS SHALL HAVE 1/4" COVER ON THE TOP, BOTTOM, SIDES AND AROUND THE HOLE.
- 3/8" LOAD PLATES AND 12 GAGE INTERNAL PLATE(S) (IF REQUIRED) SHALL BE ASTM A 709 GRADE 36 OR ASTM A 1011 GRADE 36.
- NUMBER OF INTERNAL PLATES SHOWN FOR ILLUSTRATION PURPOSES ONLY. THE NUMBER OF INTERNAL PLATE(S) SPECIFIED SHALL BE EQUALLY SPACED BETWEEN LOAD PLATES.
- USE 1/2° MOLD DRAFT IS OPTIONAL.
- BEVELED SHIM PLATES SHALL BE ASTM A 709 GRADE 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123

BENT	BEARING PADS								BEVELED SHIM PLATES	
	W	L	T	NUMBER OF INTERNAL PLATE(S)	DESIGN SHEAR DEFLECTION	DESIGN LOADS (KIPS)			T1	T2
						DEAD LOAD	LIVE LOAD (NO IMPACT)	DEAD LOAD + LIVE LOAD		
1	22"	10"	2 3/4"	3	7/16"	85.8	67.8	153.6	-	-
2BK	22"	10"	2 3/4"	3	0	67.8	67.8	135.6	-	-
2AH	22"	10"	2 3/4"	3	0	109.5	80.7	190.2	1/4"	3/8"
3BK	22"	10"	2 3/4"	3	9/16"	109.5	80.7	190.2	1/4"	3/8"
3AH	22"	10"	3 1/4"	2	9/16"	47.6	58.2	105.8	1/4"	1/2"
4	22"	10"	3 1/4"	2	13/16"	65.6	58.2	123.8	1/4"	1/2"

BRIDGE NO. 1

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DEPARTMENT OF TRANSPORTATION
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BEARING PAD DETAILS

CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 001691

NO SCALE FEBRUARY 2018

DRAWING NO. 35-0012
BRIDGE SHEET 12 OF 18

DESIGNED VO
DRAWN LCY/VO

CHECKED KJK
DESIGN GROUP DLW

REVIEWED DLC/SKG
APPROVED WMD

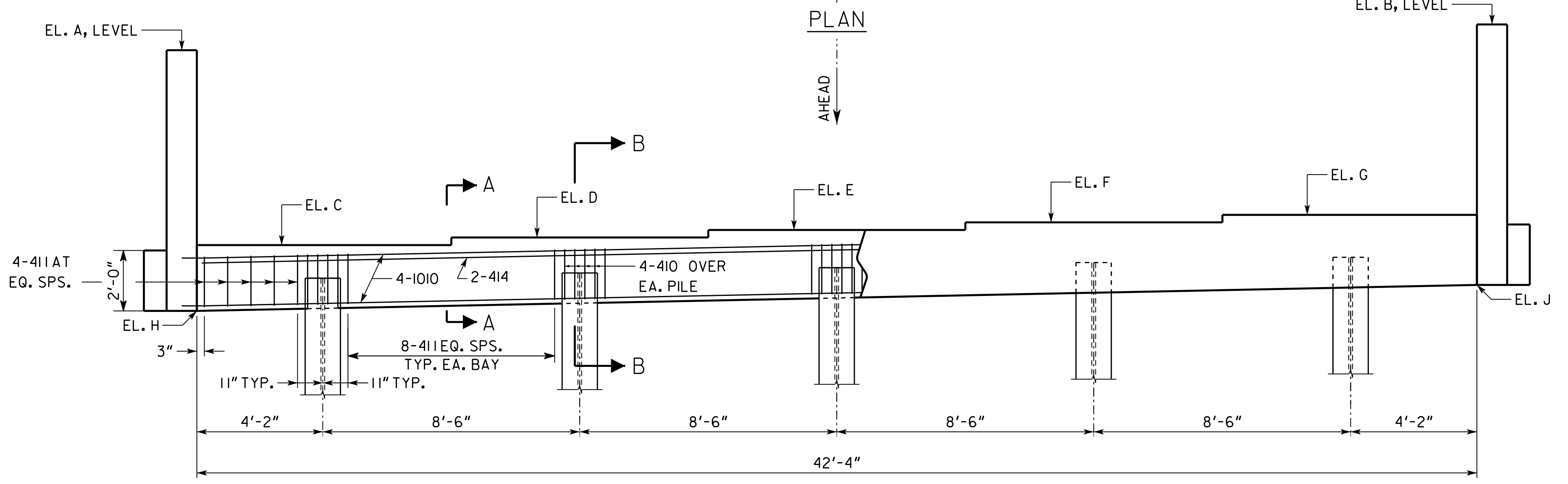
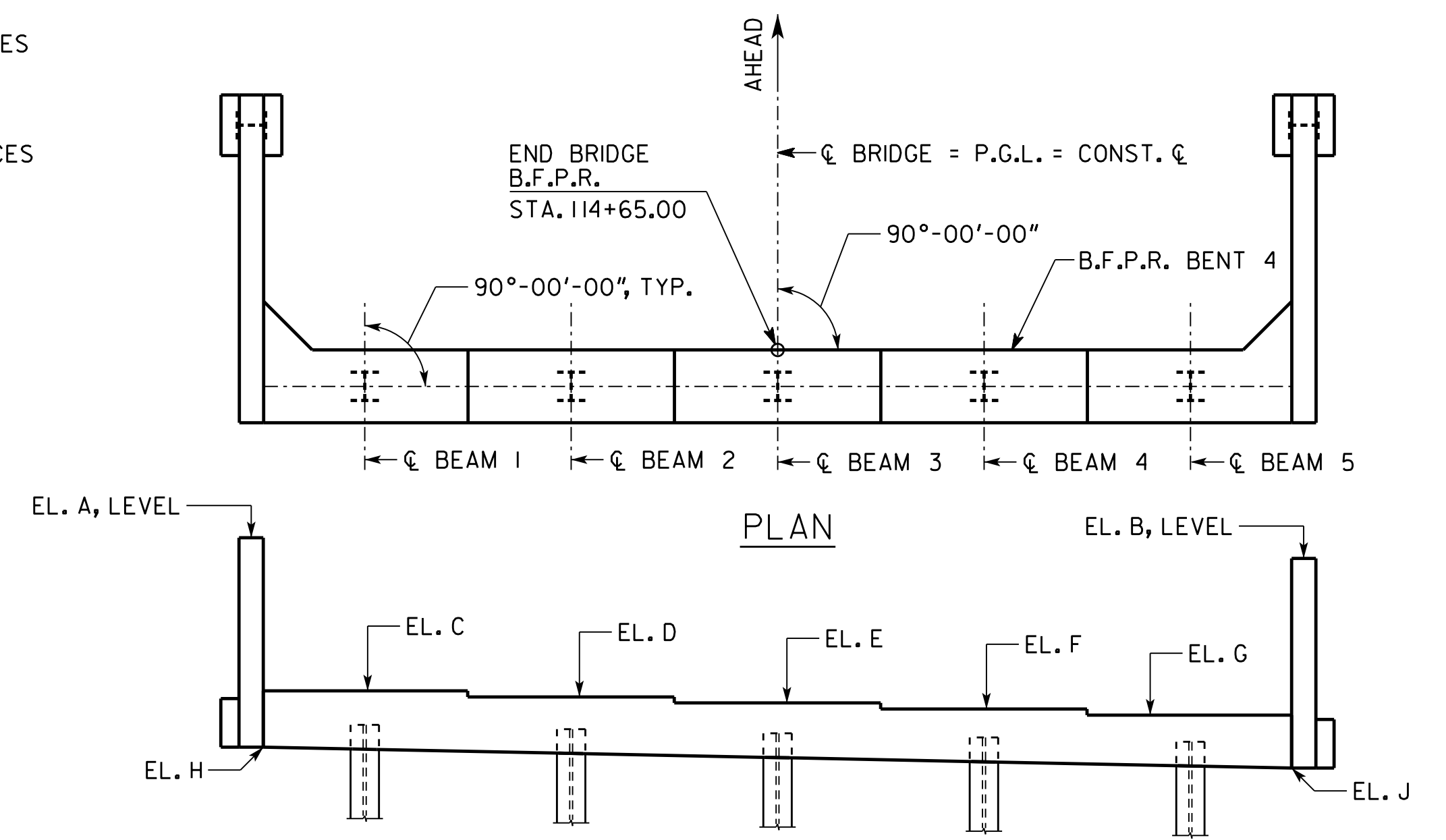
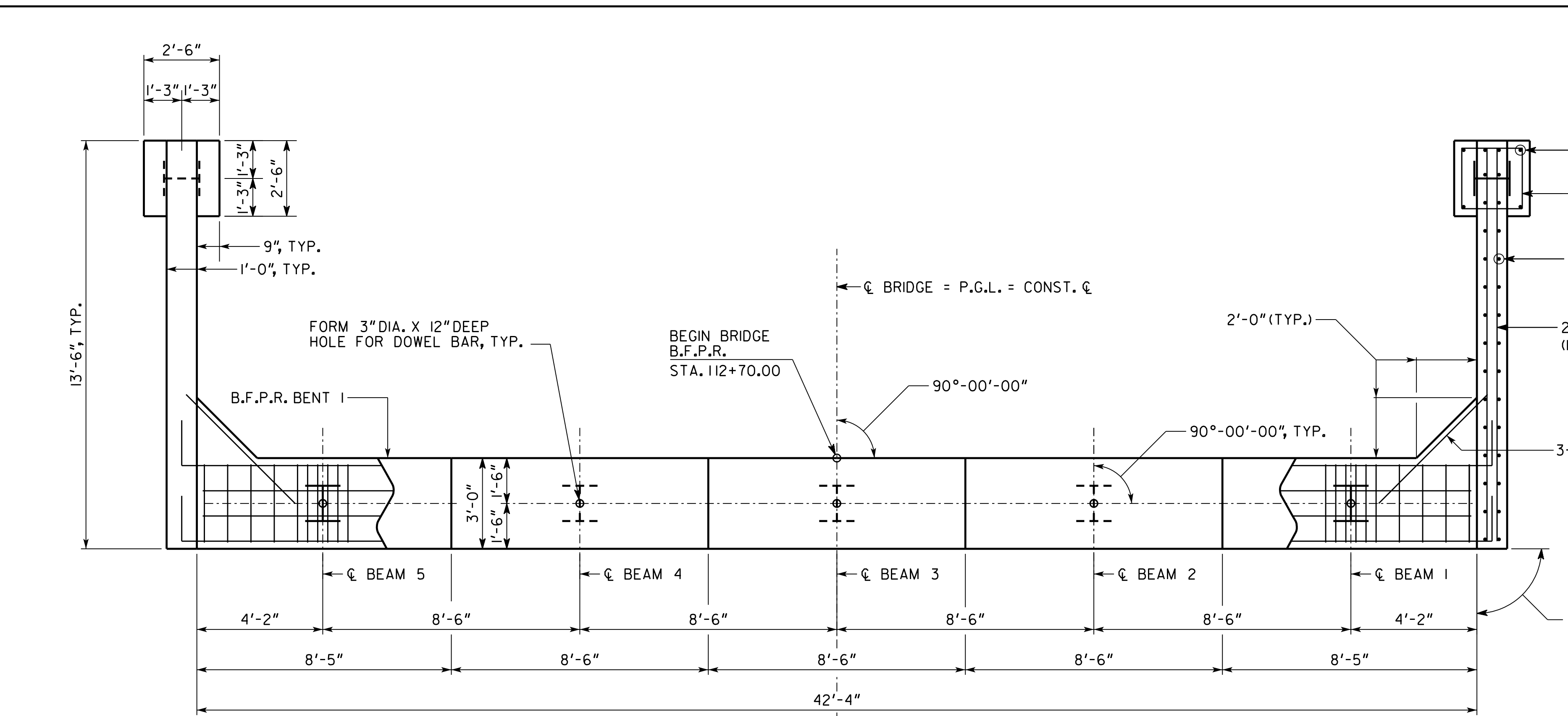
1/4" = 1" WHEN PRINTED FULL SIZE

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- NOTES:
- POUR WINGWALLS MONOLITHICALLY WITH CAP.
 - SEE GA. STD. NO. 9037 FOR DRAINAGE DETAILS AT END BENTS.
 - WINGWALL PILES NOT SHOWN IN ELEVATION.



	A	B	C	D	E	F	G	H	J
BENT 1	757.51	758.36	751.06	751.23	751.40	751.57	751.74	748.91	749.66
BENT 4	761.87	761.02	754.88	754.71	754.54	754.37	754.20	752.80	752.05

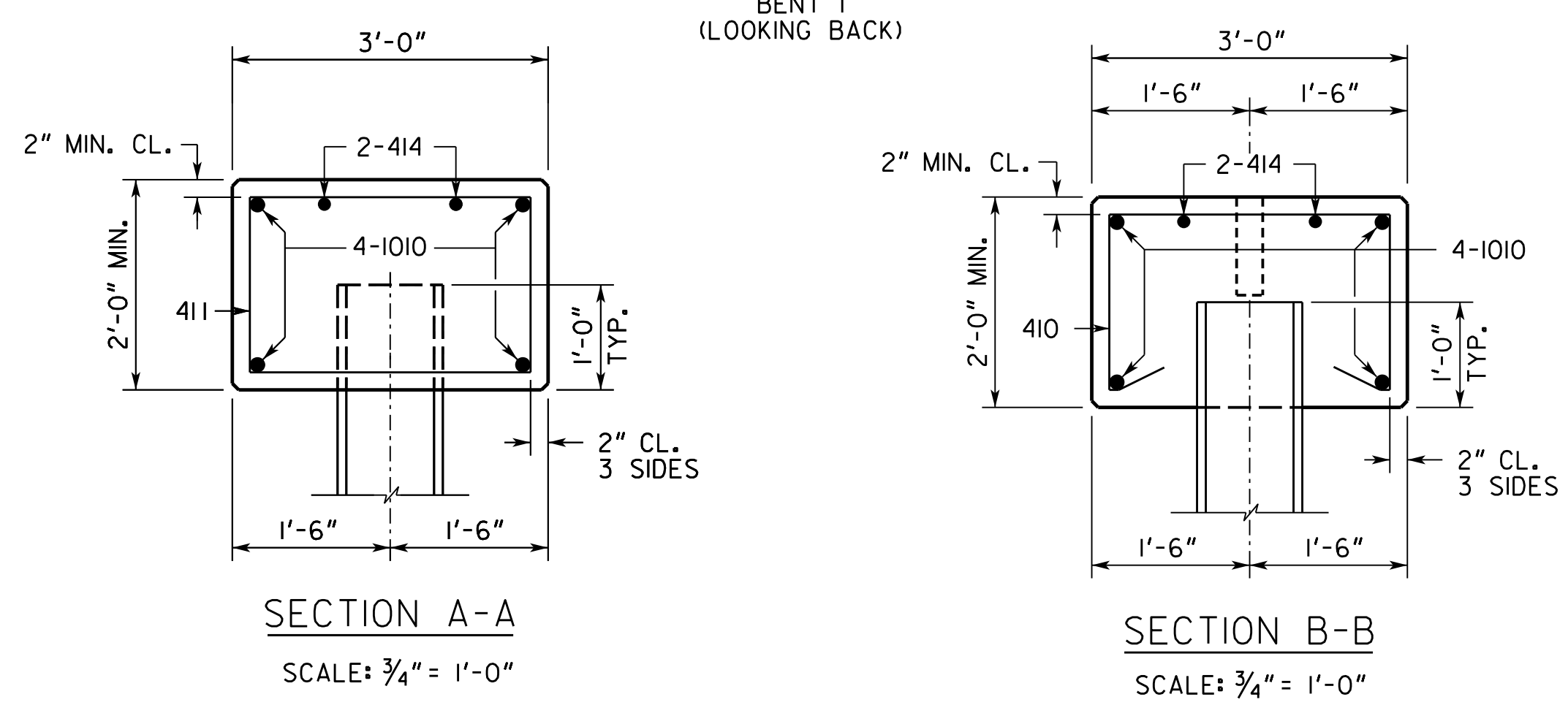
ITEM	BENT 1	BENT 4
TWENTY-FOUR HOUR ACCELERATED CONC, CY	19.9	20.1
LB BAR REINFORCEMENT STEEL	2,357	2,357

PILES ARE DESIGNED FOR A MAXIMUM FACTORED LOAD OF 261 KIPS FOR BENT 1 AND 218 KIPS FOR BENT 4.
ALL PILES SHALL BE STEEL H, HP 14 X 89

PLAN DRIVING OBJECTIVE

ALL PILES SHALL BE DRIVEN TO THE FOLLOWING DRIVING RESISTANCE AFTER THE MINIMUM TIP ELEVATIONS ARE ACHIEVED.

BENTS	DRIVING RESISTANCE (KIPS)	MINIMUM TIP
1	462	707.5
4	550	707



BRIDGE NO. 1

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END BENTS
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

SCALE: 3/8" = 1'-0" (UNLESS OTHERWISE NOTED) FEBRUARY 2018

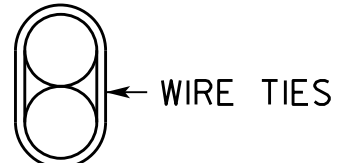
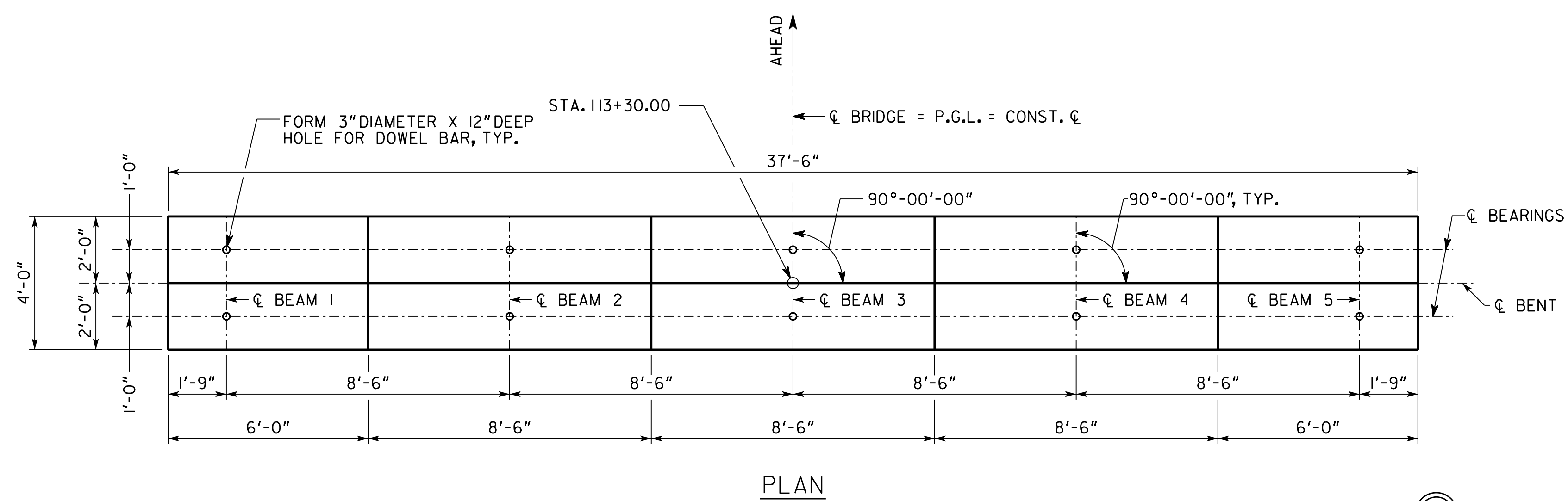
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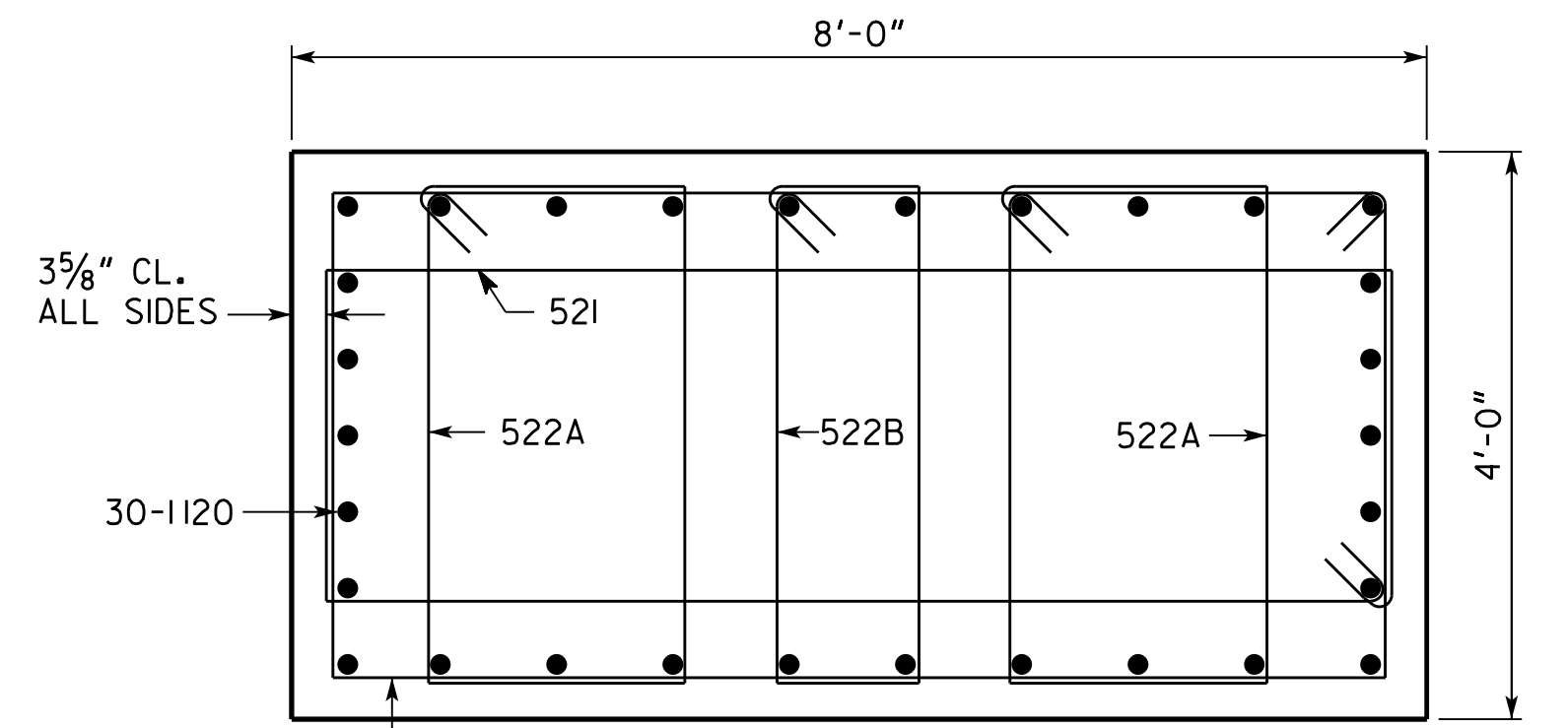
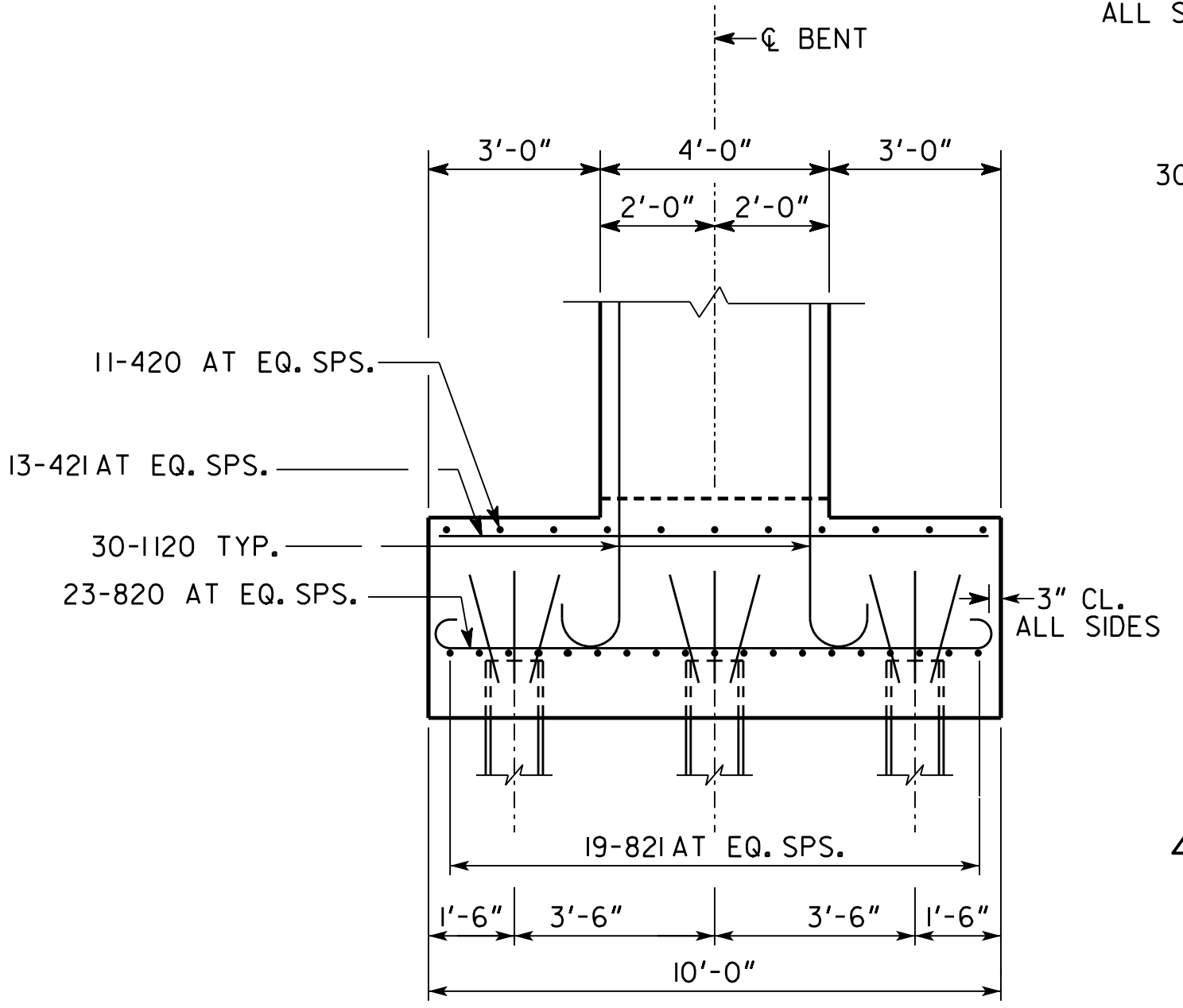
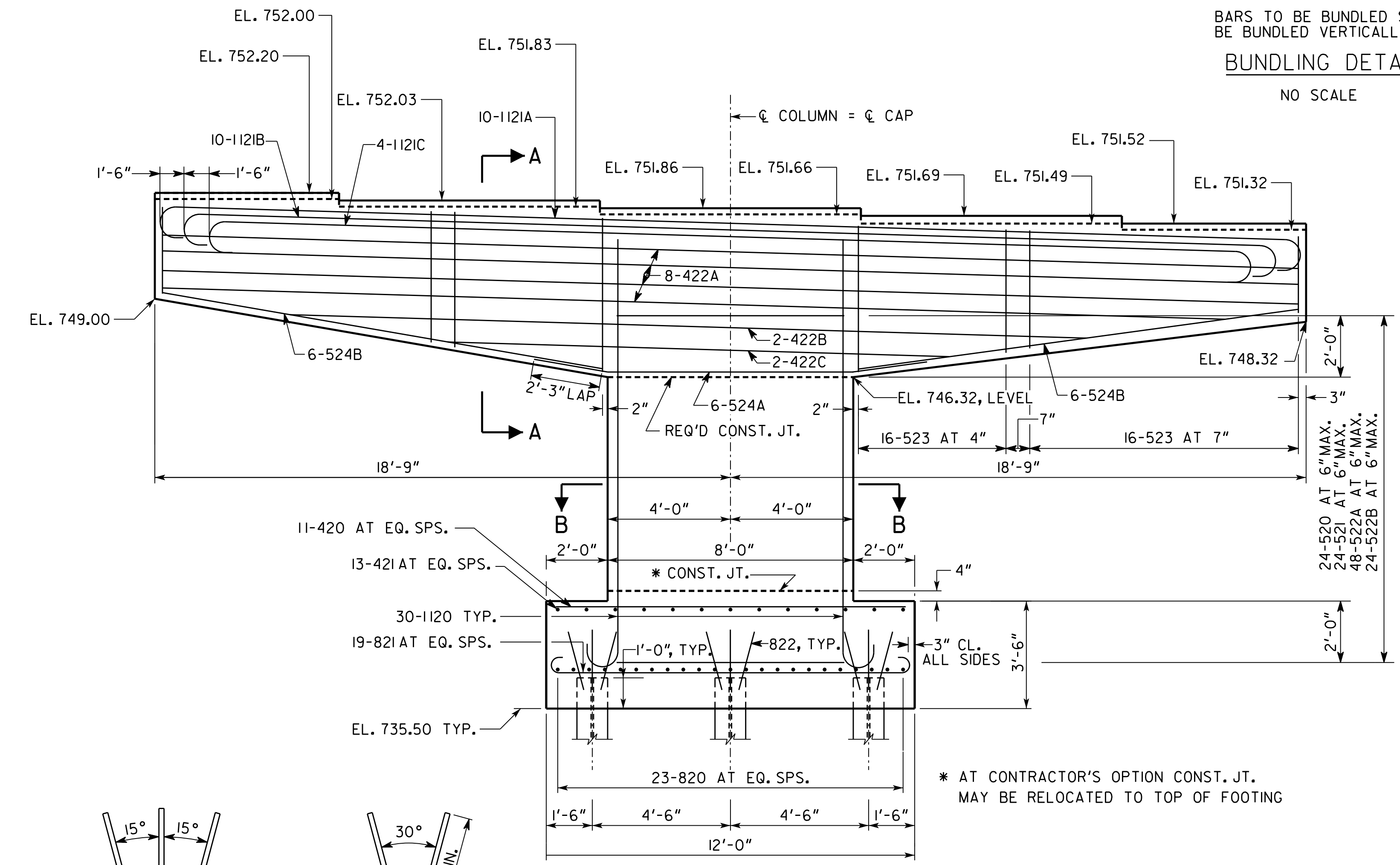
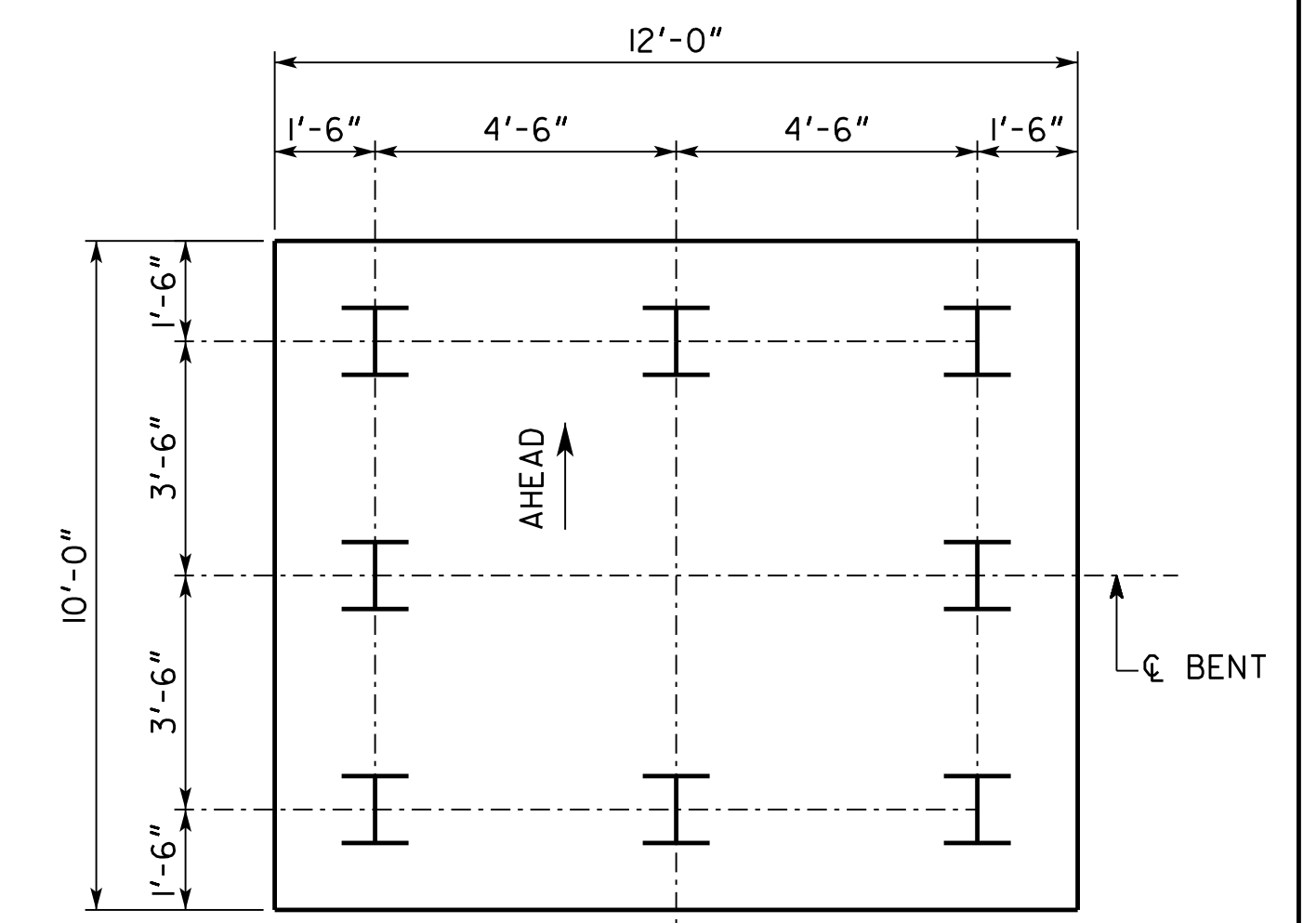
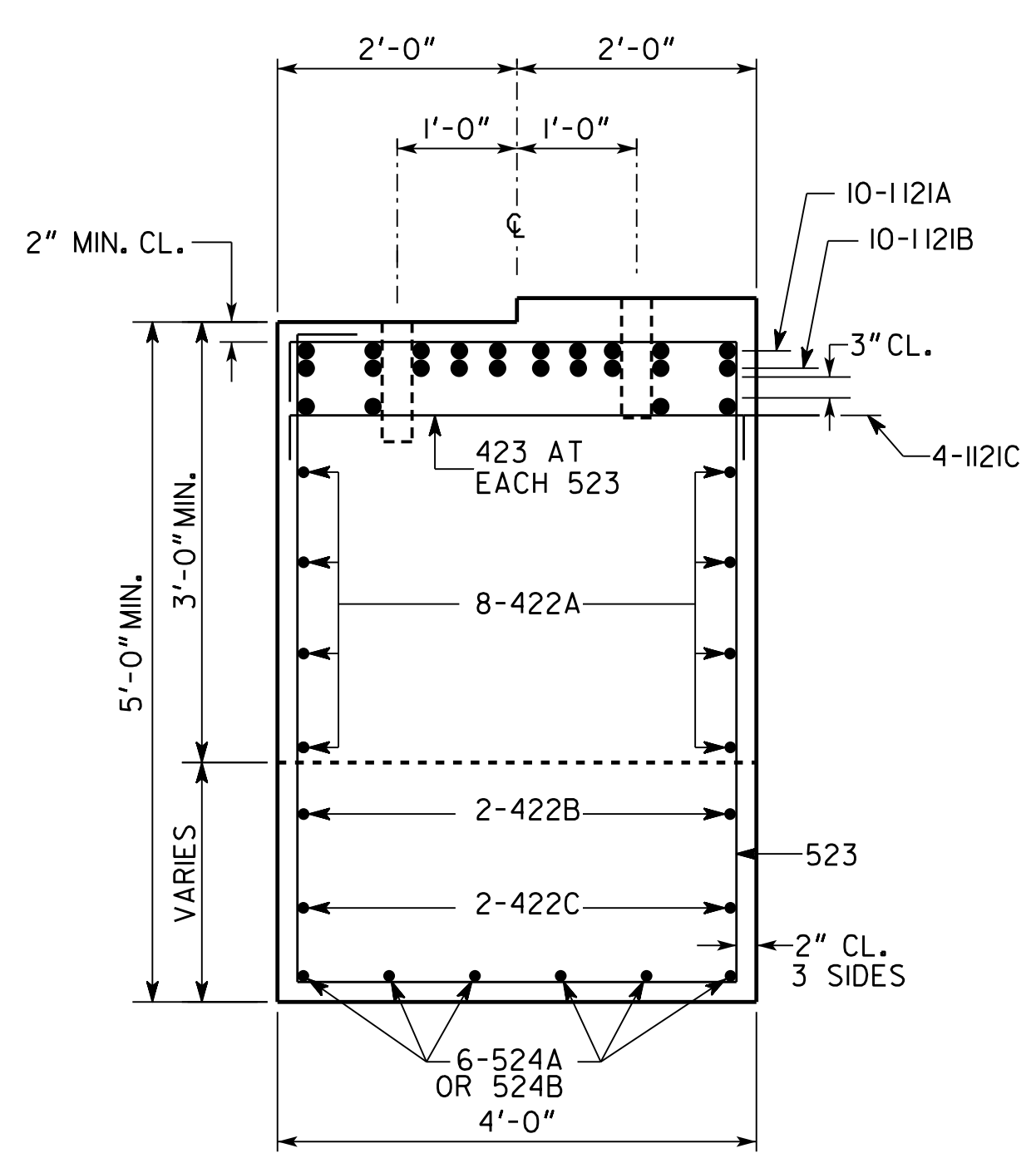
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BARS TO BE BUNDLED SHALL BE BUNDLED VERTICALLY

BUNDLING DETAIL

NO SCALE



NOTE: EXTEND 1120 BARS 4'-0" MINIMUM INTO CAP.

SUBSTRUCTURE QUANTITIES	
ITEM	BENT 2
TWENTY-FOUR HOUR ACCELERATED CONC, CY	49.5
LB BAR REINFORCEMENT STEEL	12,847

BRIDGE NO. 1

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DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

ALTERNATE 1- BENT 2
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY

SCALE: 3/8" = 1'-0" (UNLESS OTHERWISE NOTED) FEBRUARY 2018

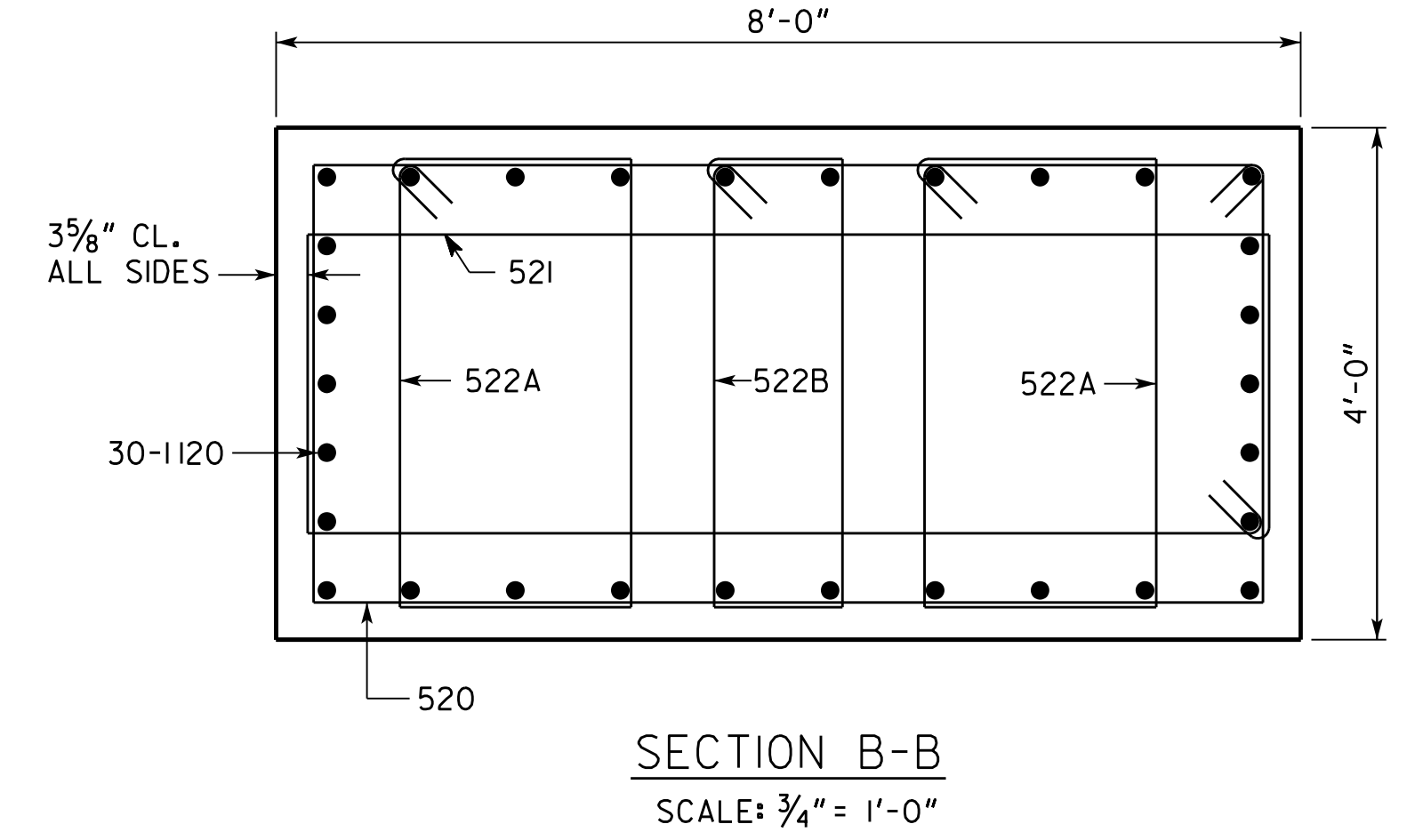
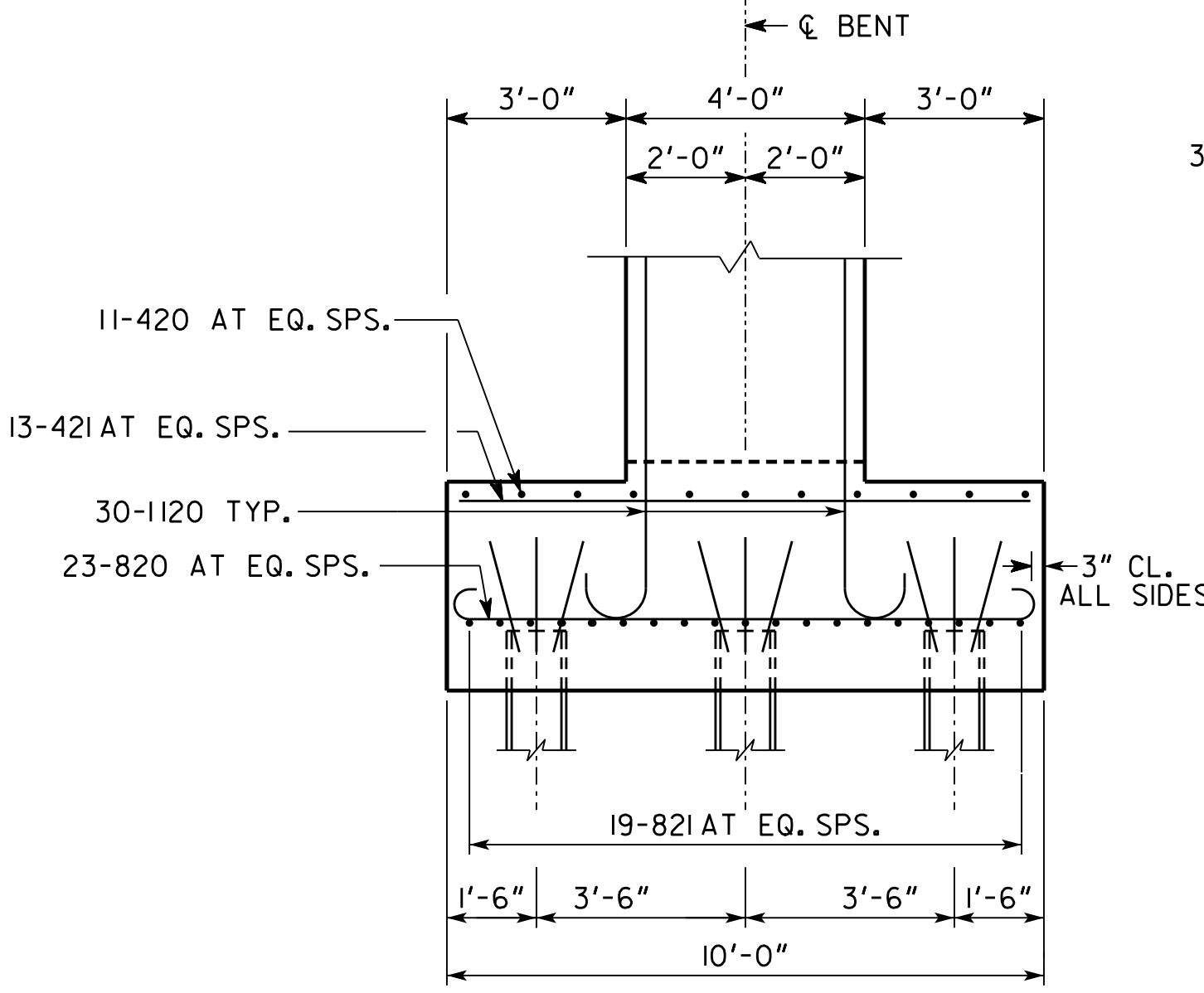
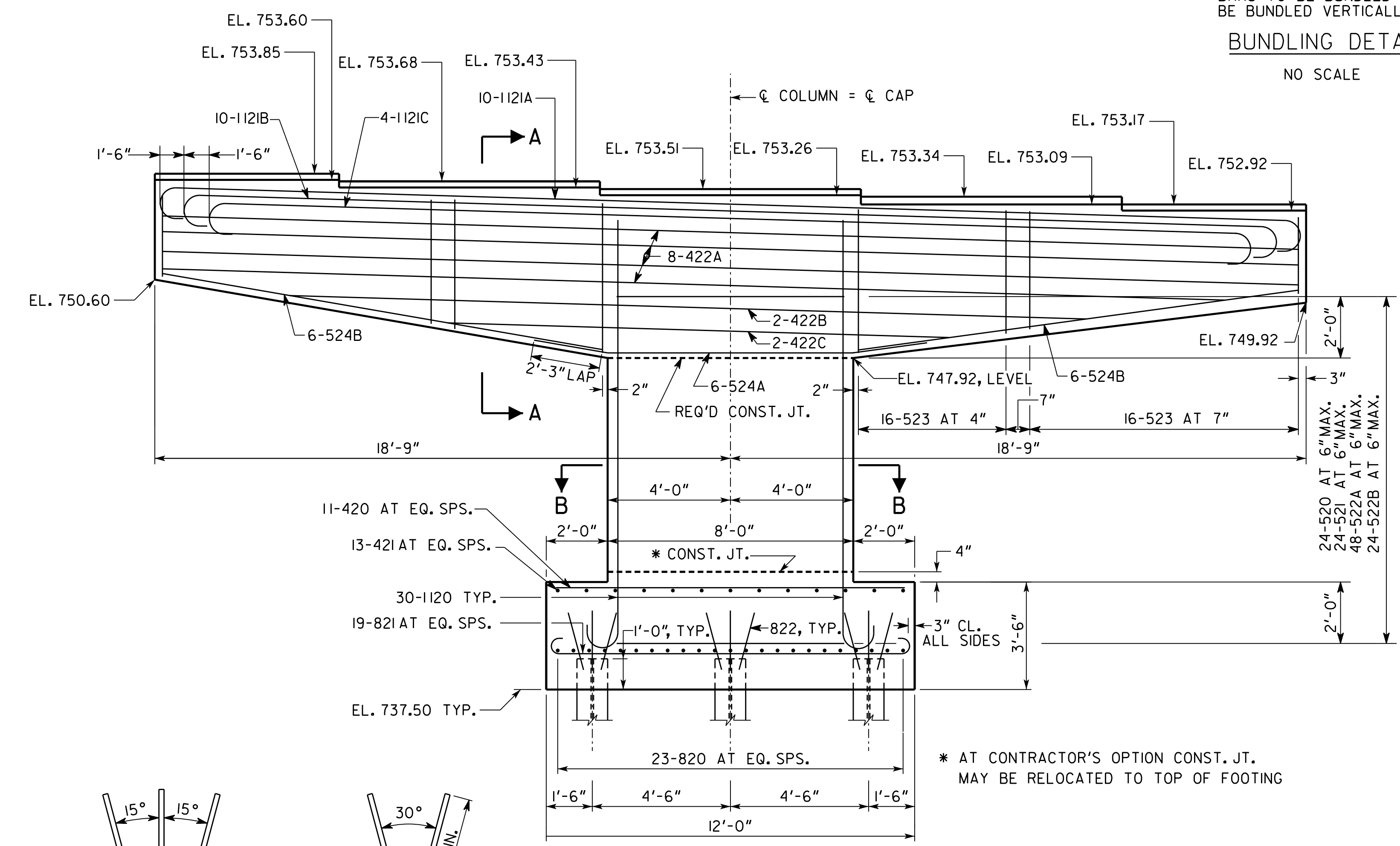
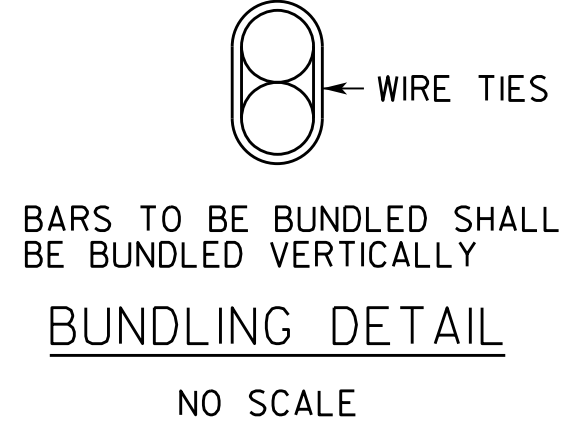
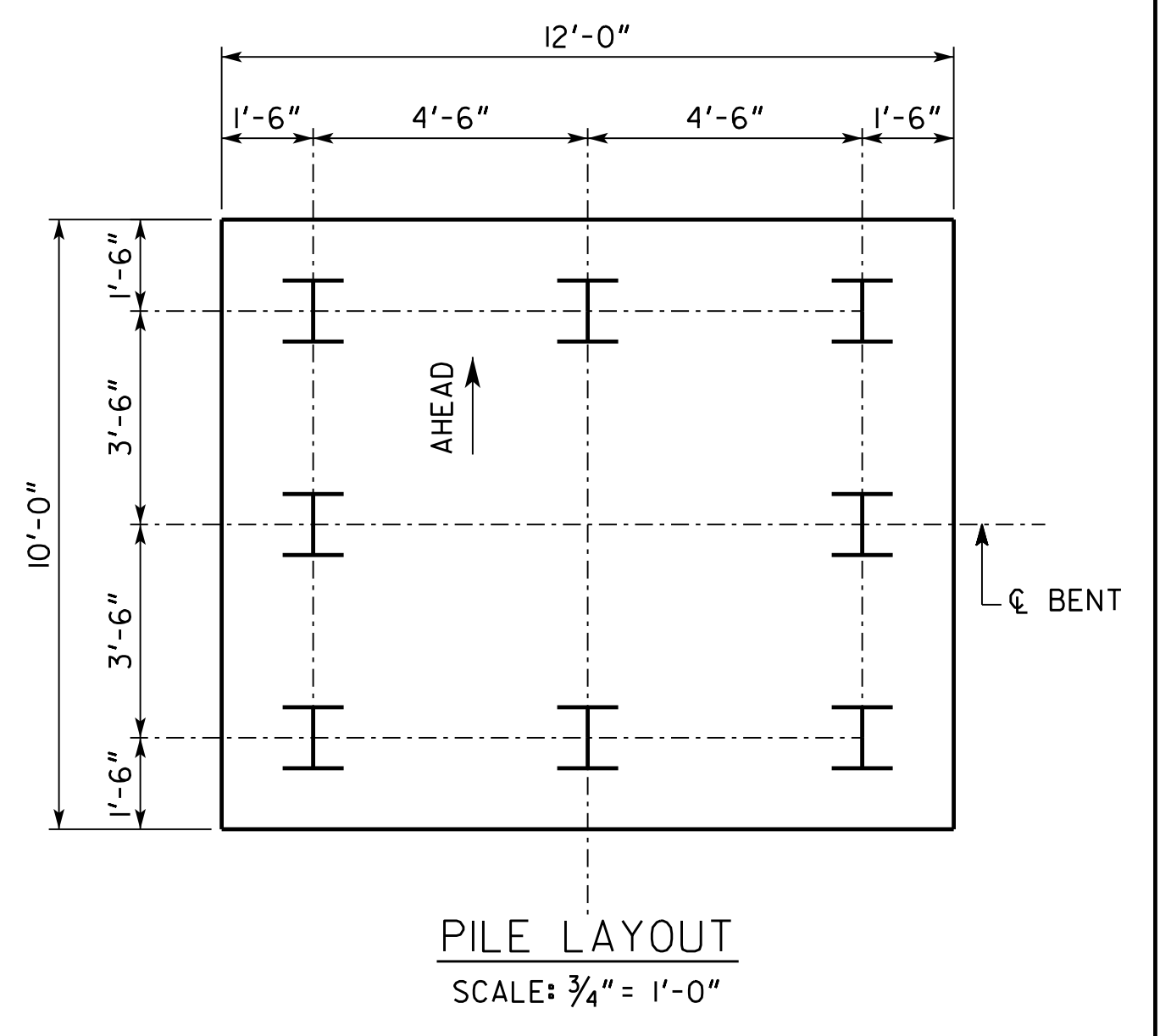
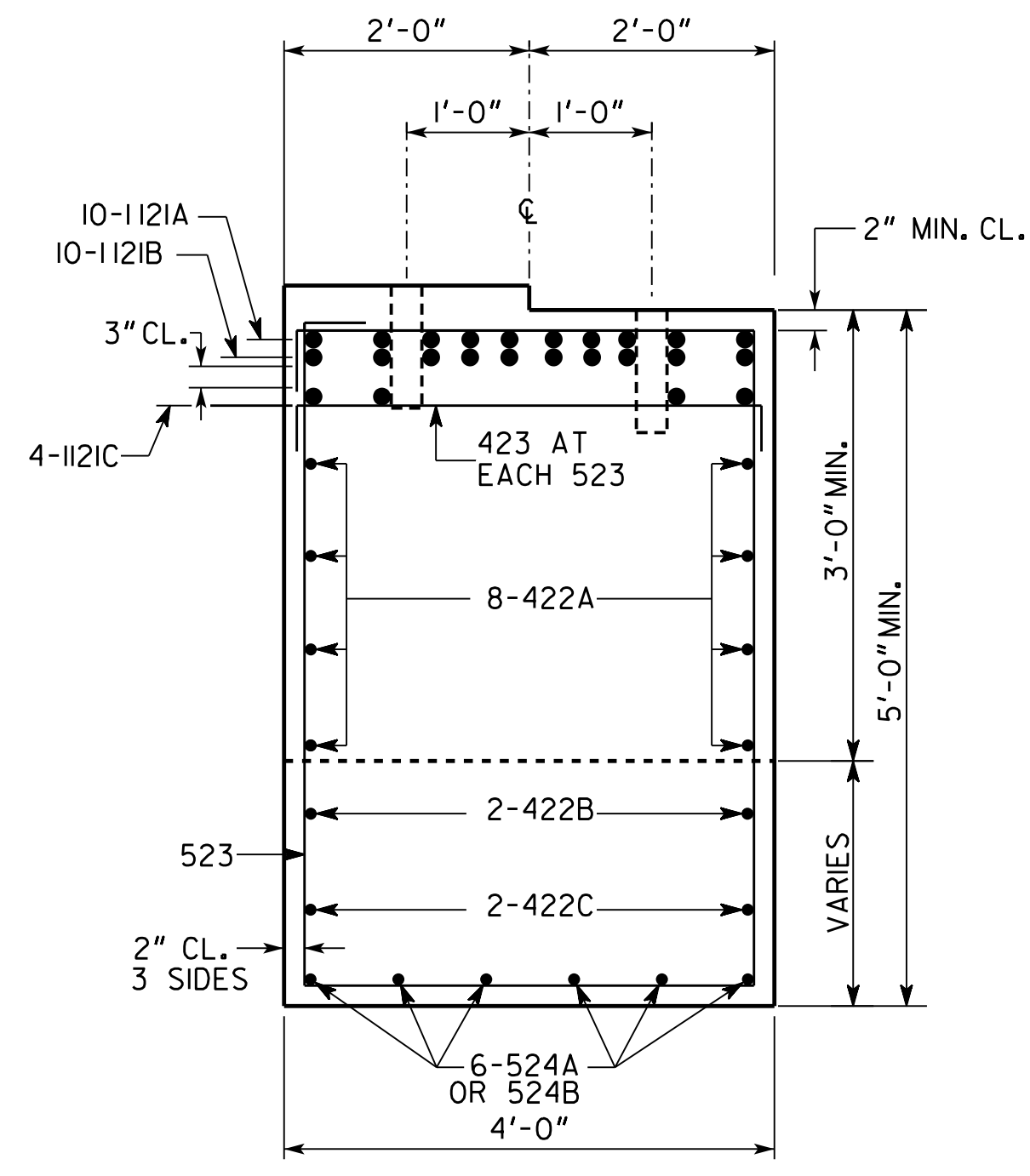
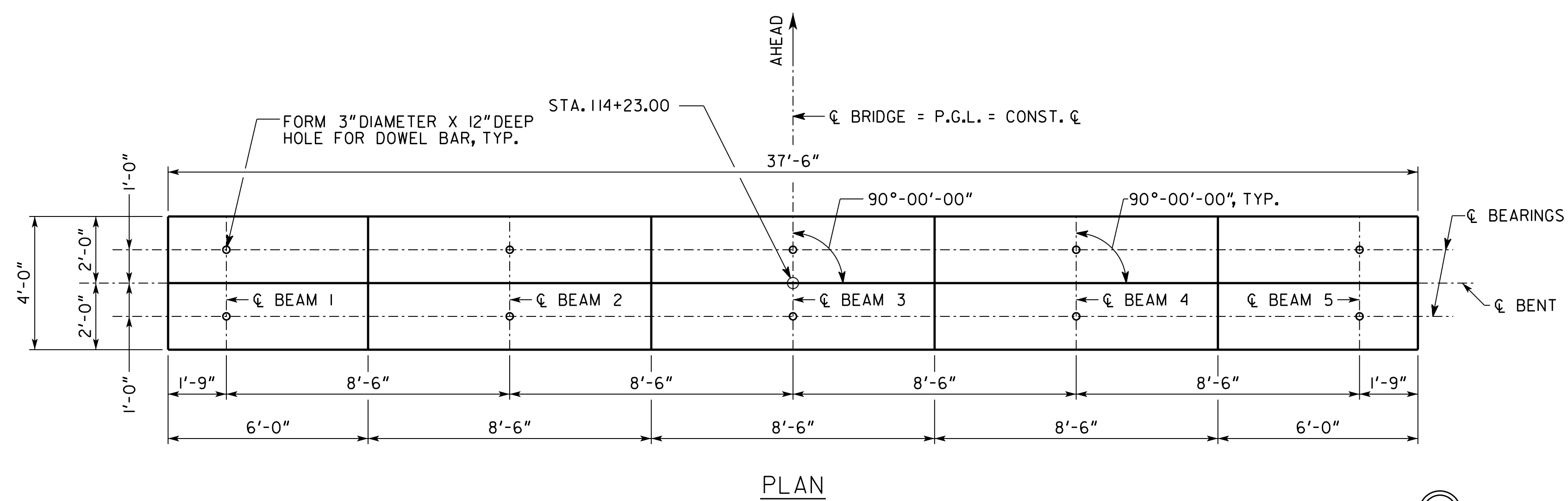
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BRIDGE SHEET 14 OF 18	DRAWN VO	DESIGN GROUP DLW	APPROVED WMD

1 INCH WHEN PRINTED FULL SIZE

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NOTE: EXTEND 1120 BARS 4'-0" MINIMUM INTO CAP.

SUBSTRUCTURE QUANTITIES	
ITEM	BENT 3
TWENTY-FOUR HOUR ACCELERATED CONC, CY	49.0
LB BAR REINFORCEMENT STEEL	12,847

BRIDGE NO. 1



GEORGIA
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

ALTERNATE 1- BENT 3
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY

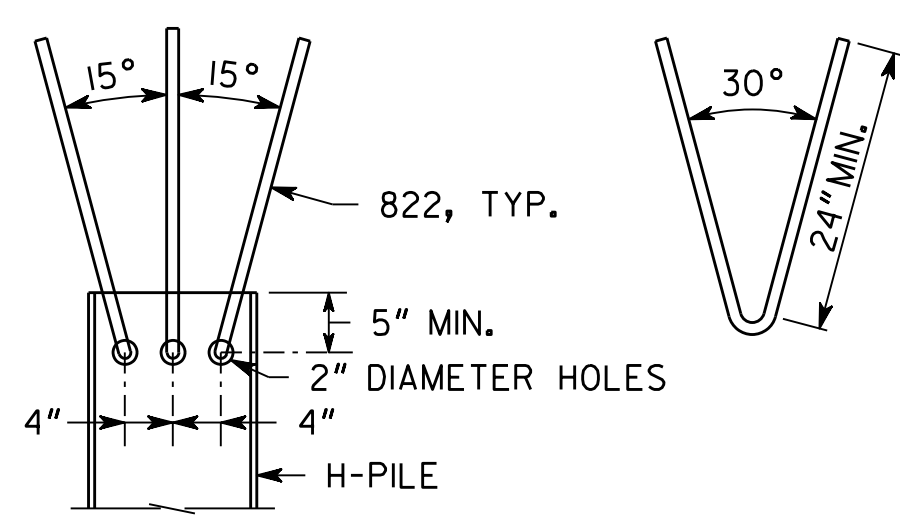
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DRAWING NO. 35-0015	DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
BRIDGE SHEET 15 OF 18	DRAWN VO	DESIGN GROUP DLW	APPROVED WMD

THE PILES ARE DESIGNED FOR A MAXIMUM FACTORED LOAD OF 303 KIPS.
ALL PILES SHALL BE STEEL H, HP 14 X 89

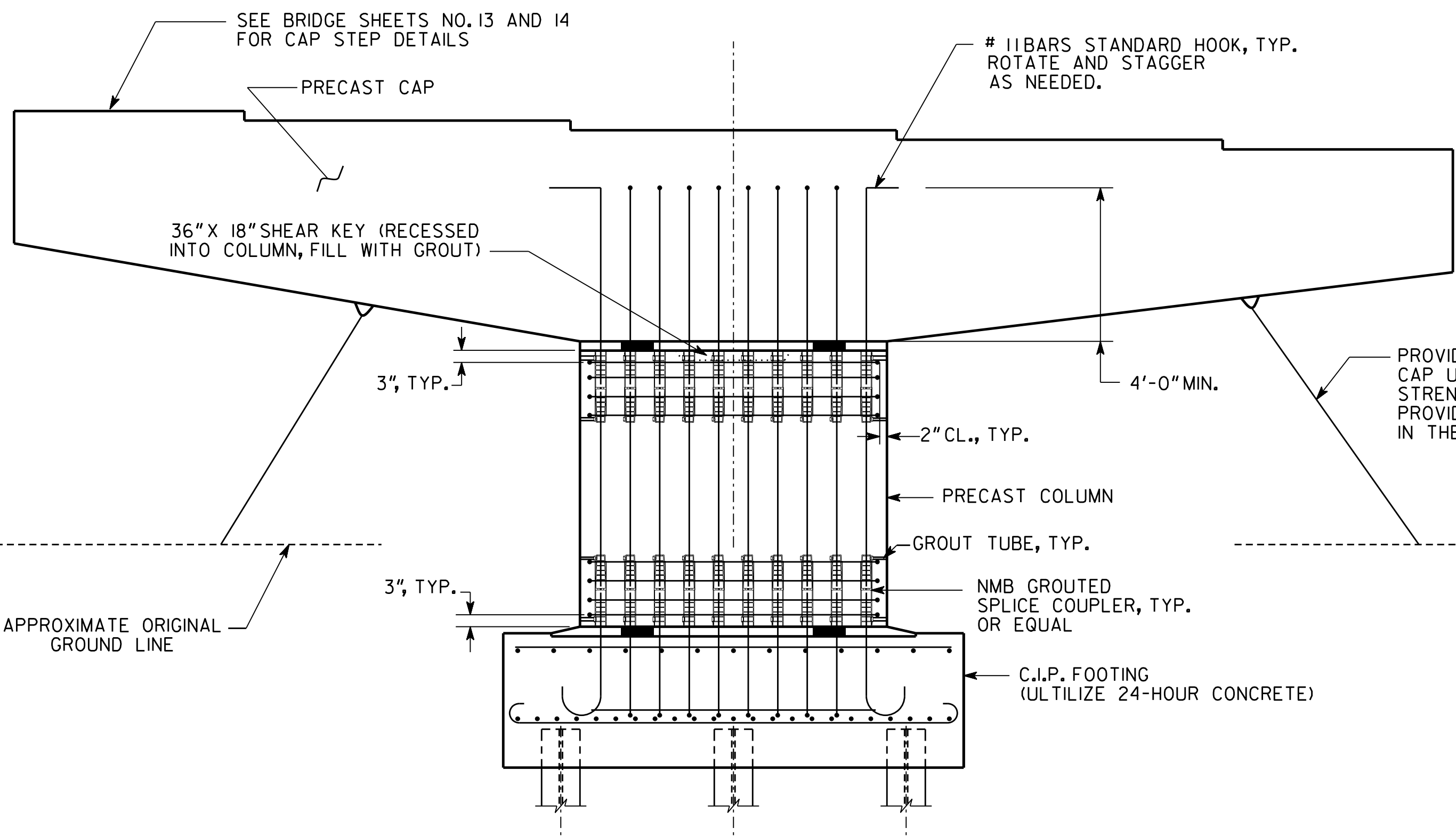
PLAN DRIVING OBJECTIVE
ALL PILES SHALL BE DRIVEN TO A DRIVING RESISTANCE OF 466 KIPS AFTER A MINIMUM TIP ELEVATION OF 707 IS ACHIEVED.

* AT CONTRACTOR'S OPTION CONST. JT. MAY BE RELOCATED TO TOP OF FOOTING

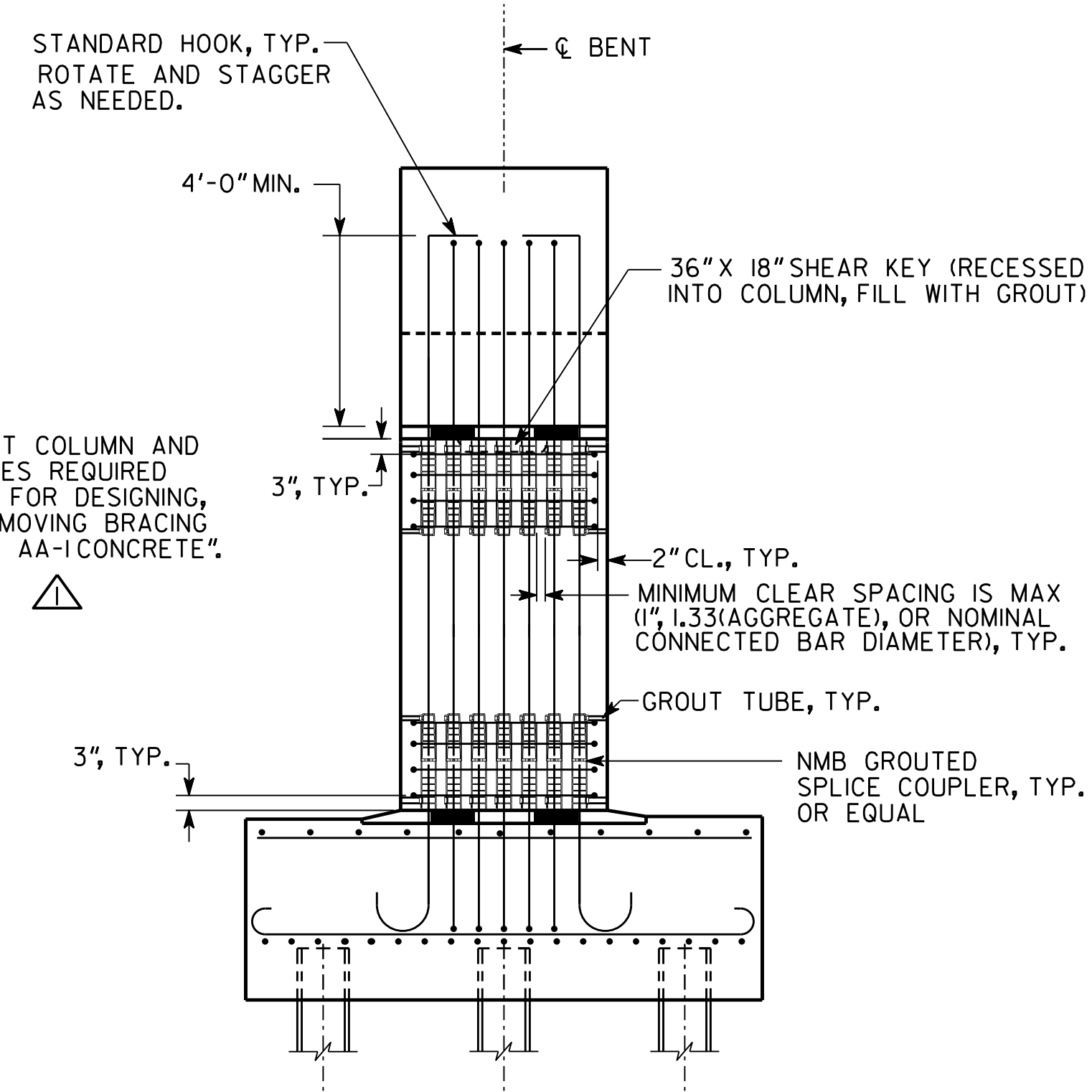


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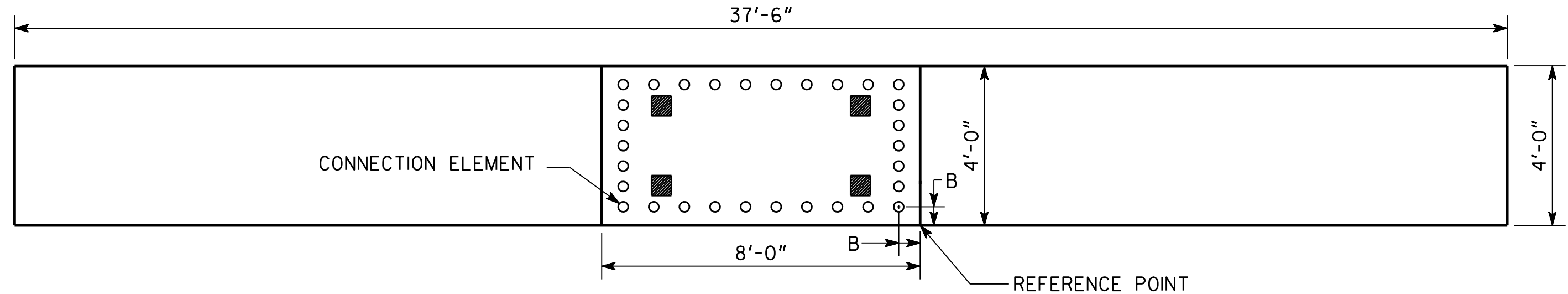
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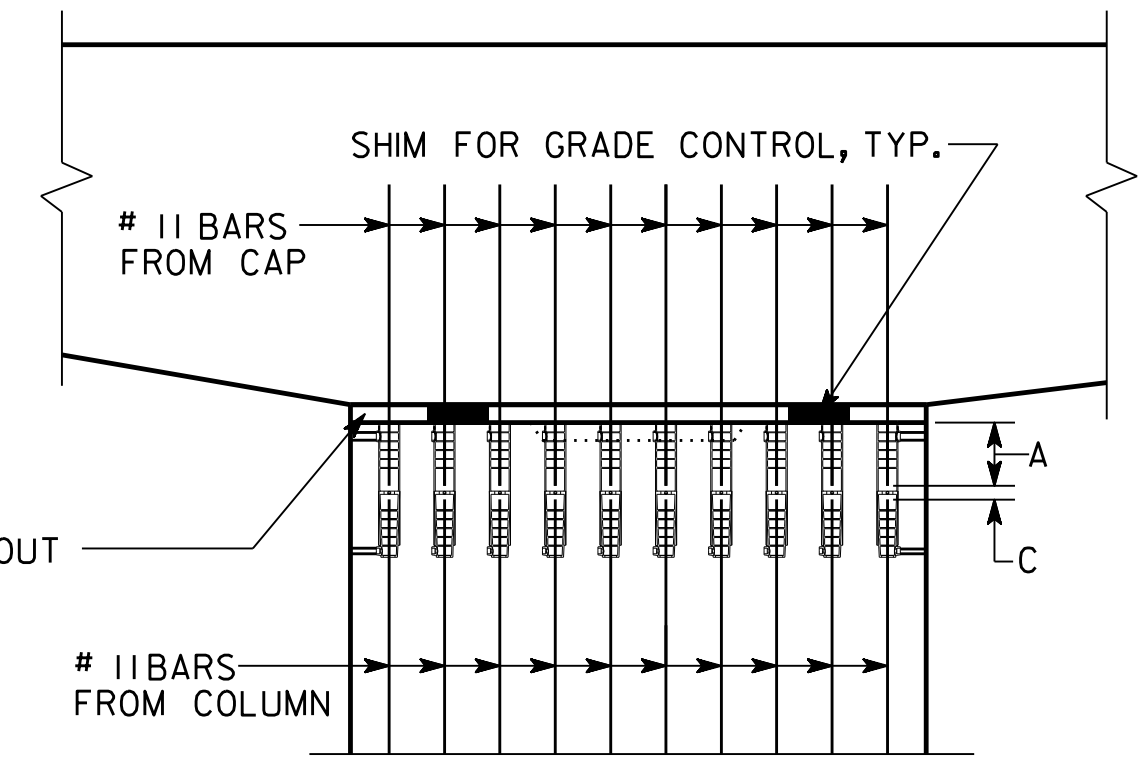
ELEVATION



SIDE ELEVATION

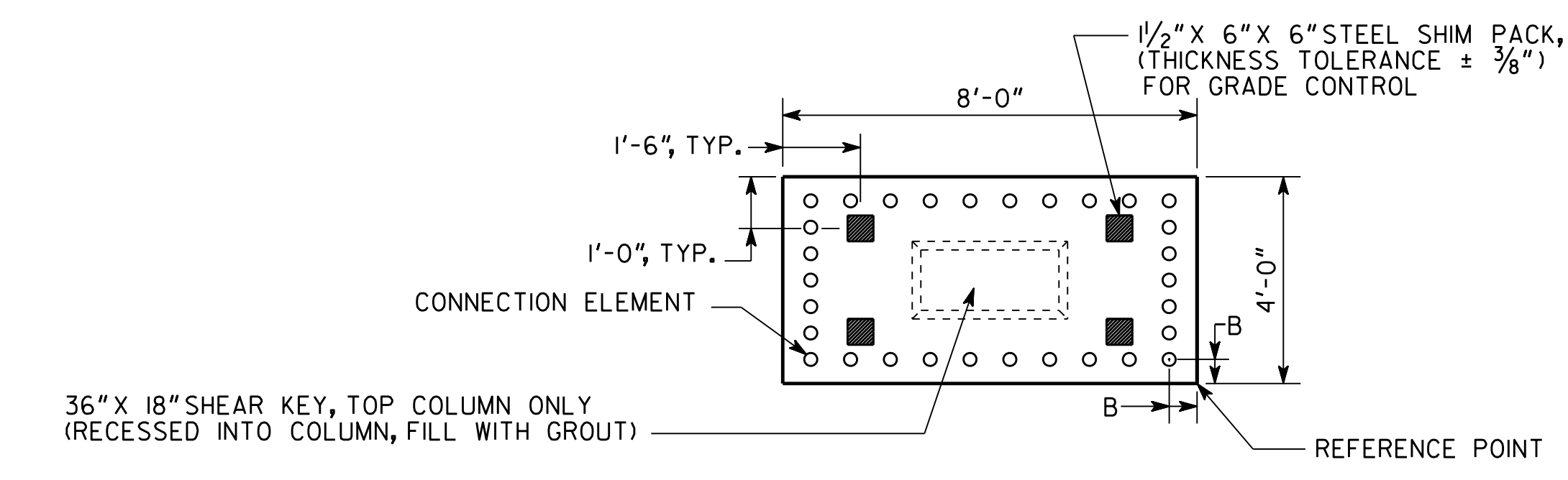


BENT CAP PLAN

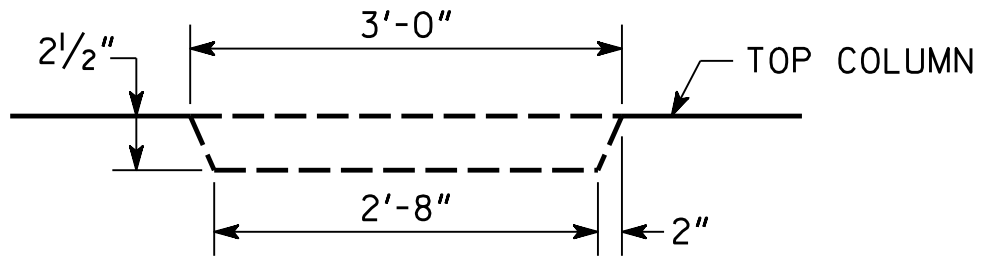


GRouted BAR COUPLER DETAILS

CAP/COLUMN CONNECTION ELEVATION VIEW SHOWN (SIDE VIEW SIMILAR)



GRouted COUPLER DETAILS AT TOP AND BOTTOM OF COLUMN



SHEAR KEY DETAIL

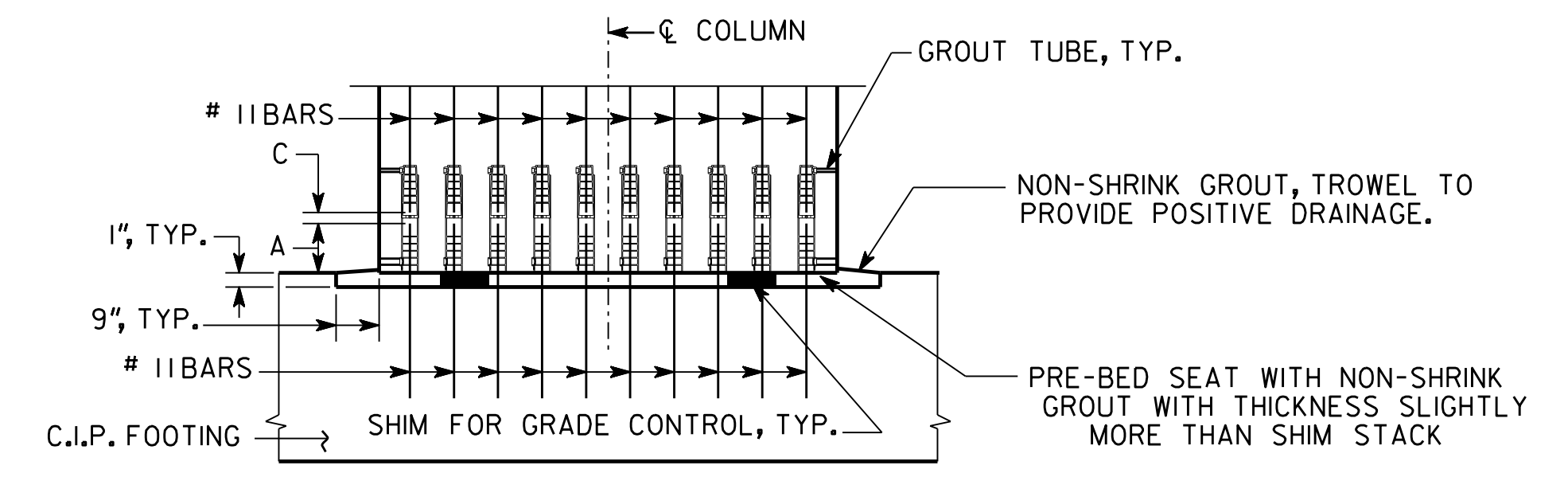
ELEVATION VIEW SHOWN (SIDE VIEW SIMILAR)

NOTES

- SEE BRIDGE SHEETS 13 AND 14 FOR DIMENSION, ELEVATIONS AND REINFORCEMENT DETAILS.
- PROVIDE A SUITABLE LIFTING DEVICE FOR PRECAST CAP AND COLUMN.
- SUBMIT SHOP DRAWINGS OF PRECAST ELEMENTS TO ENGINEER FOR REVIEW AND ACCEPTANCE.

CONSTRUCTION SEQUENCE

- FOLLOW COUPLER SUPPLIER INSTALLATION PROCEDURES.
- SURVEY LOCATION AND ELEVATION OF LOWER ELEMENT.
- DETERMINE THE REQUIRED REINFORCING EXTENSION LENGTHS AND REQUIRED SHIM HEIGHTS BASED ON THE SURVEY.
- CUT THE REINFORCING EXTENSIONS TO THE REQUIRED LENGTH BASED ON THE SURVEY AND THE COUPLER SUPPLIER'S RECOMMENDATIONS.
- PLACE BEDDING NON-SHRINK GROUT ON TOP OF LOWER ELEMENT. USE OF EXTRA NON-SHRINK GROUT THAT IS ALLOWED TO FLOW OUT DURING ELEMENT PLACEMENT IS PERMITTED. IN LIEU OF PRE-PLACEMENT OF BEDDING NON-SHRINK GROUT, PLACE THE BEDDING NON-SHRINK GROUT AFTER ELEMENT ERECTION AND GROUTING OF COUPLERS.
- ERECT UPPER ELEMENT TO WITHIN THE SPECIFIED ERECTION TOLERANCES. PREVENT BEDDING NON-SHRINK GROUT FROM FLOWING INTO COUPLER.
- MAINTAIN INTEGRITY OF NON-SHRINK GROUT BED DURING SETTING OPERATION. REPAIR NON-SHRINK GROUT THAT IS DISPLACED OR GAPS THAT DEVELOP IN THE NON-SHRINK GROUT JOINT USING HAND TOOLS.
- BRACE THE UPPER ELEMENT.
- INSTALL GROUT IN COUPLERS FOLLOWING THE SUPPLIER'S WRITTEN PROCEDURES. IF THE COUPLER IS BELOW THE JOINT, THE COUPLER GROUT CAN BE INSTALLED PRIOR TO APPLICATION OF BEDDING NON-SHRINK GROUT.
- DO NOT PLACE SUBSEQUENT ELEMENTS ABOVE A CONNECTION UNTIL THE CONNECTION HAS ACHIEVED ADEQUATE STRENGTH AS DETERMINED THROUGH STRENGTH TESTING OF THE NON-SHRINK GROUT.



GRouted BAR COUPLER DETAILS

COLUMN/FOOTING CONNECTION ELEVATION VIEW SHOWN (SIDE VIEW SIMILAR)

SUBSTRUCTURE QUANTITIES		
ITEM	BENT 2	BENT 3
CY CLASS AA-1 CONCRETE	34.0	33.5
TWENTY-FOUR HOUR ACCELERATED CONC, CY	15.5	15.5
LB BAR REINFORCEMENT STEEL	13,109	13,109

INCLUDE THE COST OF FABRICATED PRECAST CAP AND COLUMN, GRouted BAR COUPLERS, NON-SHRINK GROUT, AND INSTALLATION IN THE PRICE BID FOR "CLASS AA-1 CONCRETE".

GRouted SPLICE COUPLER TOLERANCES		
ID	DESCRIPTION	TOLERANCE
A	DOWEL EXTENSION	CONSULT SUPPLIER
B	LOCATION OF COLUMN REINFORCING, GRouted SPLICE COUPLER, AND FOOTING DOWELS MEASURED FROM A COMMON REFERENCE POINT	± 1/4"
C	GAP BETWEEN DOWELS AND COLUMN REINFORCING	CONSULT SUPPLIER

NOTES

- USE MATCHING TEMPLATES AND JIGS FOR THE LOCATION OF REINFORCING AND GRouted SPLICE COUPLER PLACEMENT WITHIN THE ELEMENTS TO CONTROL CRITICAL DIMENSION "B".
- CONSULT SUPPLIER OF THE GRouted SPLICE COUPLER FOR PROPER DIMENSIONS "A" AND "C" AND FOR TOLERANCE ON THESE DIMENSIONS.
- FOLLOW INSTALLATION RECOMMENDATIONS FROM THE SUPPLIER OF THE GRouted SPLICE COUPLER.

BRIDGE NO. 1

270 Peachtree St. NW, Suite 1500
Atlanta, GA 30303-1393
678.954.5000 • www.chacompanies.com

GEORGIA
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

ALTERNATE 2 (PRECAST) - BENTS 2-3
CR 661 (BLACKHALL ROAD) OVER RUM CREEK
HENRY COUNTY 0011691

NO SCALE FEBRUARY 2018

DESIGNED VO CHECKED KJK REVIEWED DLC/SKG
DRAWN VO DESIGN GROUP DLW APPROVED WMD

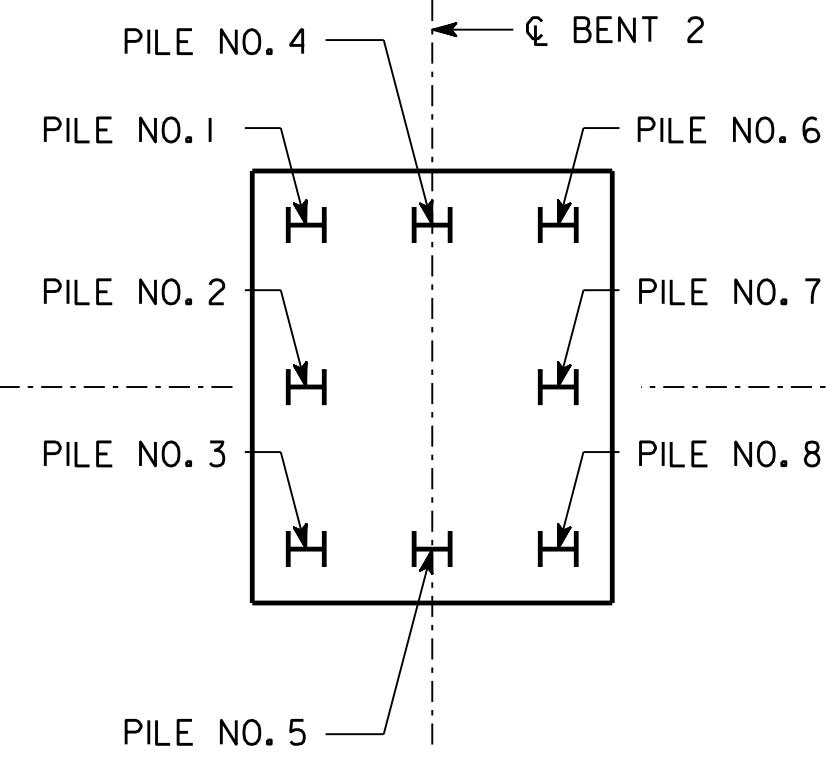
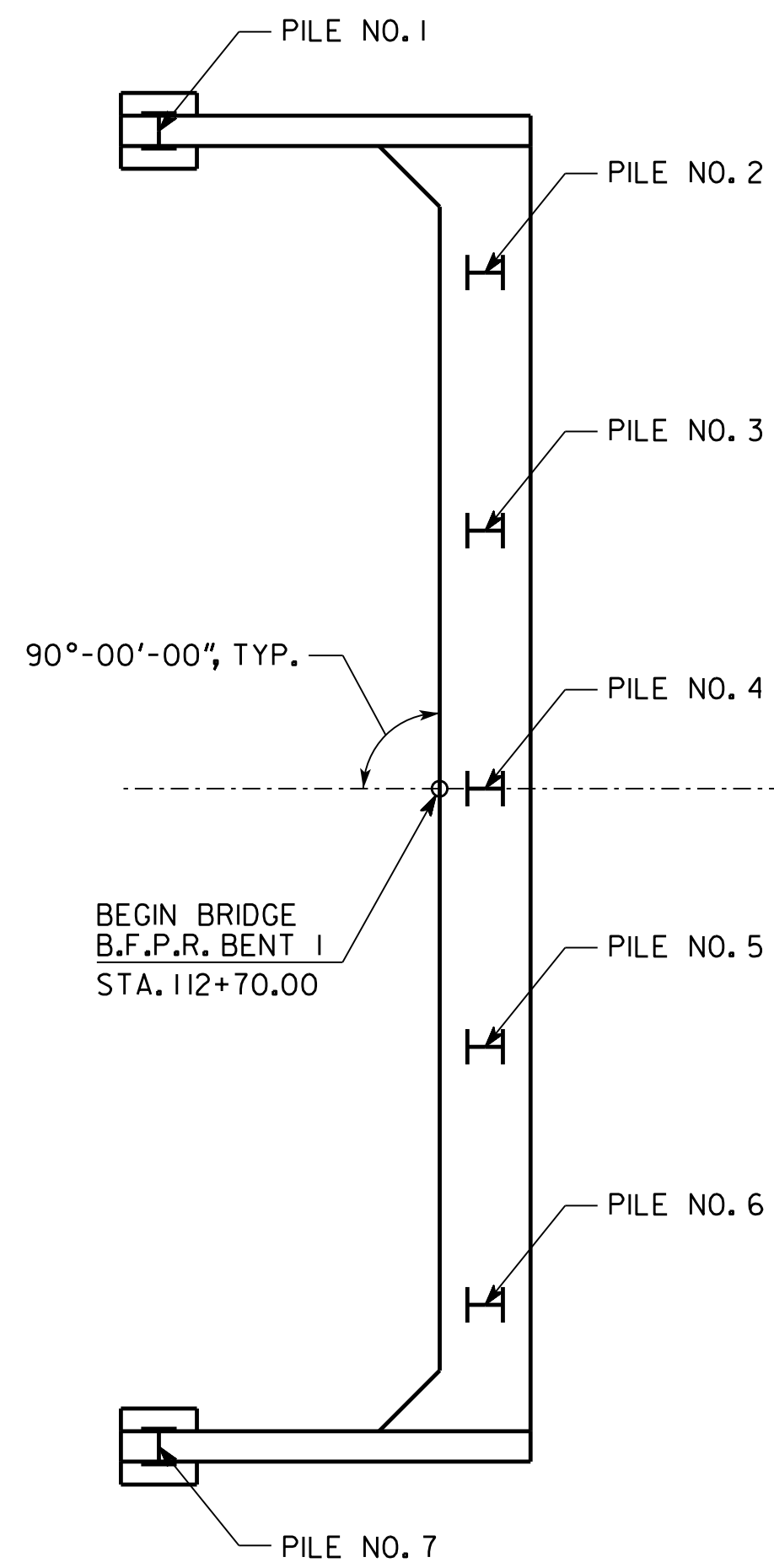
DRAWING NO. 35-0016	DATE 07-06-18
BRIDGE SHEET 16 OF 18	REVISIONS BY CHA REVISOR PAY ITEM

1 INCH WHEN PRINTED FULL SIZE

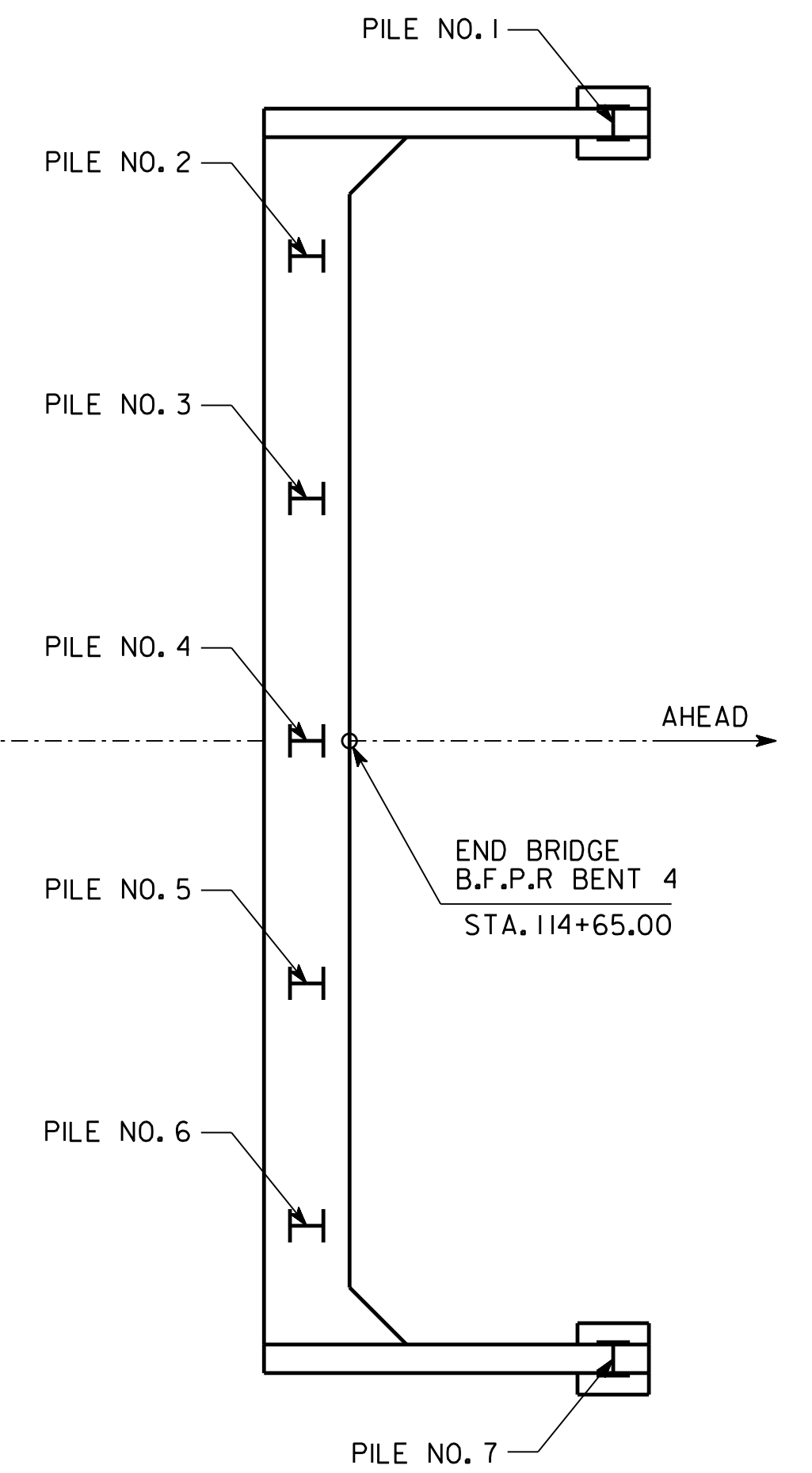
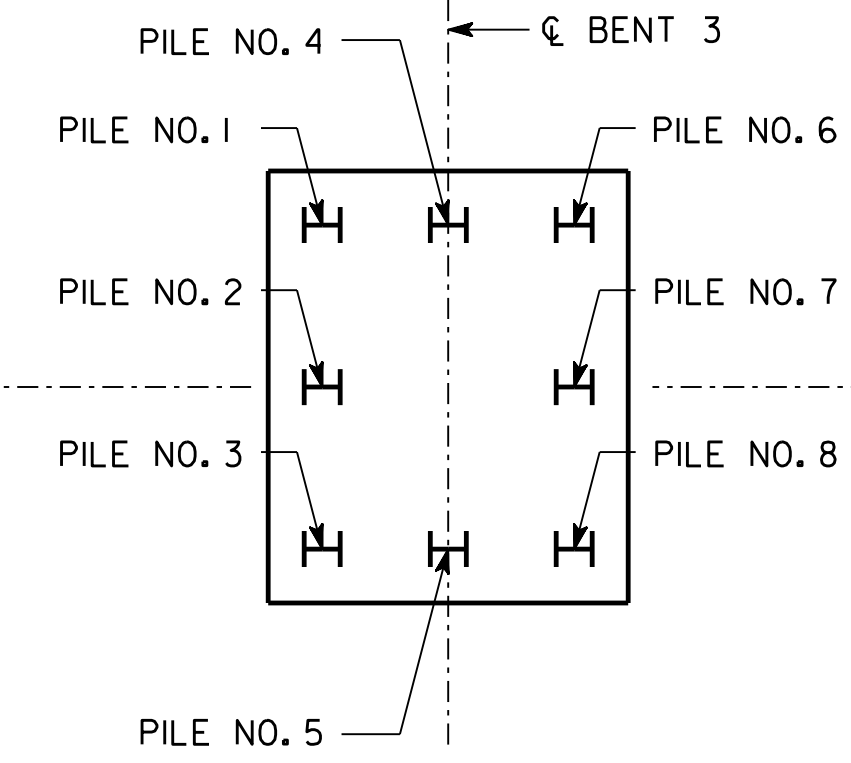
03/30/07 AM 8/27/2018

5/5/5

X.DGN

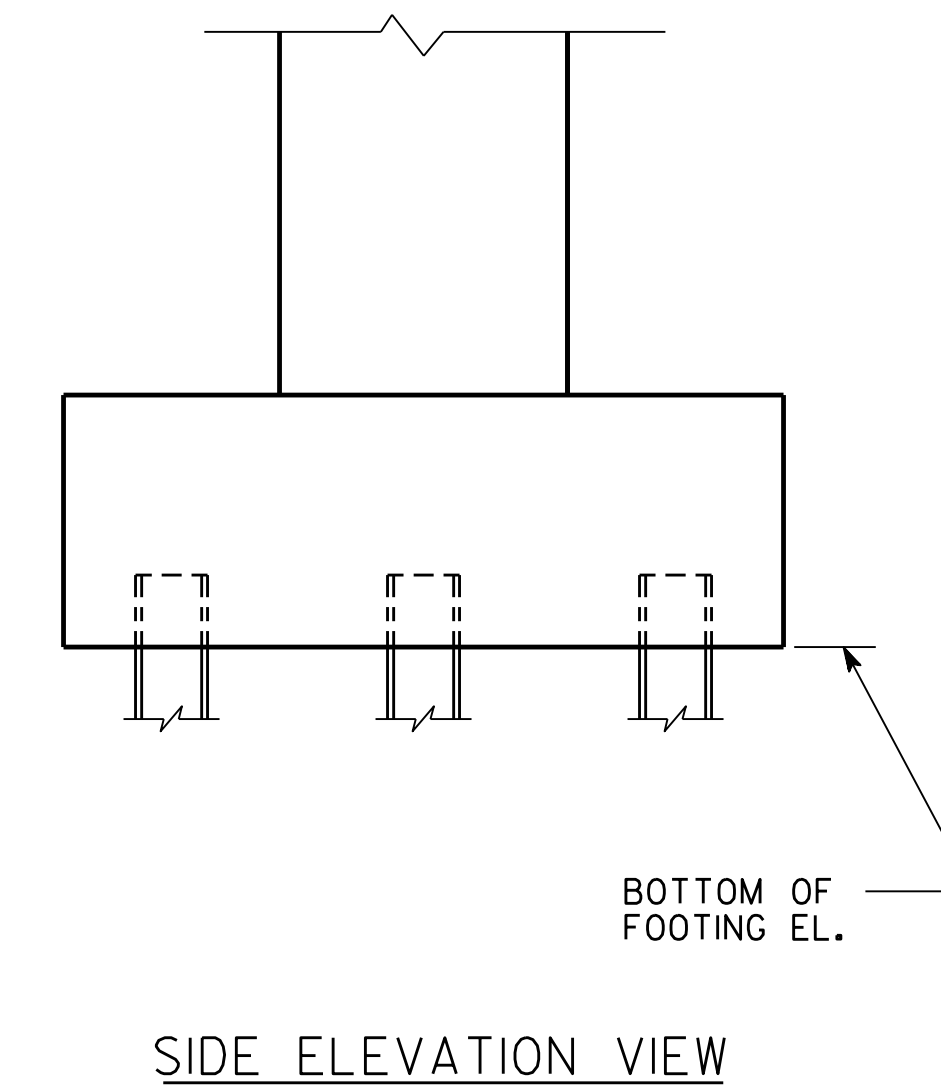
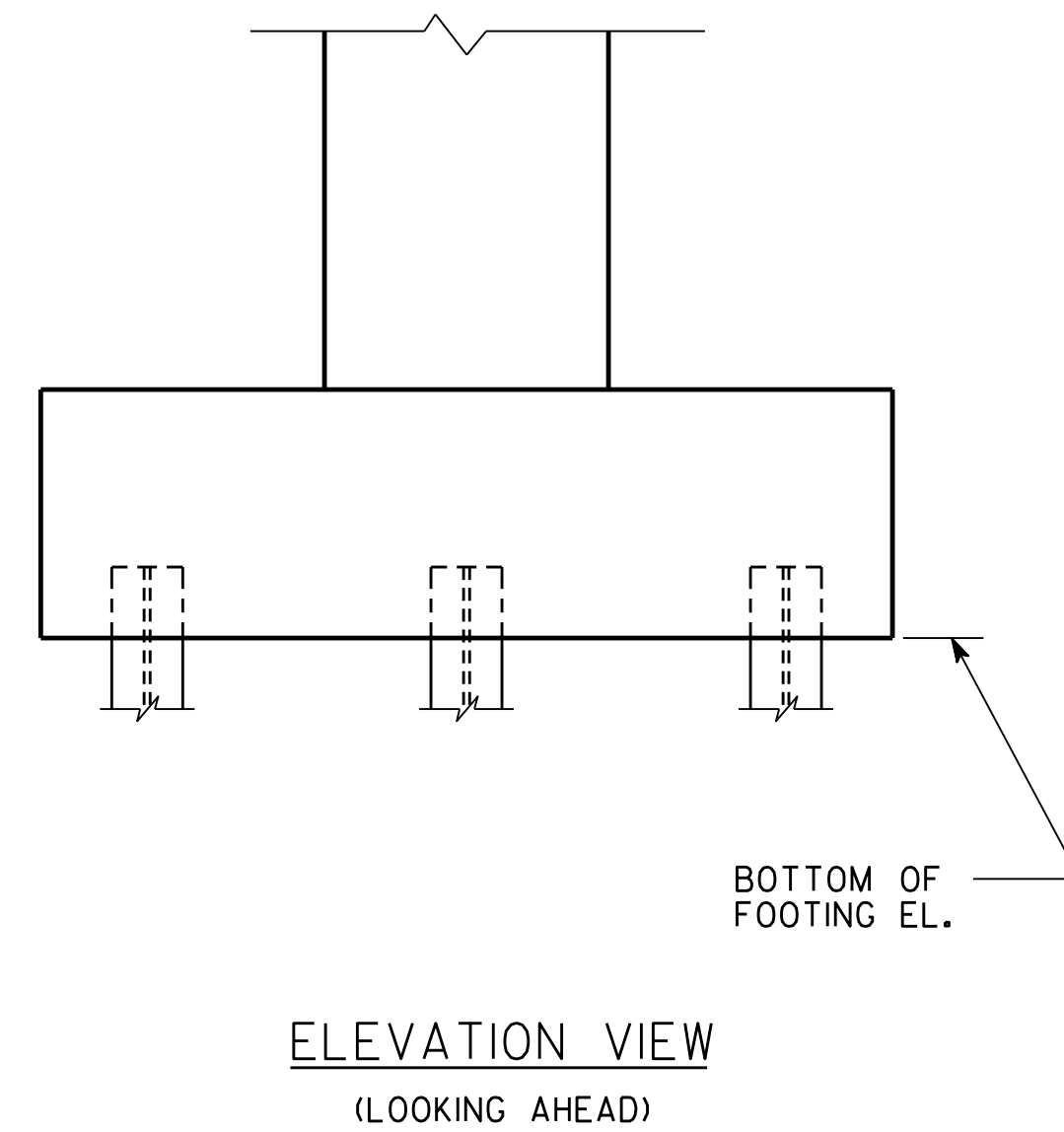


CL BRIDGE = P.G.L. = CONST. CL



AS BUILT FOUNDATION INFORMATION			
BENT NO.	PILE NO.	PILE TIP ELEVATION	BOTTOM OF FOOTING ELEV.
1	PILE 1		X
	PILE 2		
	PILE 3		
	PILE 4		
	PILE 5		
	PILE 6		
	PILE 7		
2	PILE 1		
	PILE 2		
	PILE 3		
	PILE 4		
	PILE 5		
	PILE 6		
	PILE 7		
	PILE 8		
3	PILE 1		
	PILE 2		
	PILE 3		
	PILE 4		
	PILE 5		
	PILE 6		
	PILE 7		
	PILE 8		
4	PILE 1		X
	PILE 2		
	PILE 3		
	PILE 4		
	PILE 5		
	PILE 6		
	PILE 7		

NOTE - PILES ARE NUMBERED LEFT TO RIGHT LOOKING AHEAD.



THIS SHEET SHALL BE FILLED IN BY PROJECT ENGINEER AND RETURNED TO THE OFFICE OF BRIDGES AND STRUCTURES AFTER COMPLETION OF FOOTING CONSTRUCTION AND PILE DRIVING FOR POSTING TO THE PLANS AS A PERMANENT RECORD OF THE BRIDGE CONSTRUCTION.

PROJECT ENGINEER (PRINT)
 TELEPHONE NUMBER INCLUDING AREA CODE
 DATE THE SHEET WAS FILLED IN

BRIDGE NO. 1



GEORGIA
 DEPARTMENT OF TRANSPORTATION
 ENGINEERING DIVISION-OFFICE OF BRIDGES AND STRUCTURES

AS-BUILT FOUNDATION INFORMATION
 CR 661 (BLACKHALL ROAD) OVER RUM CREEK
 HENRY COUNTY 0011691

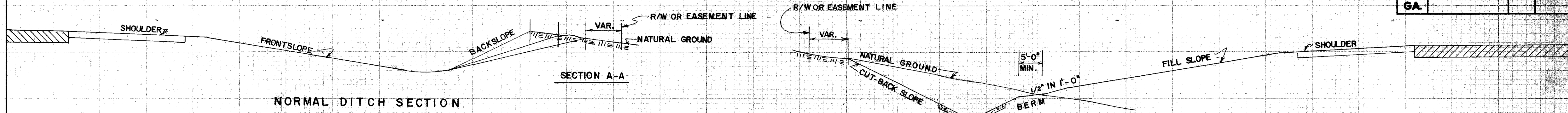
DRAWING NO. 35-0017	DESIGNED VO	CHECKED KJK	REVIEWED DLC/SKG
BRIDGE SHEET 17 OF 18	DRAWN VO	DESIGN GROUP DLW	APPROVED WMD

1 INCH WHEN PRINTED FULL SIZE

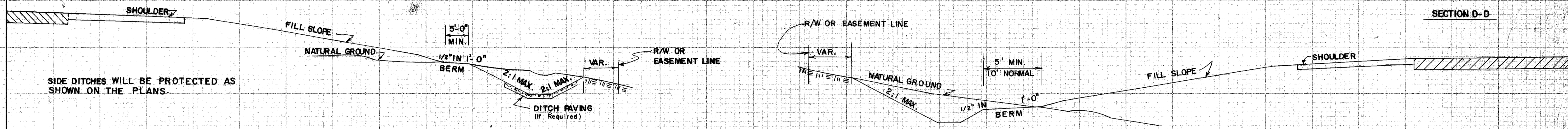
03/27/2018 8:27:20 AM

5/5/13

X.DGN

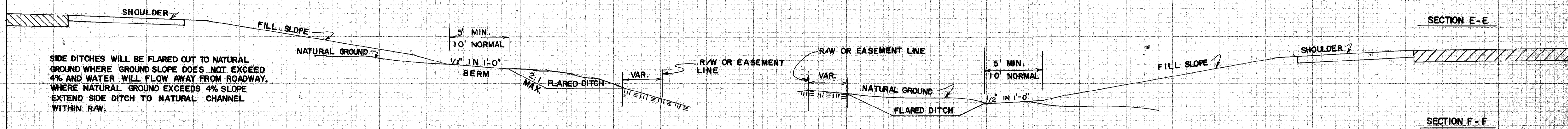


BERM DITCHES WILL BE USED WHERE NATURAL GROUND SLOPES TOWARDS THE ROADWAY IN FILL SECTIONS. BERM DITCHES WILL BE PROTECTED AS SHOWN ON THE PLANS.



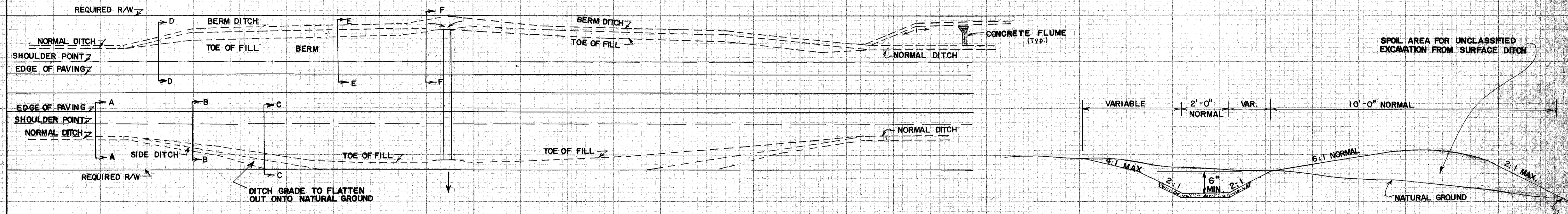
SIDE DITCHES WILL BE PROTECTED AS SHOWN ON THE PLANS.

SOD DITCH CHECKS WILL BE USED IN BERM DITCHES ON GRADES OF 2.1% OR OVER AS SHOWN ON THE PLANS



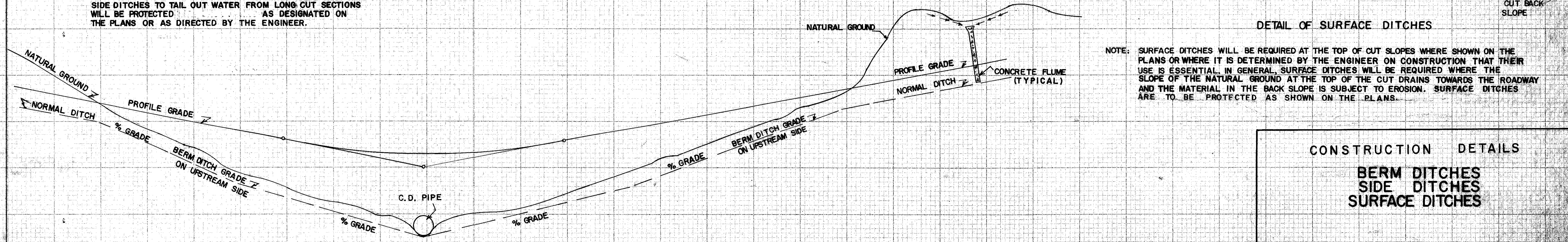
SIDE DITCHES WILL BE FLARED OUT TO NATURAL GROUND WHERE GROUND SLOPE DOES NOT EXCEED 4% AND WATER WILL FLOW AWAY FROM ROADWAY. WHERE NATURAL GROUND EXCEEDS 4% SLOPE EXTEND SIDE DITCH TO NATURAL CHANNEL WITHIN R/W.

UNPAVED BERM DITCHES WILL BE FLARED OUT TO NATURAL GROUND AT INLETS OF CROSS DRAINS.



SPOIL AREA FOR UNCLASSIFIED EXCAVATION FROM SURFACE DITCH

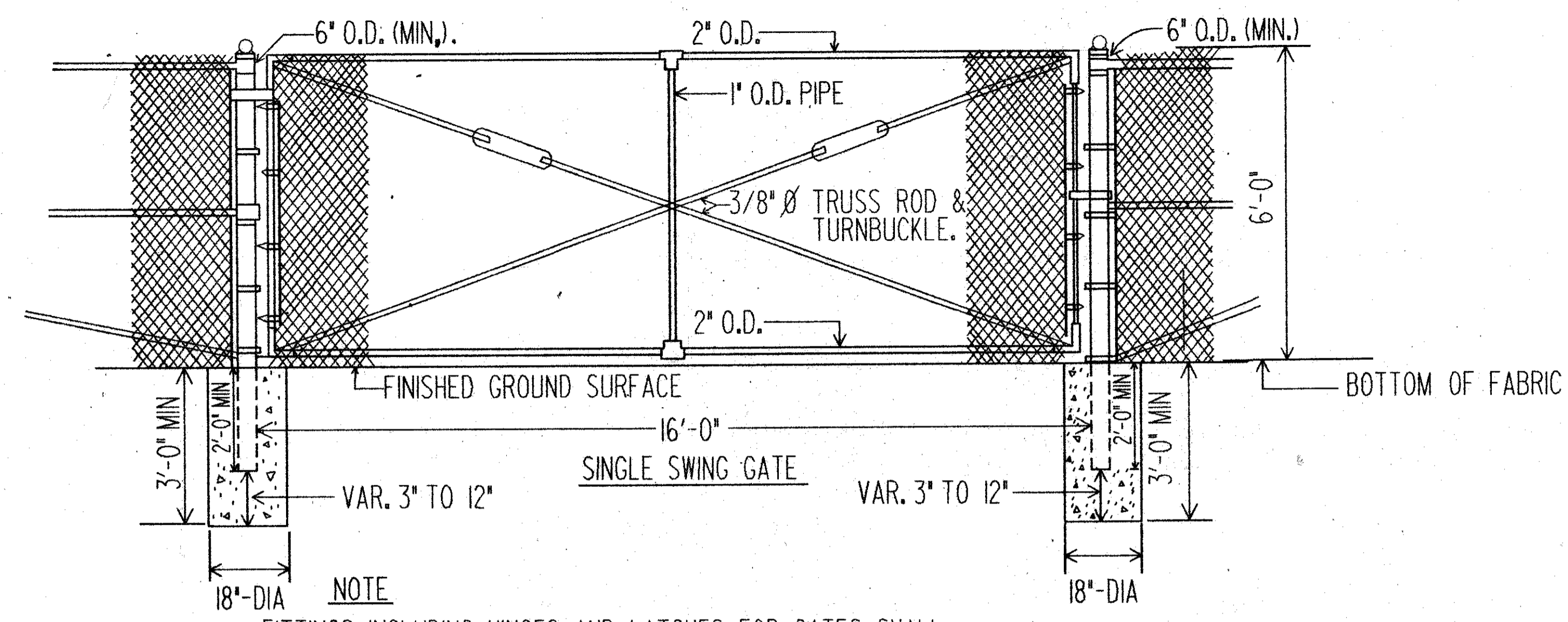
SIDE DITCHES TO TAIL OUT WATER FROM LONG CUT SECTIONS WILL BE PROTECTED AS DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.



NOTE: SURFACE DITCHES WILL BE REQUIRED AT THE TOP OF CUT SLOPES WHERE SHOWN ON THE PLANS OR WHERE IT IS DETERMINED BY THE ENGINEER ON CONSTRUCTION THAT THEIR USE IS ESSENTIAL. IN GENERAL, SURFACE DITCHES WILL BE REQUIRED WHERE THE SLOPE OF THE NATURAL GROUND AT THE TOP OF THE CUT DRAINS TOWARDS THE ROADWAY AND THE MATERIAL IN THE BACK SLOPE IS SUBJECT TO EROSION. SURFACE DITCHES ARE TO BE PROTECTED AS SHOWN ON THE PLANS.

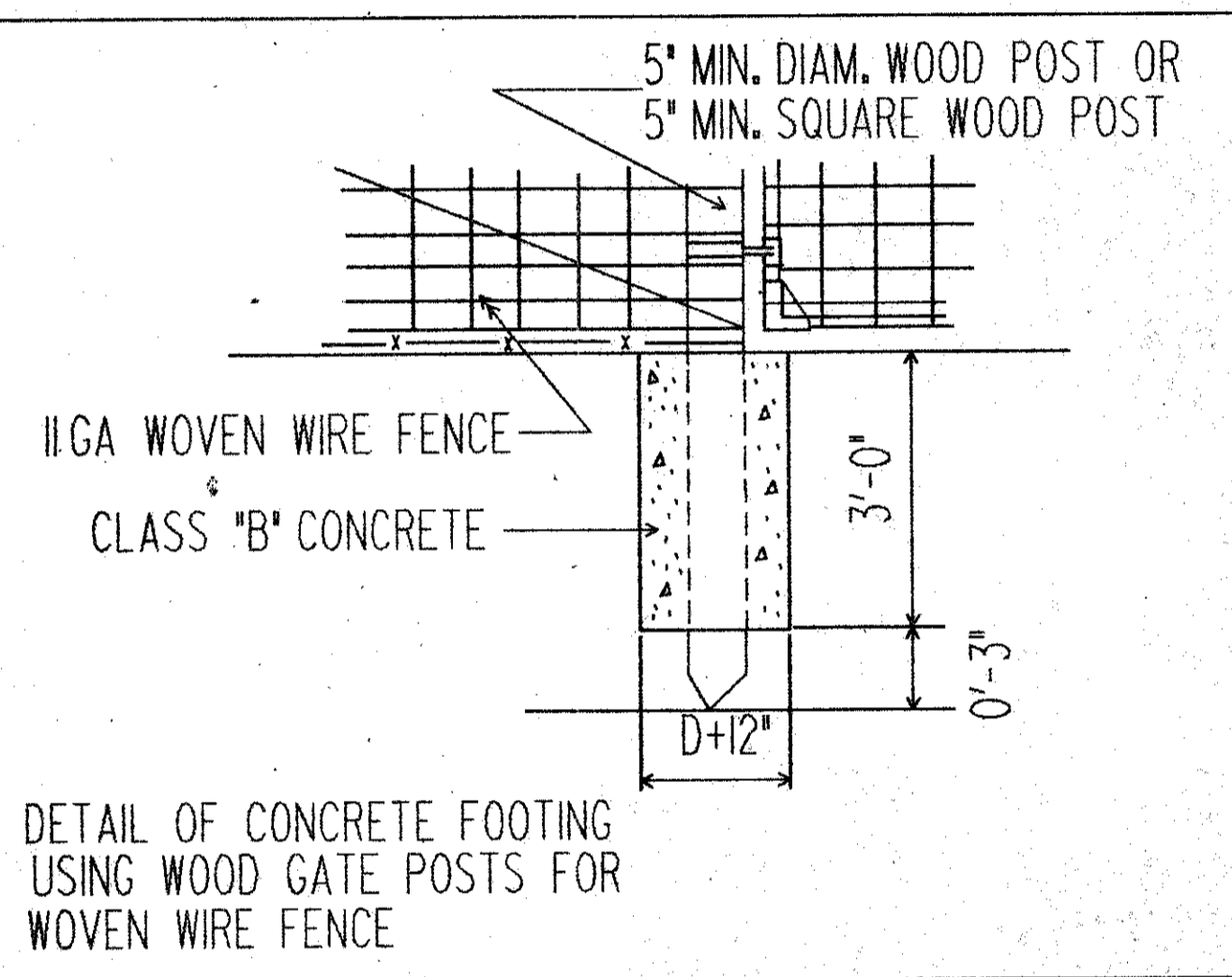
CONSTRUCTION DETAILS
BERM DITCHES
SIDE DITCHES
SURFACE DITCHES

NOTE:
WHERE CHAIN LINK WIRE FENCE HAS BARBED WIRE, GATE SHALL ALSO REQUIRE BARBED WIRE BUT WITH VERTICAL EXTENSION ARMS ON THE GATE AND GATE POST UNLESS SPECIFIED OTHERWISE.



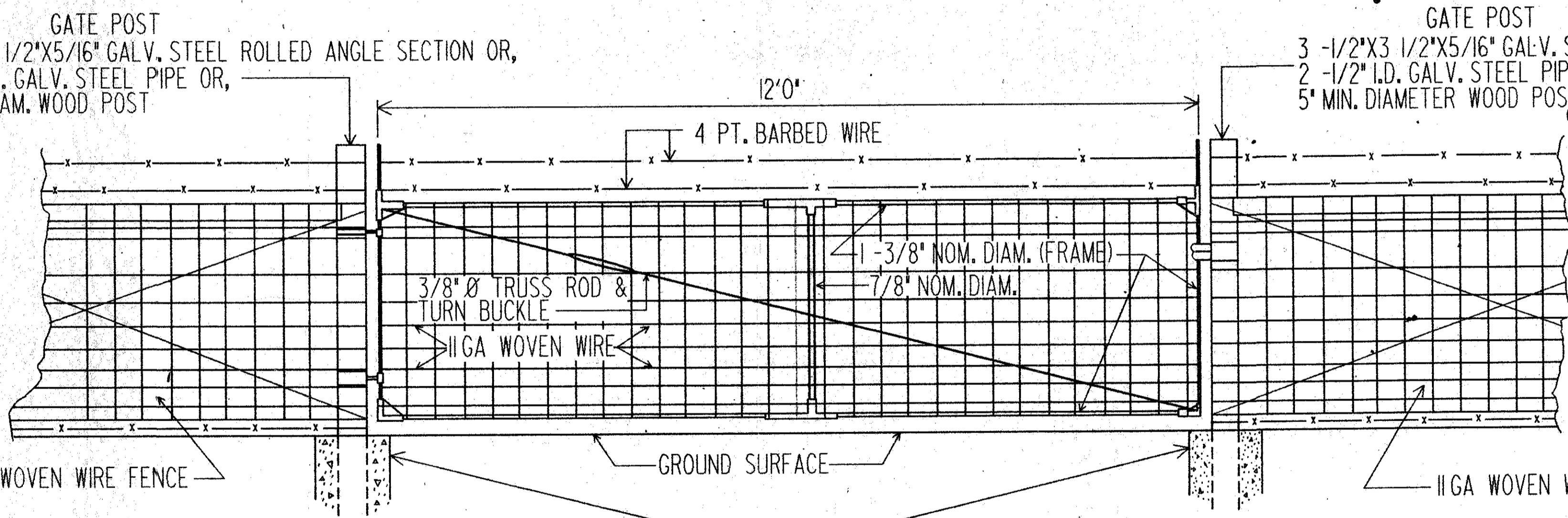
GATE FOR CHAIN LINK FENCE

NOTE
FITTINGS INCLUDING HINGES AND LATCHES, FOR GATES SHALL MEET THE APPROVAL OF THE ENGINEER AND THE REQUIREMENTS OF THE SPECIFICATIONS.



DETAIL OF CONCRETE FOOTING USING WOOD GATE POSTS FOR WOVEN WIRE FENCE

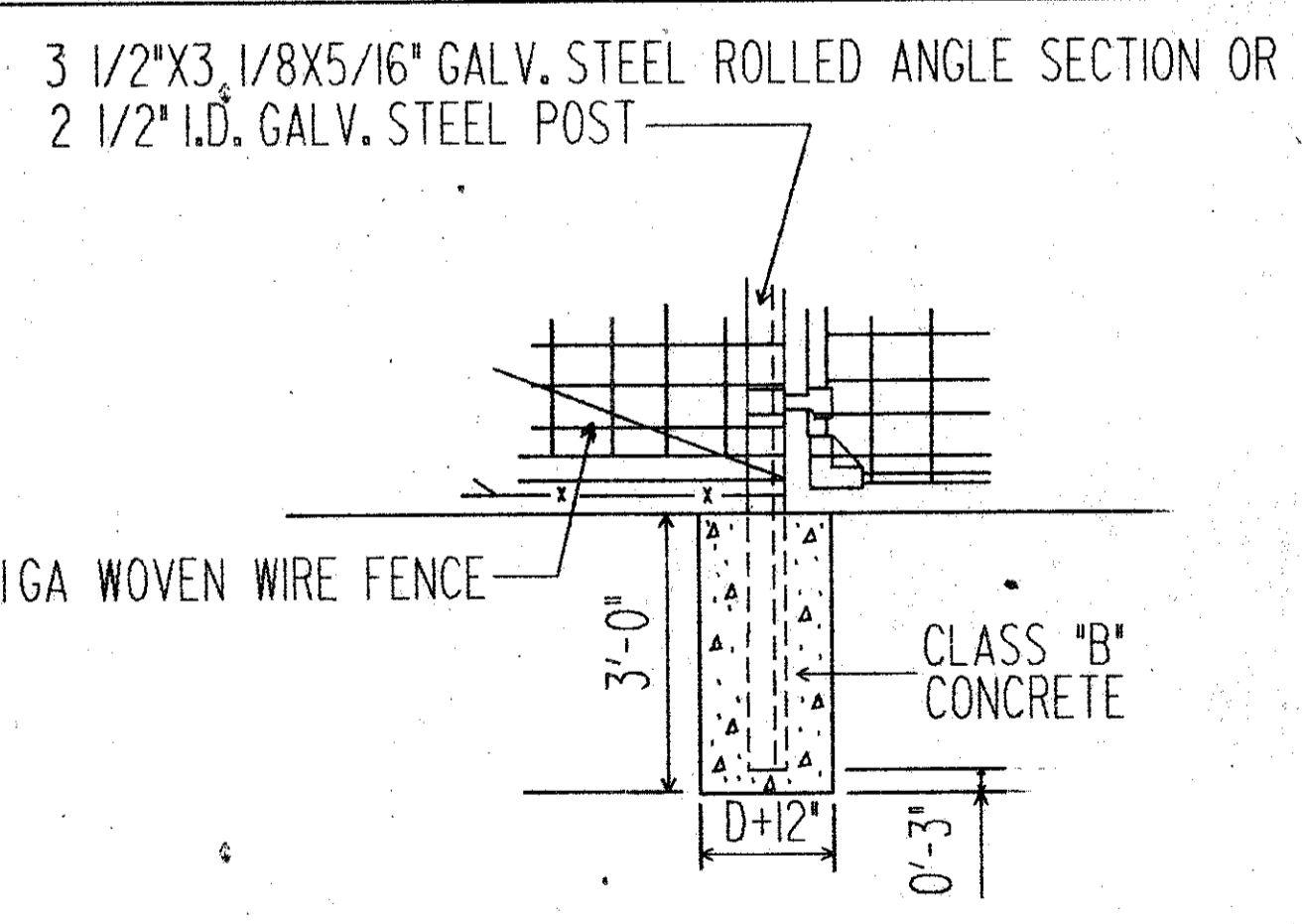
GATE POST
3 1/2"x3 1/2"x5/16" GALV. STEEL ROLLED ANGLE SECTION OR,
2 1/2" I.D. GALV. STEEL PIPE OR,
5" MIN. DIAM. WOOD POST



GATE FOR WOVEN WIRE FENCE

FOR DETAIL OF CONCRETE FOOTINGS SEE DETAILS LEFT

12 FT. SINGLE SWING GATE TO BE USED WITH WOOD POSTS OR METAL POSTS



DETAIL OF CONCRETE FOOTING USING METAL GATE POSTS FOR WOVEN WIRE FENCE

GATE: (WOVEN WIRE FENCE)

GATE POSTS: (WOVEN WIRE FENCE)

- 1- 1 - 3/8" NOM. DIAMETER GALV. STEEL FRAME (12' X 47")
- 2- 7/8" NOM. DIAMETER GALV. STEEL CENTER BRACE
- 3- 3/8" GALV. TRUSS-ROD & TURNBUCKLE
- 4- FABRIC IS TO BE WRAPPED AND TIED AROUND ENDS OF FRAME AND ATTACHED TOP AND BOTTOM WITH APPROVED FABRIC FASTENERS.
- 5- FITTINGS INCLUDING HINGES AND LATCHES, FOR GATES SHALL MEET THE APPROVAL OF THE ENGINEER AND THE REQUIREMENTS OF THE MATERIAL SPECIFICATIONS.

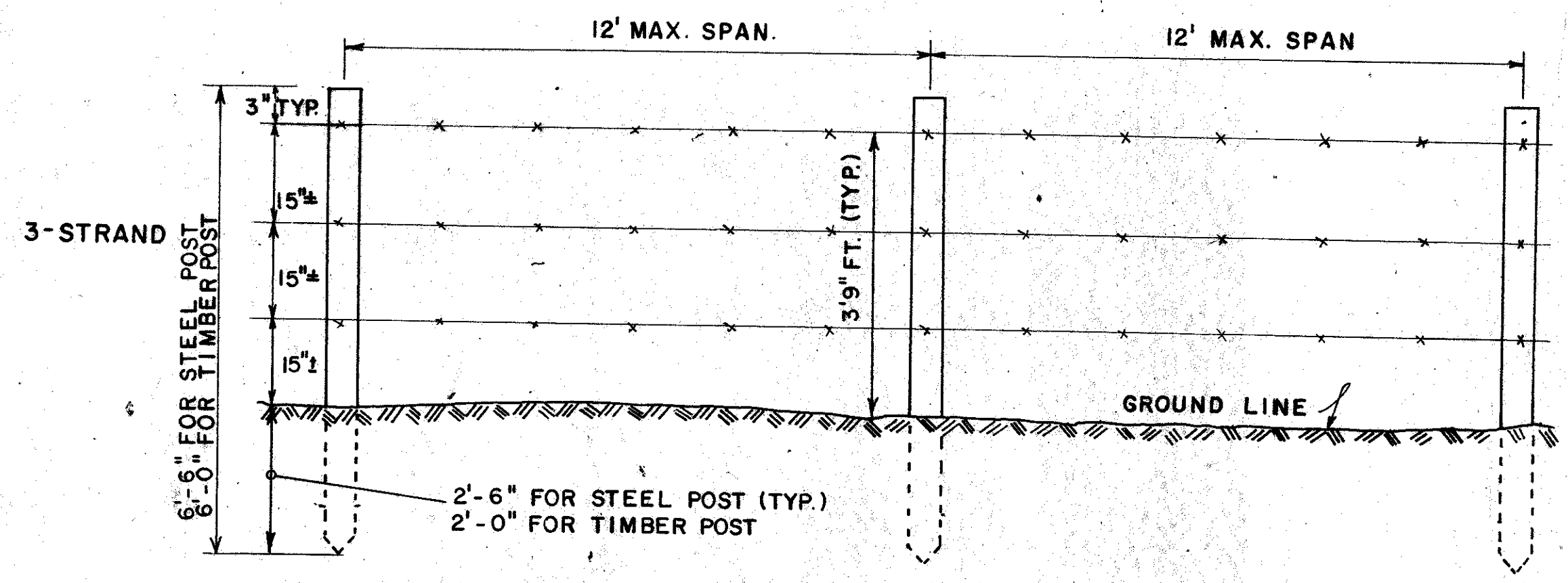
- 1- 3 - 1/2"x3 1/2"x5/16" GALV. STEEL ROLLED ANGLE SECTION OR 2 - 1/2" I.D. GALV. STEEL PIPE OR 5" MIN. DIAMETER (WOOD) OR 5" MIN. SQUARE (WOOD)
- 2- TYPE OF GATE POSTS TO BE USED IS SELECTED BY CONTRACTOR. WOOD GATE POSTS ARE TO BE USED IF CONTRACTOR ELECTS TO USE WOOD FENCE POSTS, METAL GATE POSTS IF CONTRACTOR ELECTS TO USE METAL FENCE POSTS.
- 3- GATE REMAINS AS SHOWN ON DETAIL FOR FENCE WITH WOOD POST OR FENCE WITH METAL POSTS.

DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		GATE DETAILS FOR CHAIN LINK & WOVEN WIRE FENCE	
NO SCALE		JAN. 1988	
BY	REV. RMU		
	DRW. AS		
	TRA.		
	CHK. RMU		

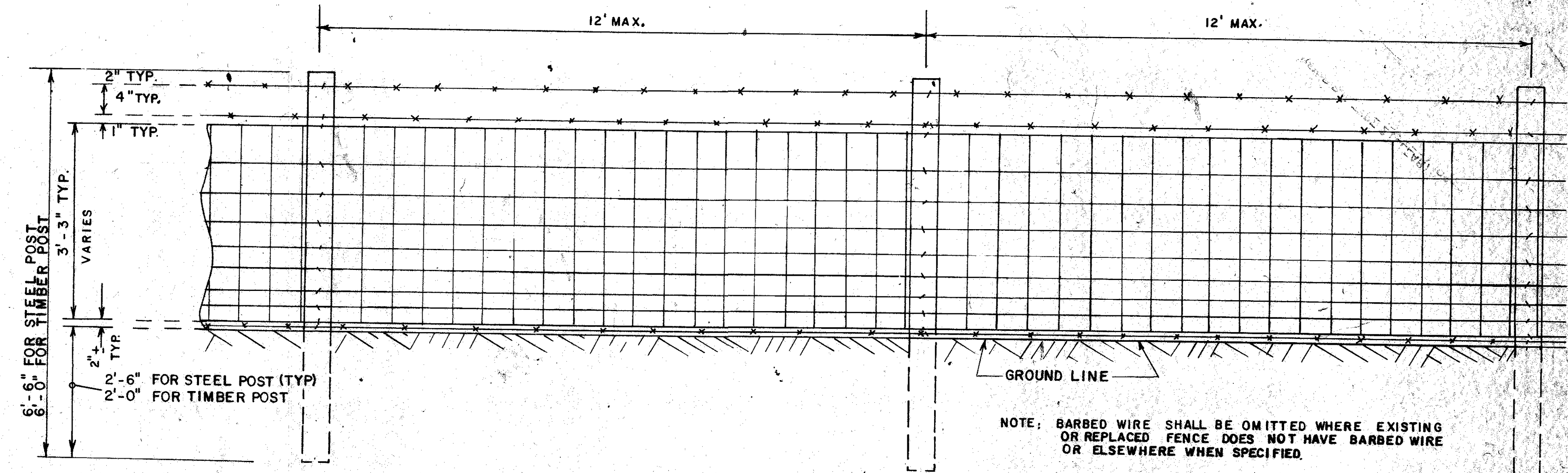
FIELD FENCE BARBED WIRE - TYPICAL DETAILS

FIELD FENCE WOVEN WIRE - TYPICAL DETAILS

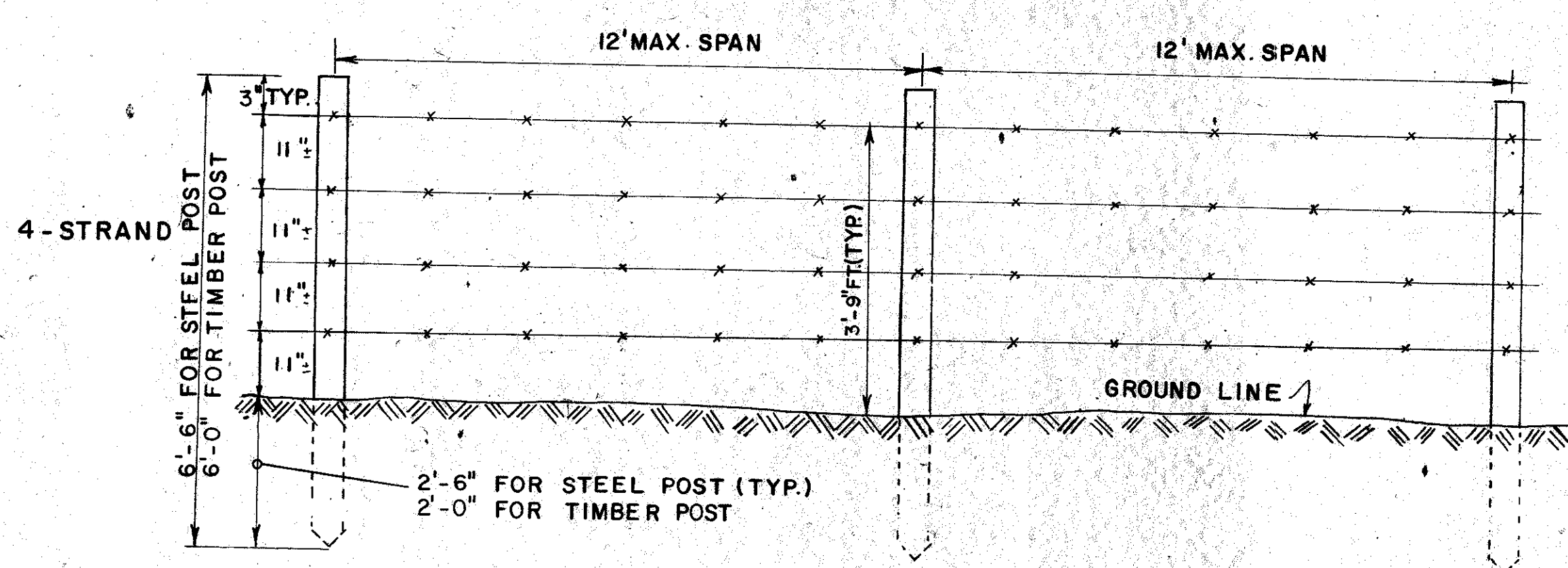
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



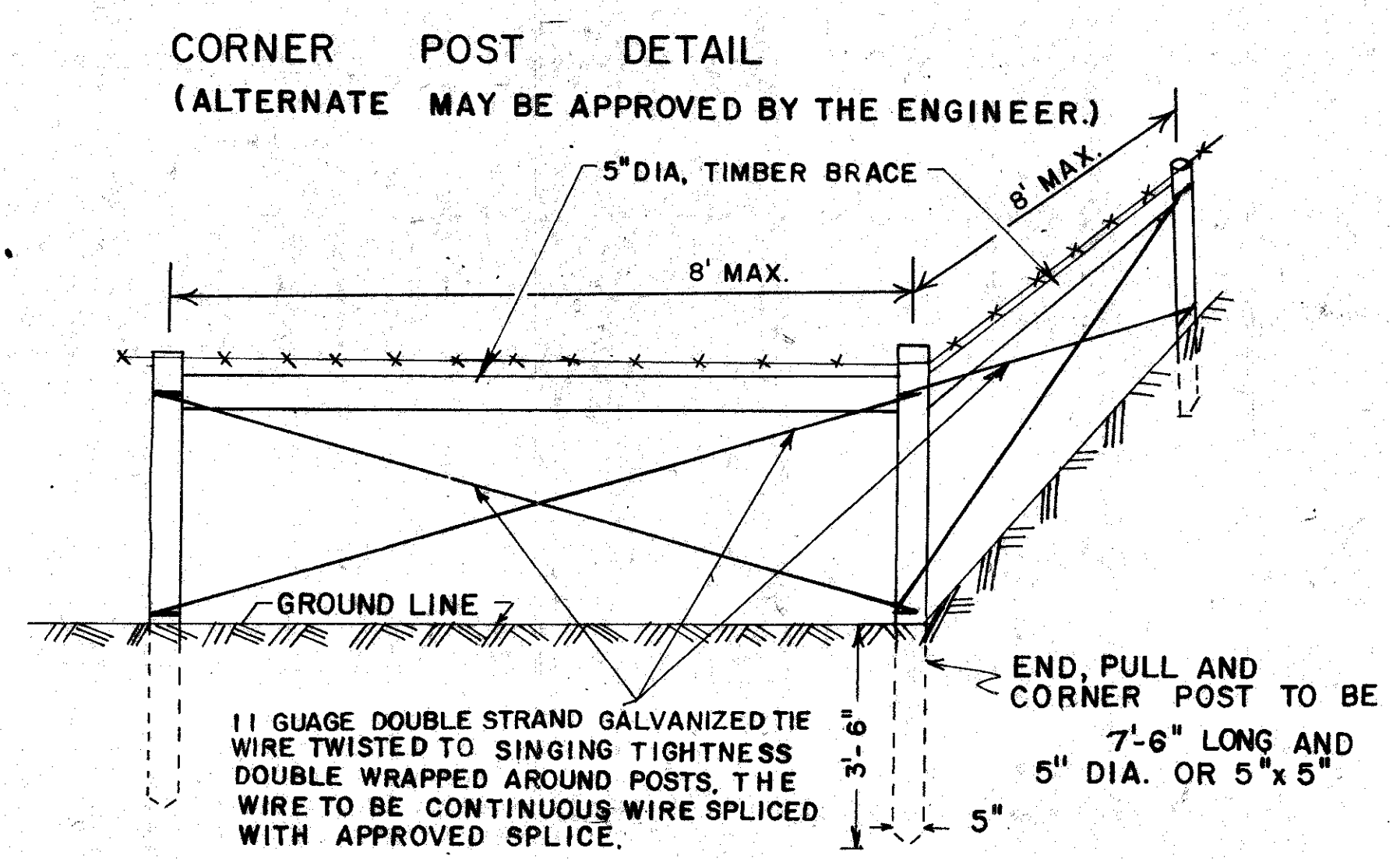
NOTE: 3,4,5 STRAND BARBED WIRE SHOWN. OTHER COMBINATIONS MAY BE SPECIFIED.



NOTE: BARBED WIRE SHALL BE OMITTED WHERE EXISTING OR REPLACED FENCE DOES NOT HAVE BARBED WIRE OR ELSEWHERE WHEN SPECIFIED.



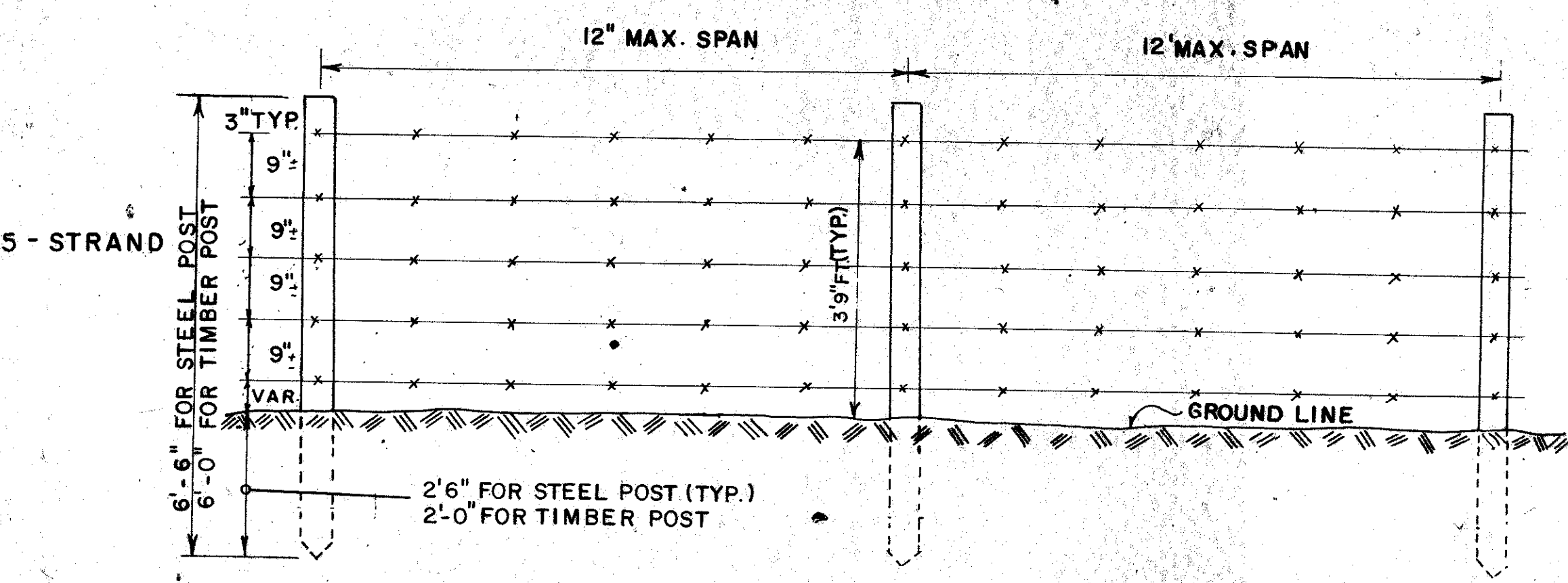
NOTE: WIRE HEIGHTS AND/OR SPACINGS VARIED WHERE SPECIFIED.



NOTE: BRACING FOR END AND PULL POST SHALL BE SAME AS ABOVE.

GENERAL NOTES:

- FENCE DESIGN NUMBERS (ASTM-A116 ARE DESIGNATED IN THE FILL-OUT BOX TO APPROXIMATE EXISTING OR REPLACED FENCING. ASTM-A116, DESIGN NO. 939-6-12 1/2 (16.9 HORIZONTAL WIRES, 39" HEIGHT, 6" STAY WIRE SPACING, (12 1/2" GAGE WIRE FABRIC) SHALL BE USED WITH 3 STRANDS OF BARBED WIRE WHERE OTHER DESIGNS ARE NOT SPECIFIED.
- CORNER AND PULL POST SHALL BE TREATED TIMBER 5" DIA. OR NOMINAL 5 1/2" LINE POST MAY BE EITHER TREATED TIMBER 3" DIA. OR NOMINAL 4" x 4" OR STEEL. IF STEEL POSTS ARE USED, THEY WILL BE 1.3! LBS./FT. STUDDED "T" POST, EITHER GALVANIZED OR PAINTED, WITH AN APPROVED ANCHOR PLATE. (4" x 4 1/2 TYP.)
- MATERIALS SHALL BE THE KIND THAT CAN BE PURCHASED AT A HARDWARE OR FARM SUPPLY STORE AND SHALL MEET THE APPROVAL OF THE ENGINEER. MATERIALS DO NOT HAVE TO BE INSPECTED OR APPROVED BY D.O.T. OFFICE OF MATERIALS & RESEARCH, UNLESS THE ENGINEER REQUEST. CONCRETE FOOTINGS ARE NOT REQUIRED.
- DETAILS MAY DIFFER FROM THAT SHOWN IN ORDER TO MATCH EXISTING OR REPLACED FIELD FENCING OR WHEN SO SPECIFIED.



SPECIAL NOTE:

THESE DETAILS ARE FOR USE IN REPLACEMENT FENCING OUTSIDE THE R/W OR FOR TEMPORARY FENCING (PROVIDED THE MATERIALS ARE NOT REUSED FOR PERMANENT FENCING INSIDE THE R/W.)

FENCE LOCATION	FIELD FENCE WOVEN WIRE*						FIELD FENCE BARBED WIRE		LINEAR FT. OF FENCE
	FENCE FABRIC ASTM-A116 DESIGN NO.	NO. OF HORIZONTAL WIRES	FABRIC HEIGHT (INCHES)	FENCE FABRIC		STRANDS OF BARBED WIRE WITH FENCE			
				SPACINGS STAY WIRES (INCHES)	WIRE GAGES INTERMED, LINE & STAY WIRES	TOP & BOTTOM	TOP BOTTOM		

*SEE GENERAL NOTE NO.1.

REVISIONS

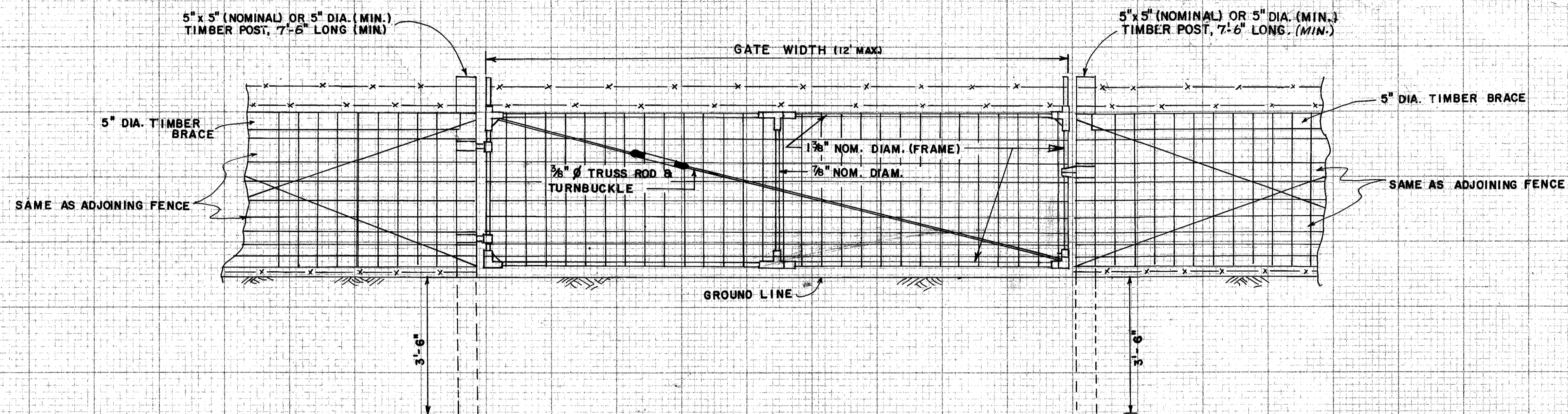
NO.	DATE	REVISION

TYPICAL DETAILS FOR
FIELD FENCING
(FIELD FENCE WOVEN WIRE
&
FIELD FENCE BARBED WIRE)

NO SCALE

SEPT. 1963

GATE LOCATION	GATE WIDTH	FENCE DESIGN



GATE :

1. 1 3/8" NOM. DIAMETER GALV. STEEL FRAME.
2. 7/8" NOM. DIAMETER GALV. STEEL CENTER BRACE.
3. 3/8" ϕ GALV. TRUSS-ROD & TURNBUCKLE.
4. FABRIC IS TO BE WRAPPED AND TIED AROUND ENDS OF FRAME AND ATTACHED TOP AND BOTTOM WITH APPROVED FABRIC FASTENERS.
5. FITTINGS INCLUDING HINGES AND LATCHES FOR GATES SHALL MEET THE APPROVAL OF THE ENGINEER.
6. FABRIC FOR GATE SHALL BE SAME AS ADJOINING FENCE FABRIC WHERE APPLICABLE. WHERE FIELD FENCE IS BARBED WIRE, THE FABRIC FOR THE GATE SHALL BE ASTM-116 DESIGN NO. 939-6-12 1/2 (OR DESIGN NO. 1047-6-12 1/2 ALTERNATE.).

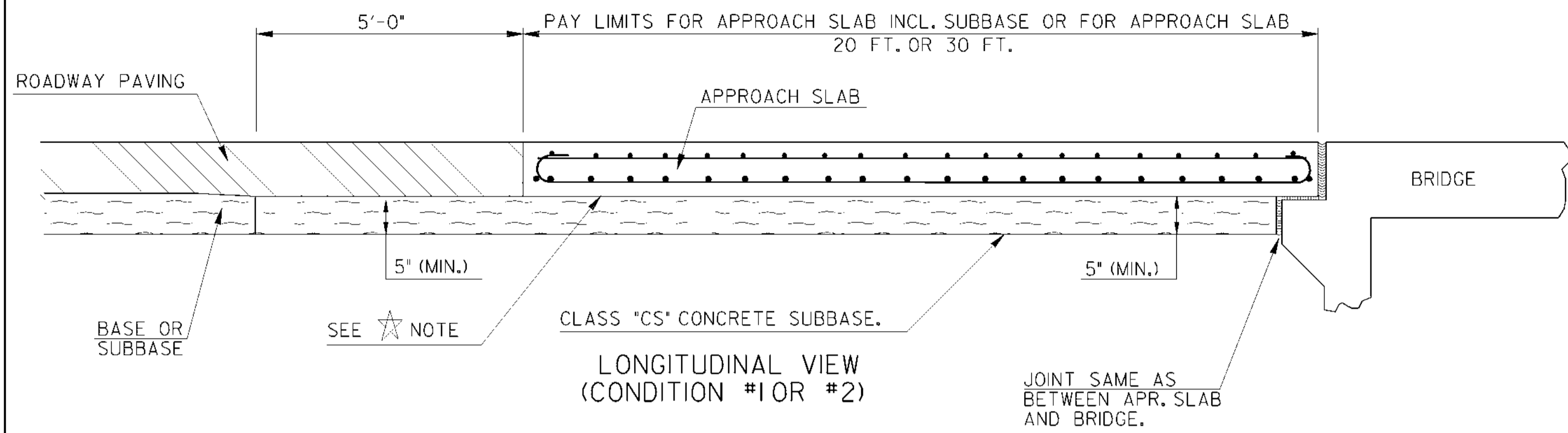
R.M.U. MIN. POST LENGTH 3-10-88
R.M.U.-GEN. REV. 1-17-1986

CONSTRUCTION DETAILS
DETAIL OF GATE TO BE USED
WITH FIELD FENCE

NO SCALE

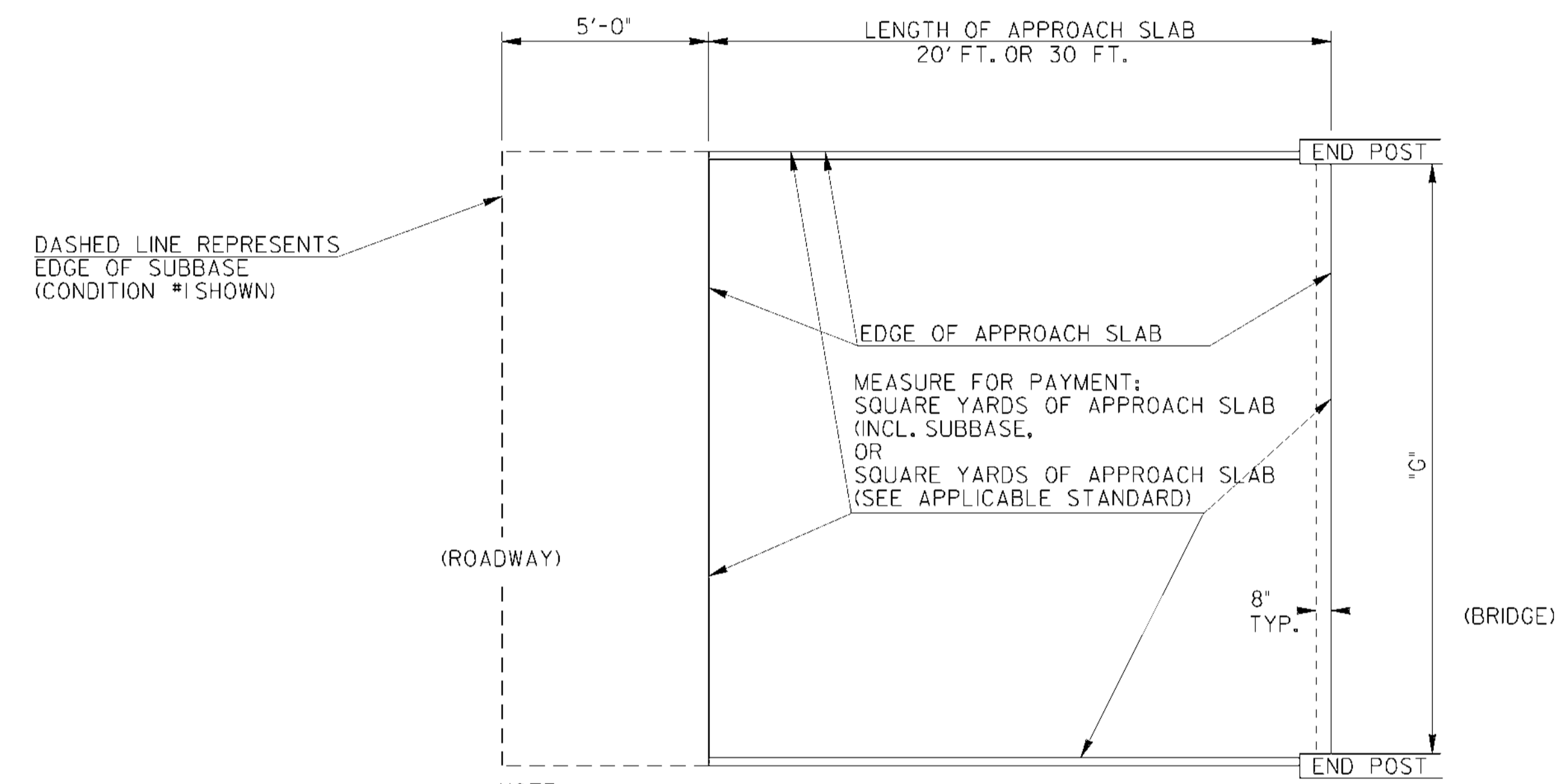
OCT. 1983

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



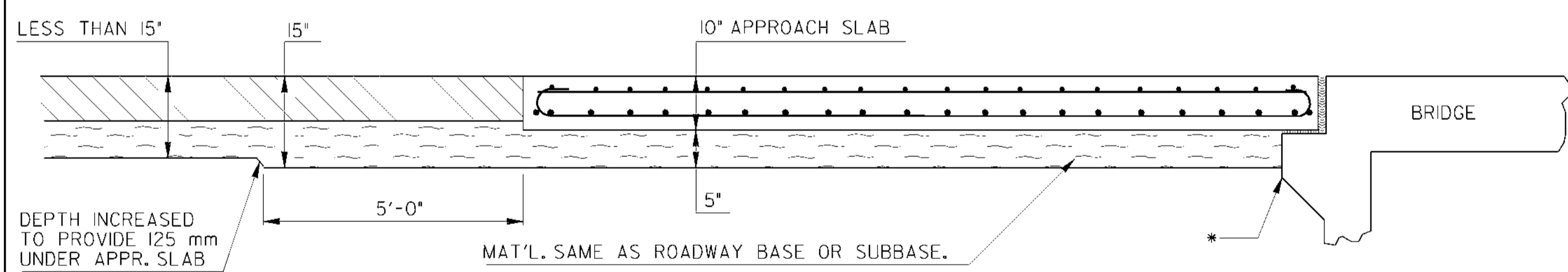
LONGITUDINAL VIEW (CONDITION #1 OR #2)

JOINT SAME AS BETWEEN APR. SLAB AND BRIDGE.

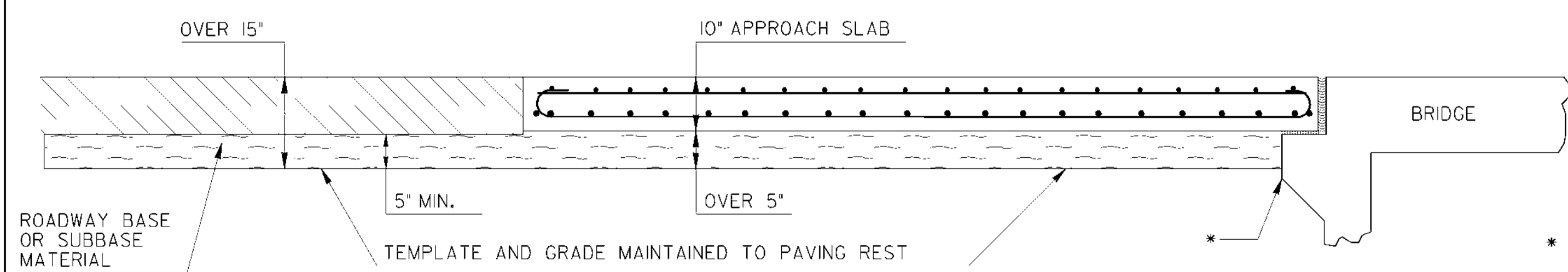


PLAN VIEW

NOTE: PAY LIMITS ARE ALWAYS BASED UPON SURFACE OF APPROACH SLAB ONLY (EITHER CONDITION).



LONGITUDINAL VIEW (CONDITION #2)



LONGITUDINAL VIEW (CONDITION #2)

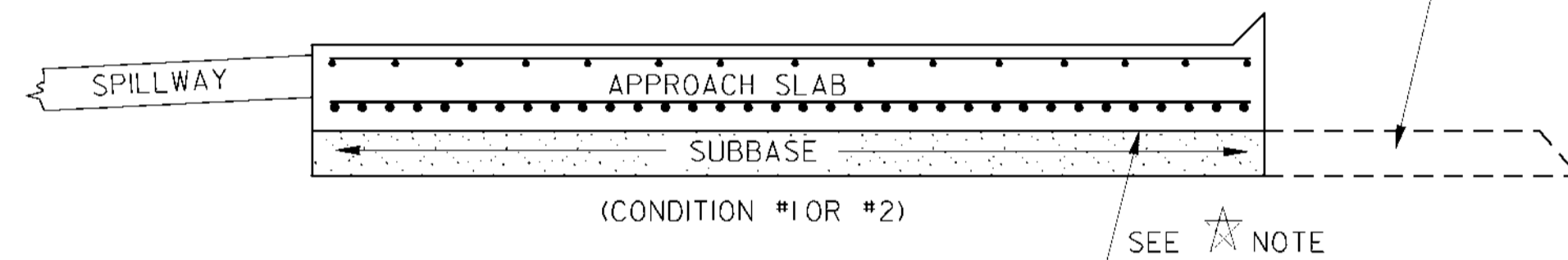
"C"	CUBIC YARDS OF SUBBASE FOR APPROACH SLAB			
	STD. 9017K	STD. 9017L	STD. 9017P	STD. 9017Q
28'-0"	15.63	11.08		
29'-6"			16.47	11.67
30'-0"				
31'-6"			17.54	12.43
32'-0"	17.75	12.58		
33'-6"			18.60	13.18
34'-0"				
35'-6"			19.67	13.94
36'-0"	19.87	14.08		
37'-6"			20.74	14.70
38'-0"				
39'-6"			21.81	15.46
40'-0"	21.99	15.59		
41'-6"			22.88	16.21
42'-0"	23.05	16.34		
43'-6"			23.94	16.97
44'-0"				
45'-6"			25.01	17.73
46'-0"		17.84		
47'-6"			26.08	
48'-0"	26.23	18.59		
49'-6"			27.15	
50'-0"				
51'-6"			28.22	
52'-0"	28.35			
53'-6"			29.29	
54'-0"				
55'-6"			30.35	
56'-0"				
57'-6"			31.42	
58'-0"	31.53			
59'-6"			32.49	
60'-0"	32.59			
61'-6"			33.56	
62'-0"	33.65			
63'-6"			34.63	
64'-0"	34.71			
65'-6"			35.70	
66'-0"	35.77			

⊗ QUANTITIES GIVEN IN THE TABLE ARE BASED UPON MINIMUM DIMENSIONS AND ARE GIVEN FOR INFORMATION ONLY.

CUBIC YARDS OF SUBBASE FOR USE WITH STD. 9017M, STD. 9017N OR FOR USE WITH SLAB SIZES NOT GIVEN IN TABLE, MAY BE ESTIMATED WITH THE FOLLOWING FORMULAE:

FOR 30' APPROACH SLABS:
CU. YARDS = 0.5298 TIMES SLAB WIDTH (IN FEET)

FOR 20' APPROACH SLABS:
CUBIC YARDS = 0.3755 TIMES SLAB WIDTH (IN FEET)



CROSS SECTIONAL VIEW

NOTE: SUBBASE SHOWN ABOVE FOR APPROACH SLAB WITH SPILLWAY ON ONE SIDE AND SLOPED EDGE ON OTHER SIDE. SUBBASE DETAILS SIMILAR FOR APPROACH SLAB WITH TRANSITION CURB OR OTHER DRAINAGE STRUCTURES.

IF MAT'L. UNDER APPROACH SLAB IS FLEXIBLE ENOUGH TO ALLOW DRIVING OF GUARDRAIL POST, THE LIMITS SHALL BE EXTENDED SIMILARLY TO THAT ON THE ROADWAY.

★ NOTE: IF 'CS' CONCRETE OR P.C. CONC. SUBBASE IS USED, CLEAR POLYETHYLENE SHEETING 8 MILS, MIN. THICKNESS, WITH A 6" OVERLAP, UNIFORMLY LAYED, SHALL BE REQUIRED UNDER THE APPROACH SLAB TO PREVENT BONDING POLYETHYLENE SHEETING SHALL BE NEW, UNUSED AND FREE OF HOLES, RIPS AND TEARS.

CONDITION #1:
WHERE THE CONTRACT FOR THE BRIDGE AND APPROACH SLABS IS LET SEPARATE FROM THE ROADWAY PAVING CONTRACT, THE SUBBASE FOR THE APPROACH SLAB WILL BE CLASS 'CS' CONCRETE ACCORDING TO SECTION 500. IN THIS CASE, PAYMENT FOR THE SUBBASE WILL BE INCLUDED IN THE PAYMENT FOR THE APPROACH SLAB.

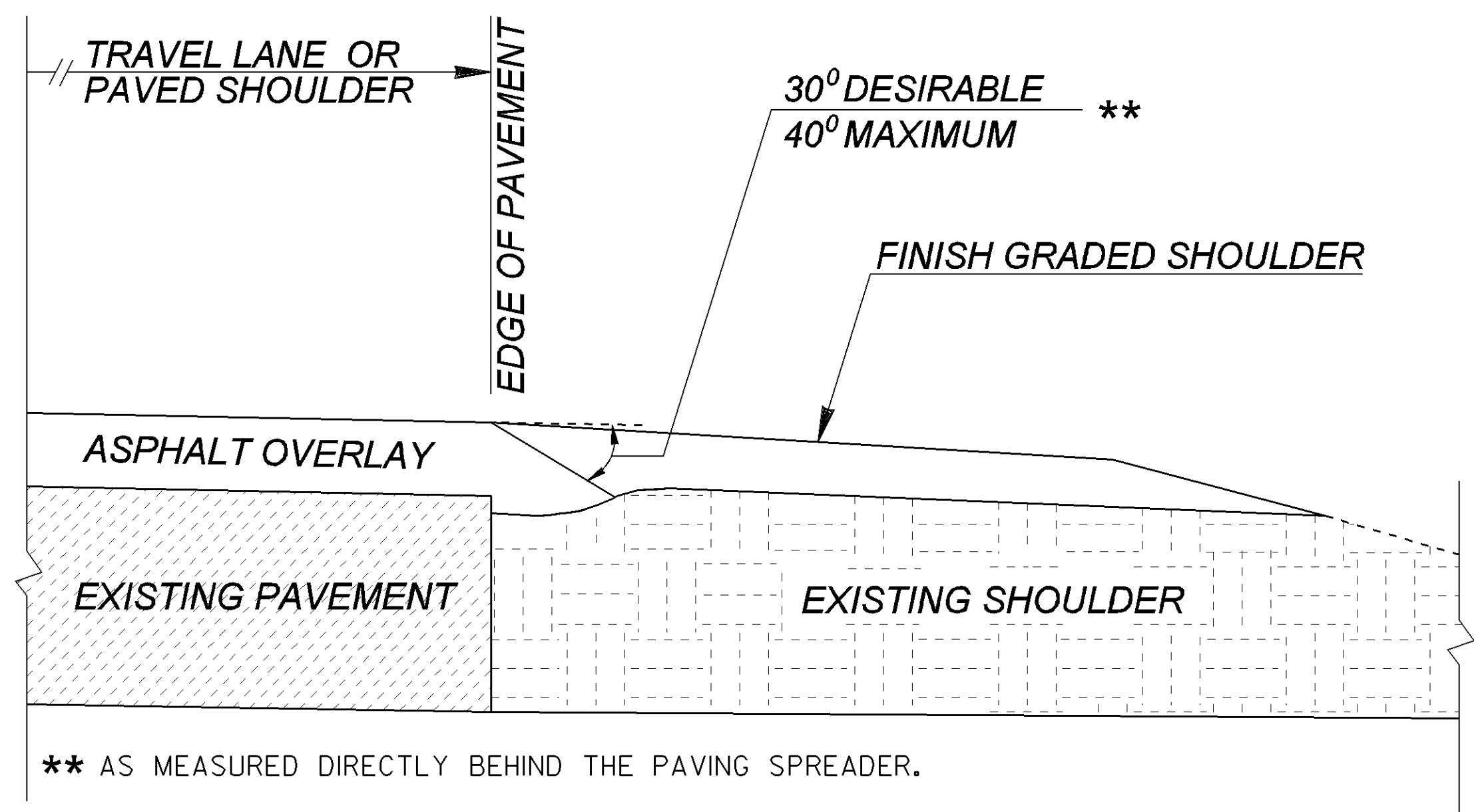
CONDITION #2:
WHERE THE ROADWAY PAVING AND THE BRIDGE ARE LET UNDER THE SAME CONTRACT, THE APPROACH SLAB SUBBASE MAY BE EITHER CLASS 'CS' CONCRETE OR MAY BE THE SAME MATERIAL AS REQUIRED FOR THE ROADWAY BASE OR SUBBASE SUCH AS GRADED AGGREGATE, P.C. CONC. SUBBASE, ETC. IN THIS CASE, PAYMENT FOR THE SUBBASE WILL BE INCLUDED IN THE PAYMENT FOR THE APPROACH SLAB.

* EXPANSION JOINT REQ'D. SAME AS BETWEEN APPROACH SLAB & BRIDGE, IF SUBBASE IS PORTLAND CEMENT CONCRETE OR CLASS 'CS' CONCRETE.

3-28-06		DATE		DEPARTMENT OF TRANSPORTATION	
6-14-88		DATE		STATE OF GEORGIA	
REVISED NOTES	PAY ITEM - COND. #2	REVISION		CONSTRUCTION DETAIL	
G.L.O.	BY			SUBBASES FOR APPROACH SLABS	
				NO SCALE	REV. & REDRAWN OCT. 1985
					NUMBER
					M-2

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

ASPHALT PAVEMENT - OVERLAY

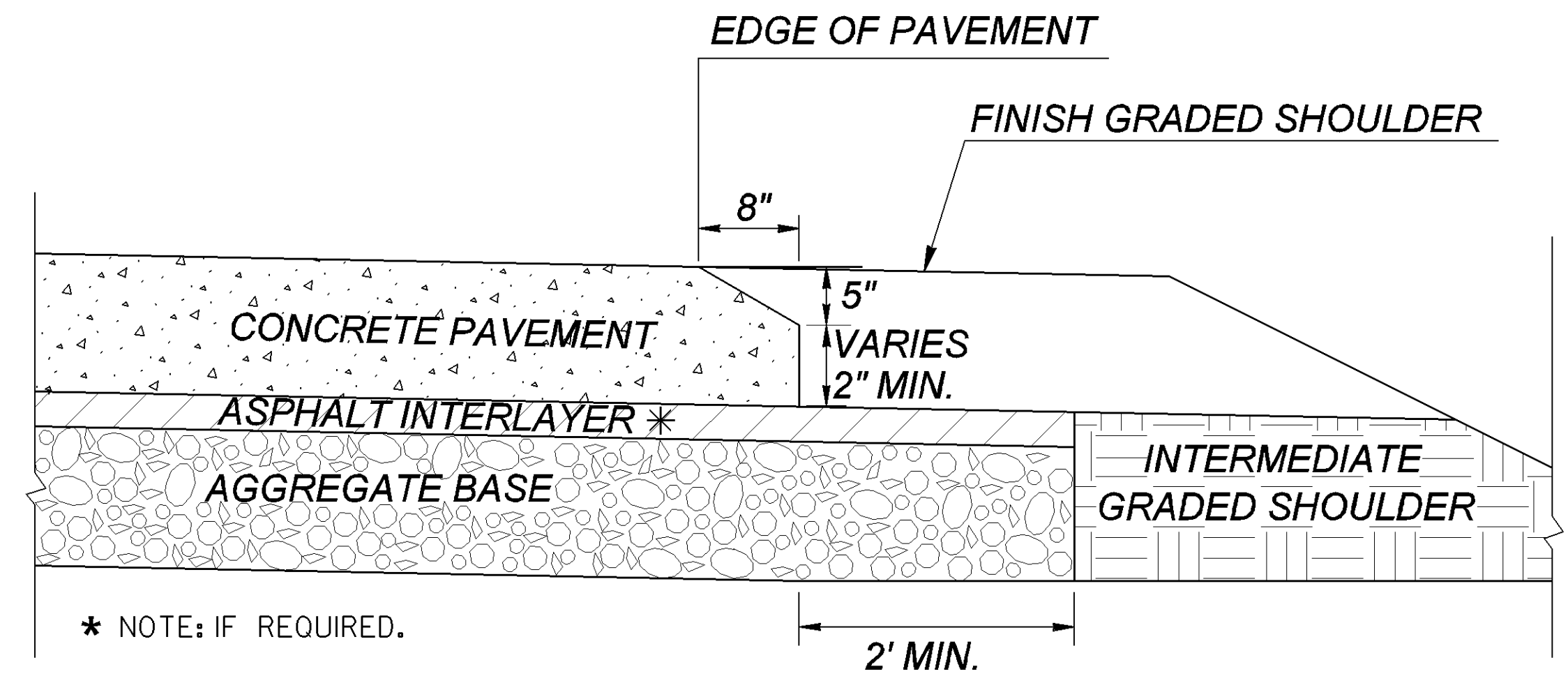


** AS MEASURED DIRECTLY BEHIND THE PAVING SPREADER.

ADDITIONAL QUANTITIES:
 DEPTH OF OVERLAY (T), NO RUTTING
 $(T)^2 \text{ (IN.)} \times 0.000441 \text{ TN/IN.-FT} \times \text{LENGTH (FT)} = \text{_____ TN}$

DEPTH OF OVERLAY (T), WITH 1 IN. RUTTING
 $(T)^2 \text{ (IN.)} \times 0.000441 \text{ TN/IN.-FT} \times \text{LENGTH (FT)} + (T) \text{ (IN.)} \times 0.000882 \text{ TN/IN.-FT} \times \text{LENGTH (FT)} = \text{_____ TN}$

PLAIN PC CONCRETE PAVEMENT OR ROLLER COMPACTED CONCRETE PAVEMENT



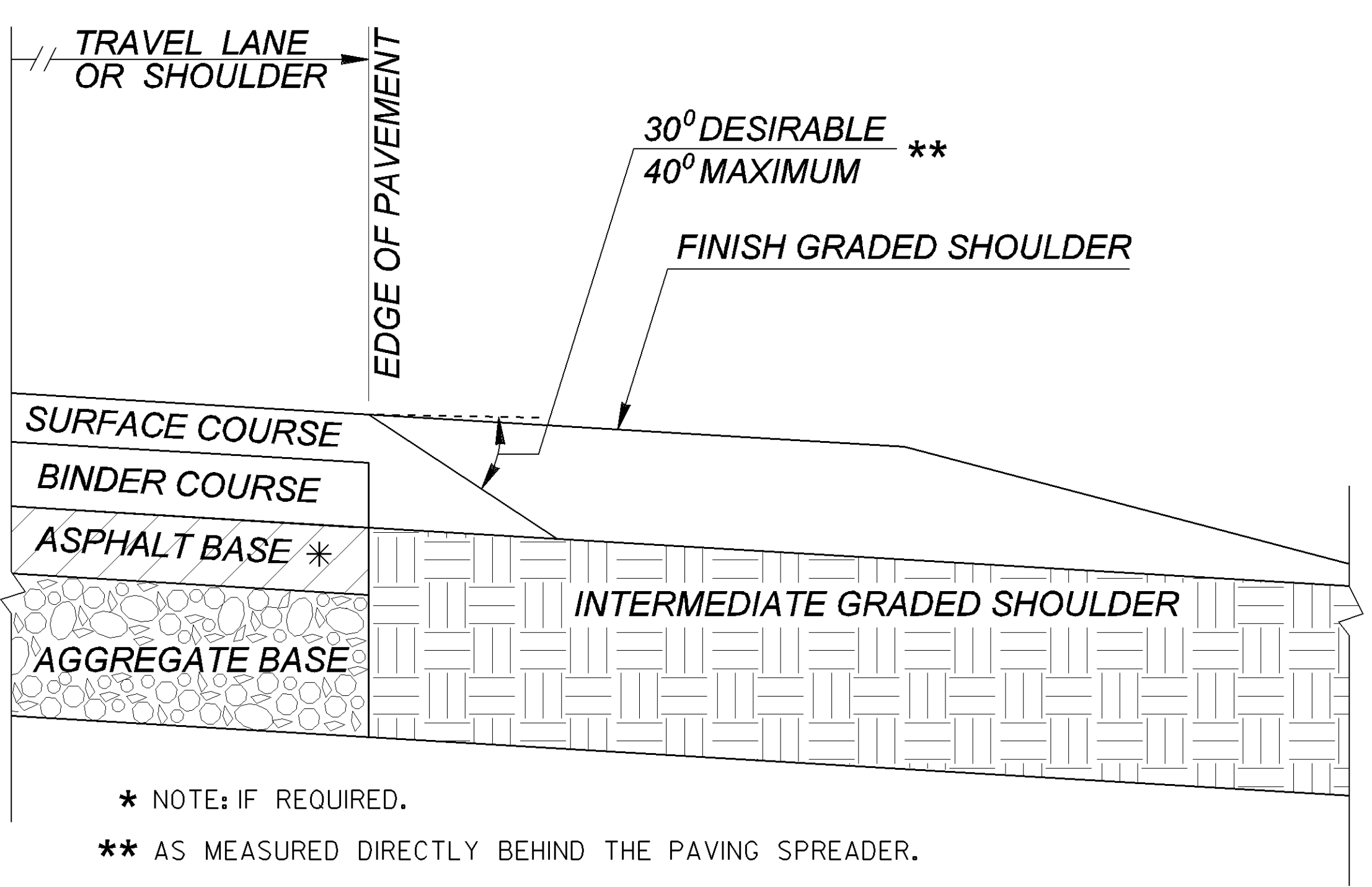
* NOTE: IF REQUIRED.

ADDITIONAL QUANTITIES:
 CONCRETE
 $0.07407 \text{ SY/FT} \times \text{LENGTH (FT)} = \text{_____ SY}$

ASPHALT INTERLAYER, IF REQUIRED
 $(T) \text{ IN.} \times \text{LENGTH (FT)} \times 0.004074 \text{ TN/IN.-FT} = \text{_____ TN}$

AGGREGATE BASE (BASED ON 2.07 TN/CY)
 $(T) \text{ IN.} \times \text{LENGTH (FT)} \times 0.0042592 \text{ TN/IN.-FT} = \text{_____ TN}$

ASPHALT PAVEMENT - NEW



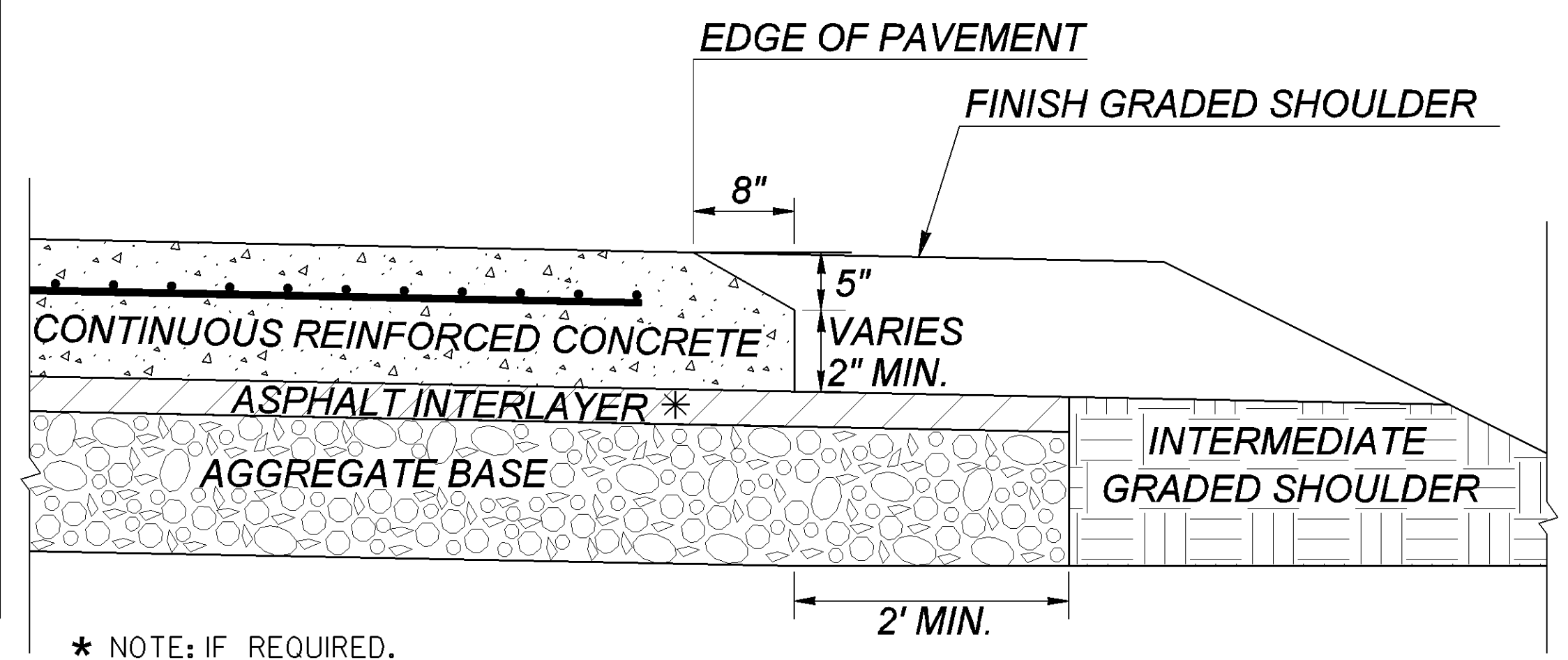
* NOTE: IF REQUIRED.
 ** AS MEASURED DIRECTLY BEHIND THE PAVING SPREADER.

ADDITIONAL QUANTITIES:
 SURFACE COURSE PAVING DEPTH (T)
 $(T)^2 \text{ (IN.)} \times 0.000441 \text{ TN/IN.-FT} \times \text{LENGTH (FT)} = \text{_____ TN}$

GENERAL NOTES:
 1. THE SAFETY EDGE SHALL BE CONSTRUCTED AS AN INTEGRAL OPERATION OF THE ROADWAY PAVEMENT PLACEMENT PROCESS.

- (ASPHALT PAVEMENT)
- USE AN APPROVED MECHANICAL DEVICE THAT WILL:
 - APPLY COMPACTIVE EFFORT TO THE ASPHALT MIXTURE TO ELIMINATE OBJECTABLE VOIDS AS THE MIXTURE PASSES THROUGH THE WEDGE DEVICE.
 - PRODUCE A WEDGE WITH A UNIFORM TEXTURE, SHAPE, AND DENSITY WHILE AUTOMATICALLY ADJUSTING TO VARYING HEIGHTS ENCOUNTERED ALONG THE ROADWAY SHOULDER.
 - A SINGLE-PLATE STRIKE-OFF METHOD SHALL NOT BE USED FOR BITUMINOUS PAVING, AS THE SINGLE-PLATE STRIKE-OFF METHOD HAS BEEN FOUND TO PRODUCE A NON-DURABLE EDGE.
 - COMPACTION OF THE EDGE SHOULD NOT BE DONE WITH THE FIRST PASS OF THE ROLLER: WITH THE ROLLER STAYING OFF THE EDGE AT LEAST 6 INCHES. THIS IS IN ORDER TO ALLOW THE EDGE MIX TO SLIGHTLY COOL PRIOR TO COMPACTION.
 - SHORT SECTIONS OF HANDWORK ARE ALLOWED, WHEN NECESSARY, FOR TRANSITIONS AND TURNOUTS.

CONTINUOUS REINFORCED CONCRETE PAVEMENT



* NOTE: IF REQUIRED.

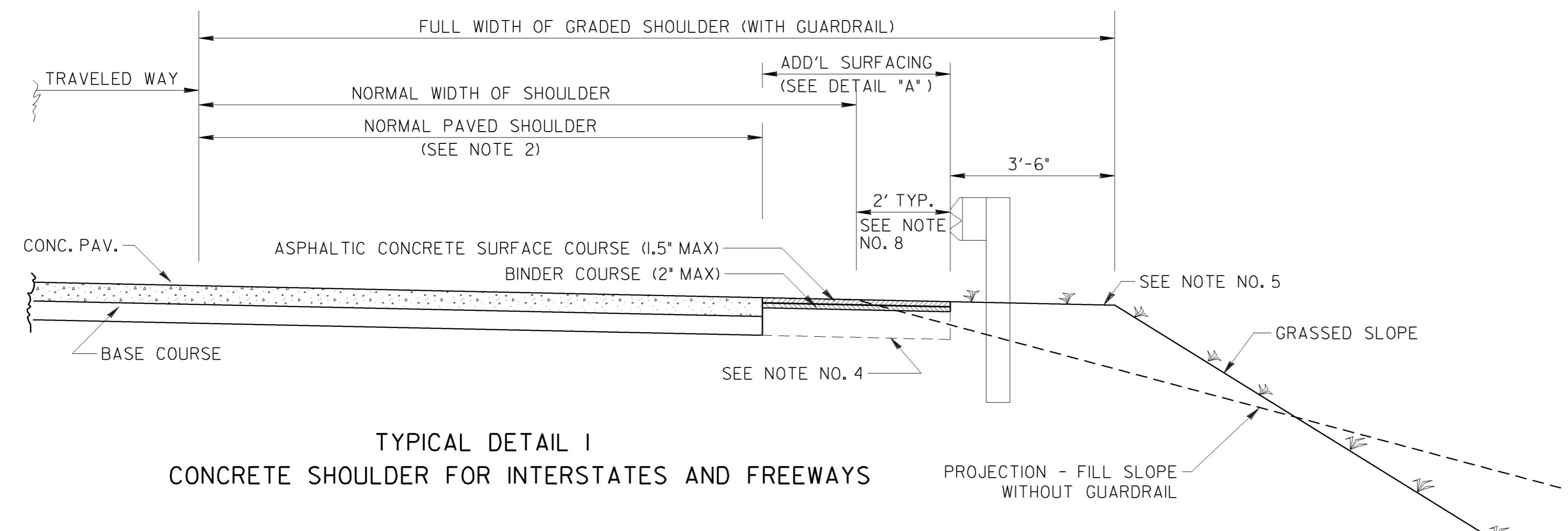
ADDITIONAL QUANTITIES:
 CONCRETE
 $0.07407 \text{ SY/FT} \times \text{LENGTH (FT)} = \text{_____ SY}$

ASPHALT INTERLAYER, IF REQUIRED
 $(T) \text{ IN.} \times \text{LENGTH (FT)} \times 0.004074 \text{ TN/IN.-FT} = \text{_____ TN}$

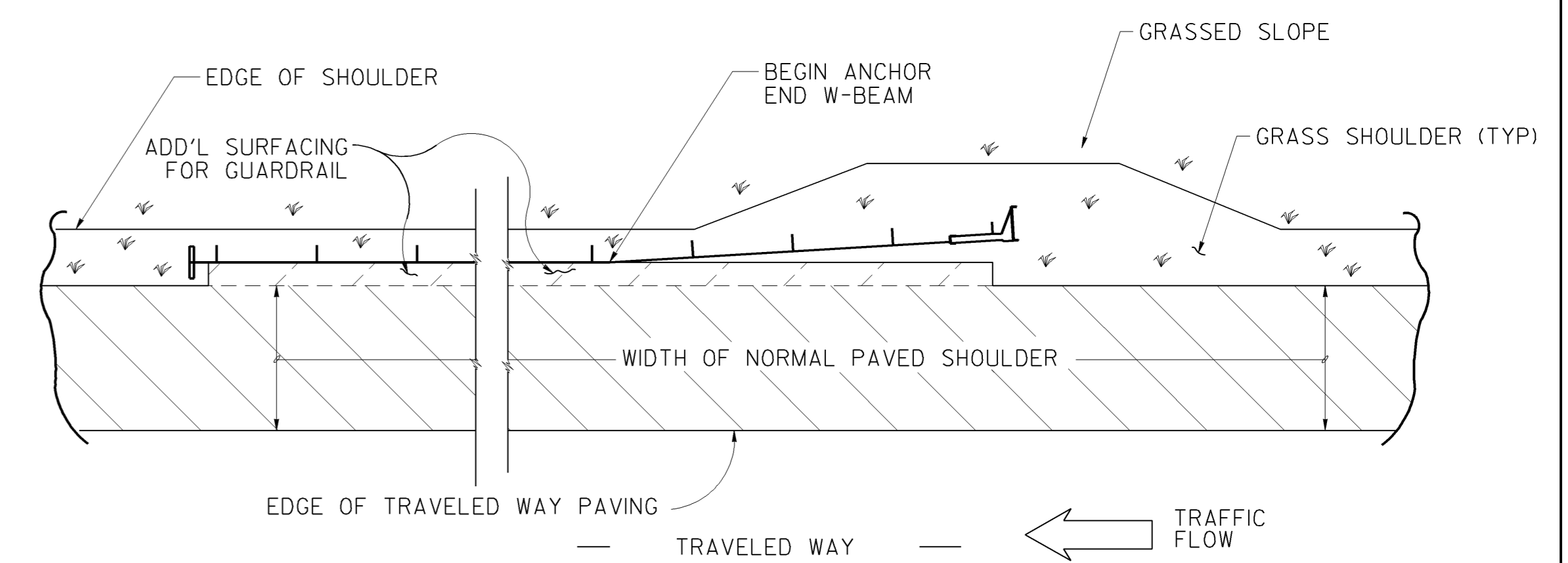
AGGREGATE BASE (BASED ON 2.07 TN/CY)
 $(T) \text{ IN.} \times \text{LENGTH (FT)} \times 0.0042592 \text{ TN/IN.-FT} = \text{_____ TN}$

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
CONSTRUCTION DETAIL PAVEMENT EDGE TREATMENT ASPHALT AND CONCRETE PAVEMENT	
NO SCALE	SEPTEMBER 2011
TC	DES. B.A.S. DRW. G.L.O. CHK. D.G.P. REVIEW B.A.S.
BY	NUMBER P-7

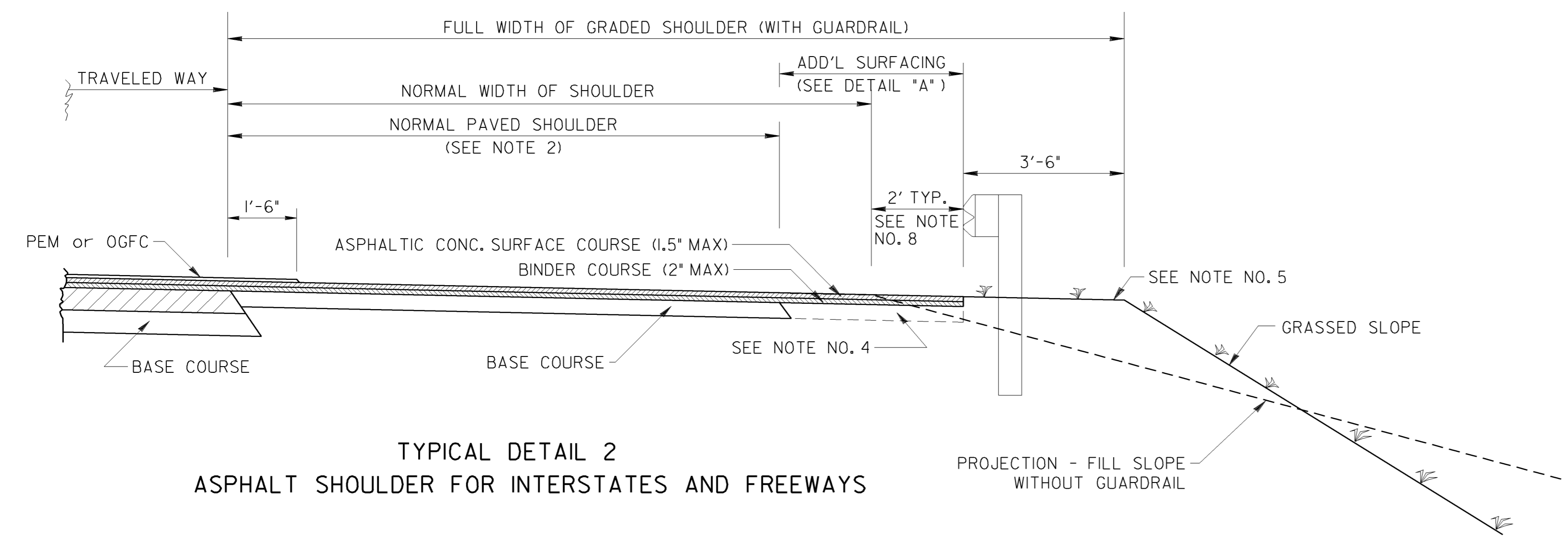
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



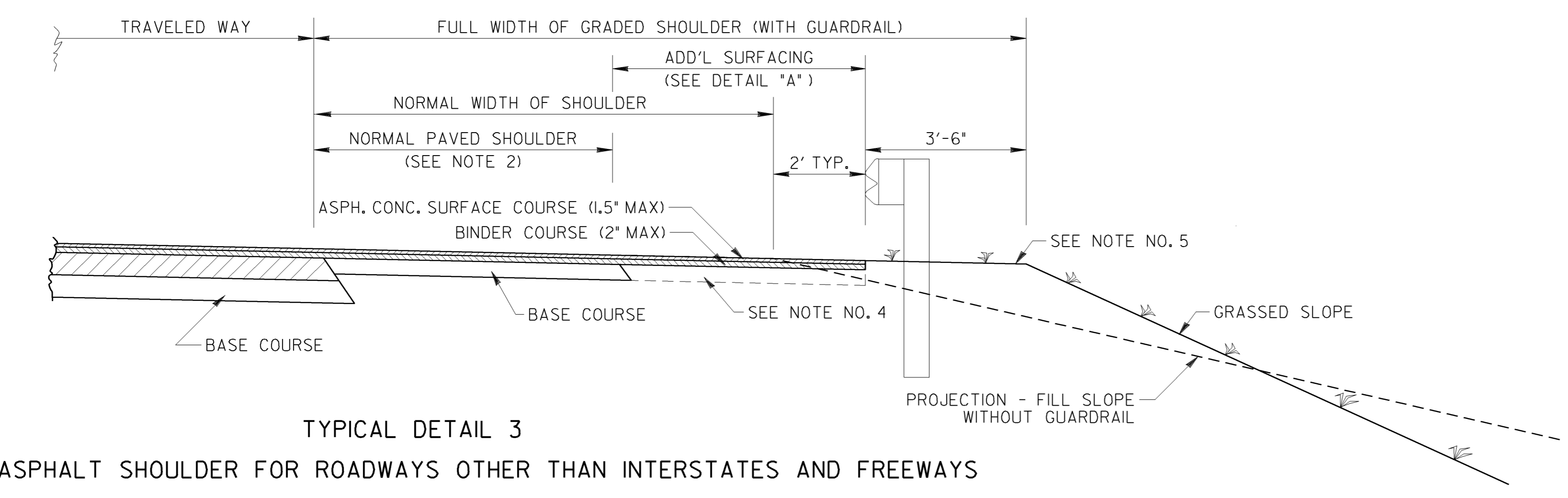
TYPICAL DETAIL 1
CONCRETE SHOULDER FOR INTERSTATES AND FREEWAYS



DETAIL "A"
ADDITIONAL SURFACING AT GUARDRAIL
TYPICAL PLAN VIEW



TYPICAL DETAIL 2
ASPHALT SHOULDER FOR INTERSTATES AND FREEWAYS

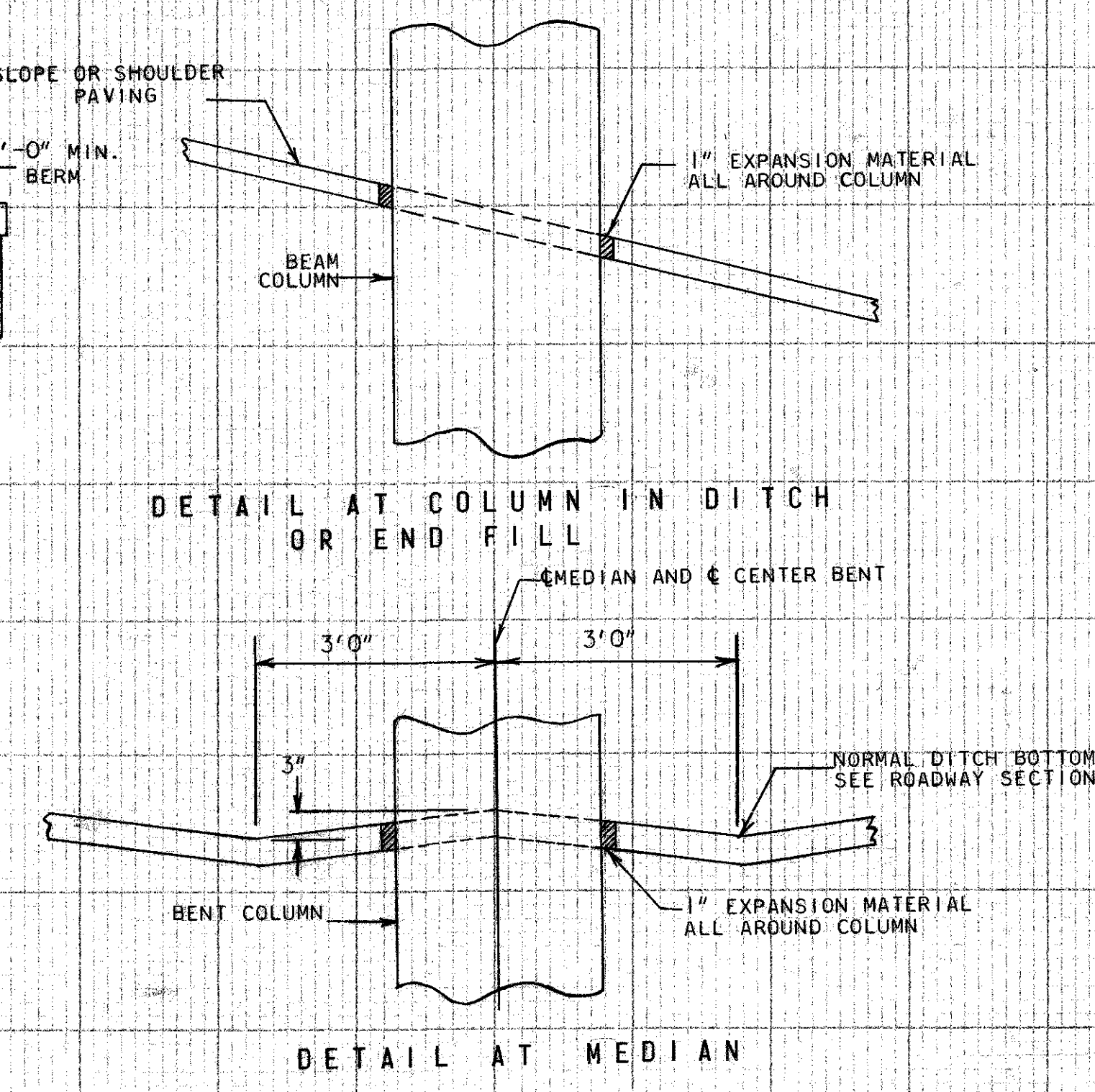
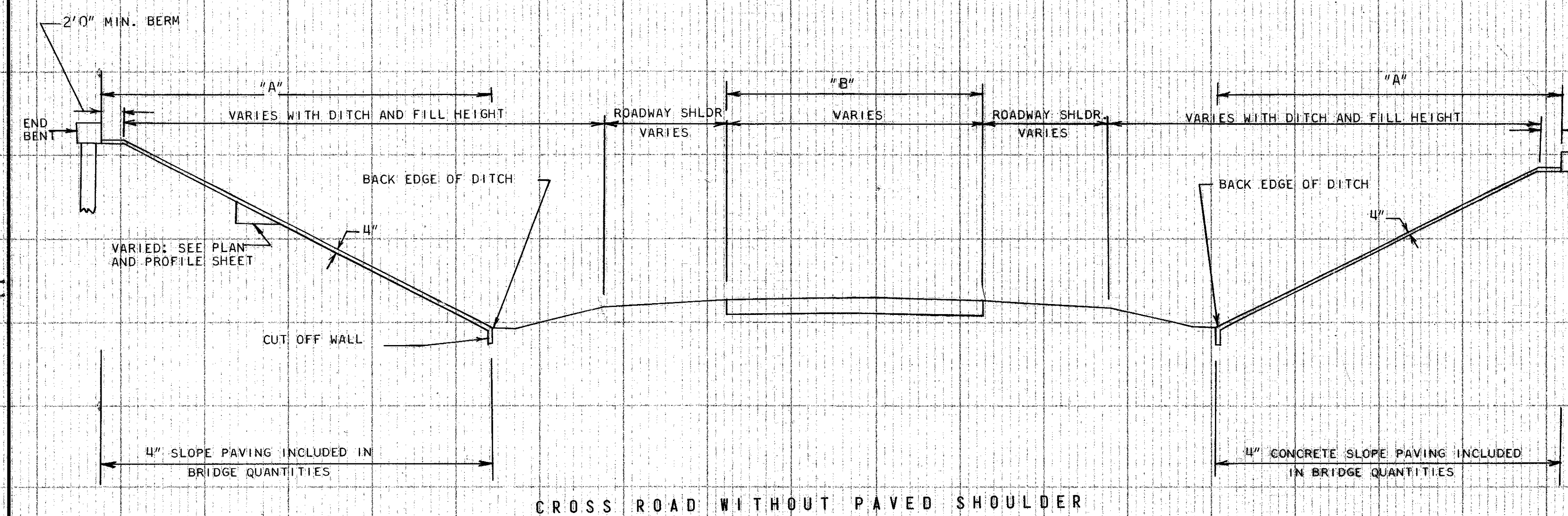
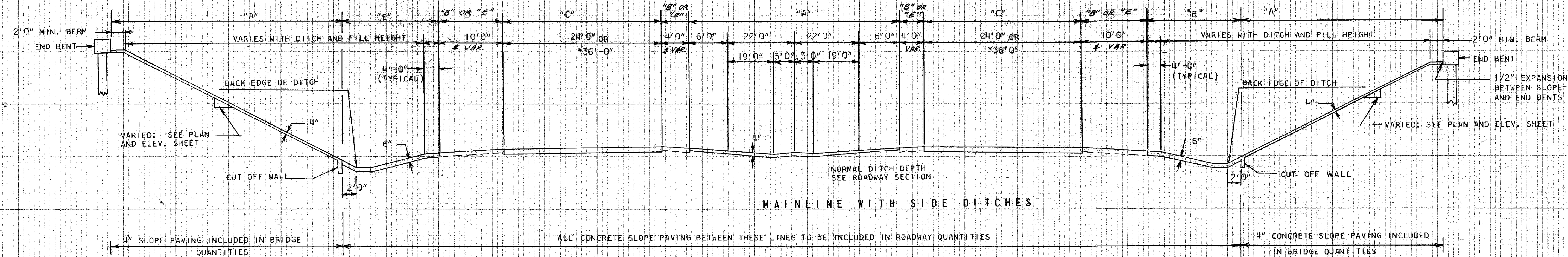
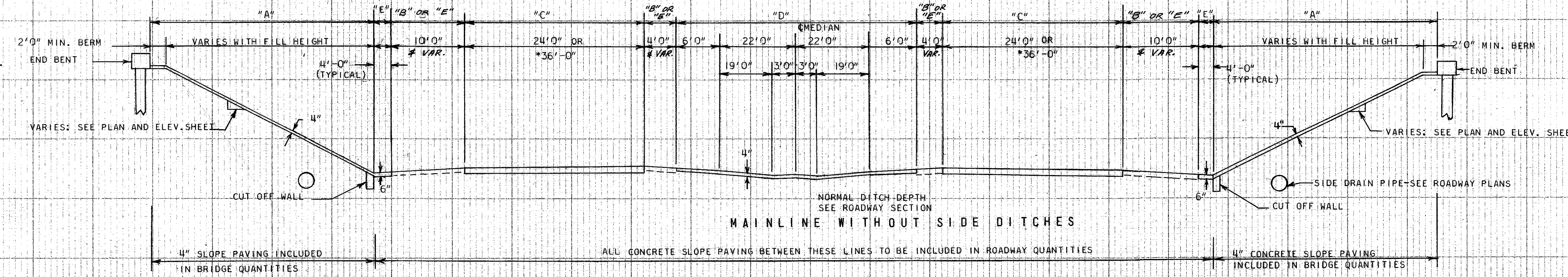


TYPICAL DETAIL 3
ASPHALT SHOULDER FOR ROADWAYS OTHER THAN INTERSTATES AND FREEWAYS

GENERAL NOTES:

1. USE OF THESE DETAILS IS WHERE A PAVED SHOULDER WIDTH IS SPECIFIED AND GUARDRAIL IS REQUIRED
2. DETAILS OF NORMAL SHOULDER PAVING ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. SEE PROJECT PLANS FOR MATERIALS AND DIMENSIONS.
3. ADDITIONAL SURFACING SHALL TERMINATE AT THE FACE OF THE GUARDRAIL.
4. THE NORMAL PAVED SHOULDER WIDTH MAY BE EXTENDED TO THE FACE OF THE GUARDRAIL, WHERE SPECIFIED ON PROJECT PLANS.
5. IN AREAS WITH HIGHLY ERODIBLE SOIL, TEMPORARY EROSION CONTROL MEASURES SHALL BE PLACED ON THE SHOULDER UNTIL THE FORESLOPE IS FULLY GRASSED AND STABILIZED.
6. SEE GUARDRAIL STANDARDS FOR SHOULDER WIDENING DIMENSIONS AT ANCHORAGE, WHERE REQUIRED
7. SEE PROJECT PLANS FOR SHOULDER DIMENSIONS.
8. THE 2-FT OFFSET IS NOT REQUIRED FOR FREEWAYS AND INTERSTATES WITH 14-FT WIDE NORMAL SHOULDERS

4-19-16		3-1-16		9-30-02		DATE		DEPARTMENT OF TRANSPORTATION	
ADDED NOTE 8		REV PAVT UNDER GUARDRAIL		COMBINED TWO S-4 DETAILS		REVISION		STATE OF GEORGIA	
BY		BY		BY		BY		CONSTRUCTION DETAIL	
NO SCALE		RE-DRAWN APRIL 2013		NUMBER		S-4		SHOULDER PAVING AND SURFACING AT GUARDRAIL	



* WHERE ROADWAY PAVEMENT WIDTH IS 36'-0", 6" CONCRETE SLOPE PAVING WILL BE USED IN MEDIAN INSTEAD OF THE 4" CONCRETE SLOPE PAVING SHOWN.

GENERAL NOTES:
 "A" - 4" CONCRETE SLOPE PAVING
 "B" - SHOULDER PAVEMENT PER ROADWAY PLANS
 "C" - ROADWAY PAVEMENT PER ROADWAY PLANS
 SECTIONS SHOWN ARE TYPICAL. FOR ACTUAL TEMPLATE SEE ROADWAY PLANS.
 SECTIONS ARE SHOWN NORMAL TO & MEDIAN. LIMIT OF 4" SLOPE PAVING IS OUT TO OUT WIDTH OF UNDERPASS PLUS 5'0" EACH SIDE.
 "D" - OMIT 4" CONCRETE SLOPE PAVING IN MEDIAN BRIDGES 28 FT. WIDE OR LESS
 "E" - 6" CONCRETE SLOPE PAVING

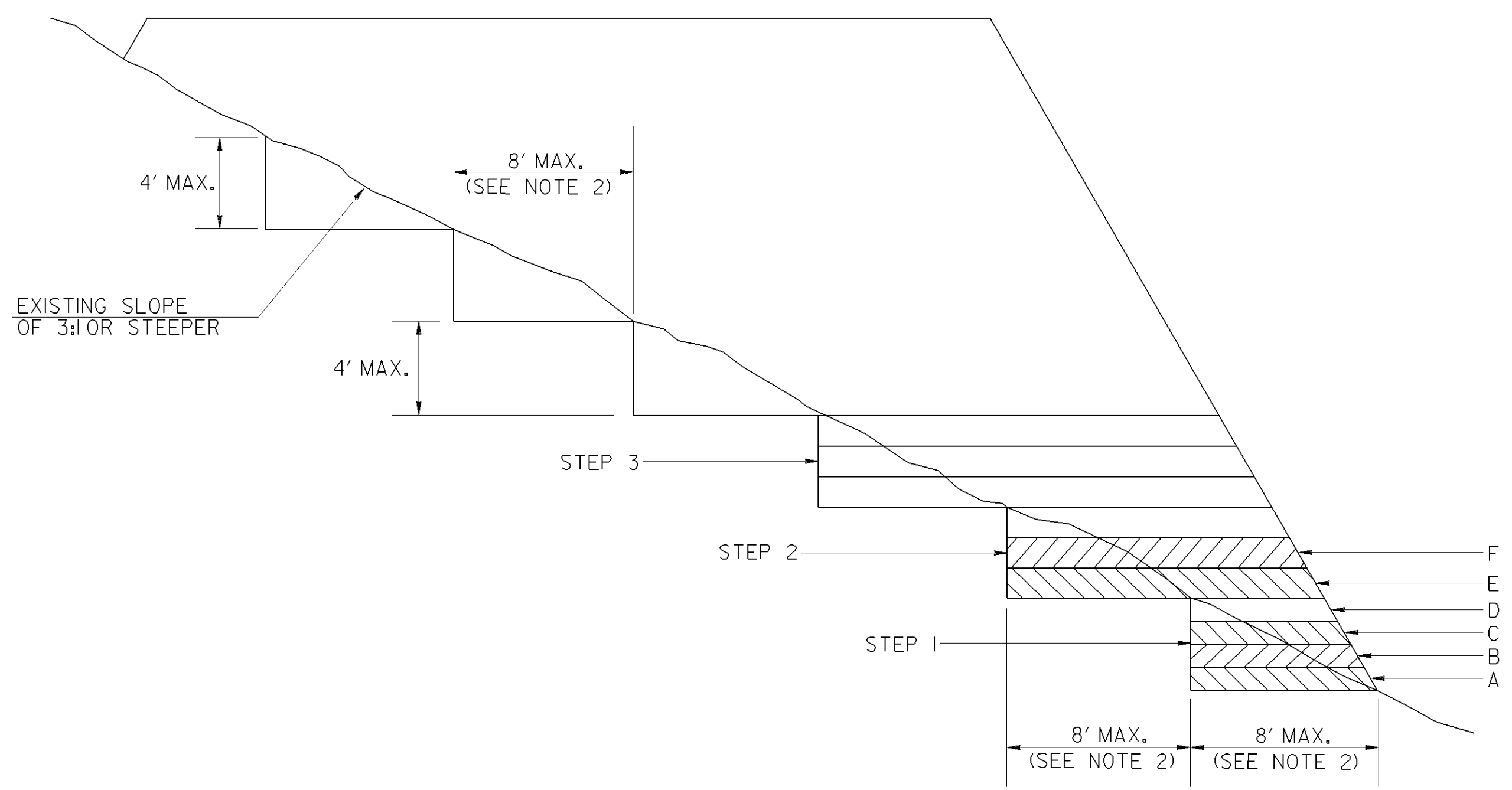
TYPICAL SLOPE PAVING DETAILS

R.M.U. - "B" OR "E" ON SHLD. - 11-29-66
 REDRAWN - MARCH, 1976
 ADDED 6" CONC. SLOPE PAV. - R.M.U. - 11-29-77

400 COPIES

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

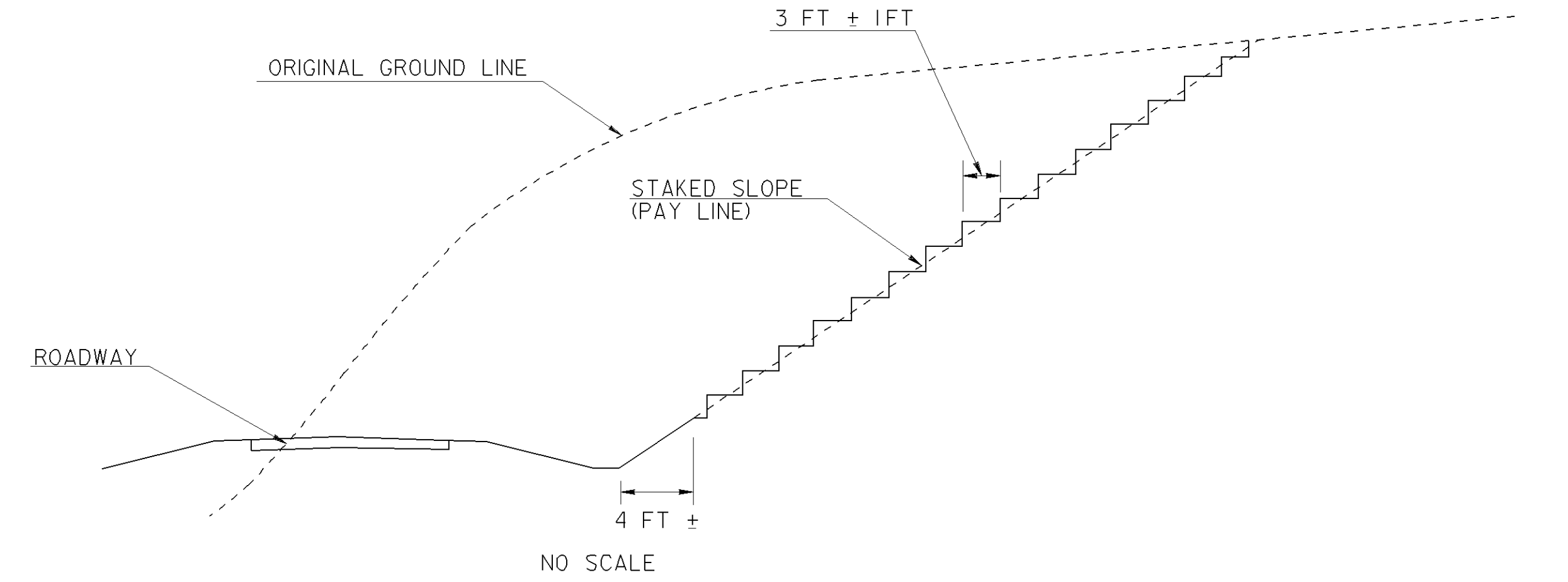
BENCHING DETAIL



NOTES :

1. WHERE THE EMBANKMENT IS TO BE PLACED ON A HILLSIDE OR ANOTHER EXISTING EMBANKMENT HAVING A SLOPE OF 3 TO 1 OR STEEPER, THE FOUNDATION MUST BE BENCHED WHILE THE EMBANKMENT IS BEING MADE.(SEE DIAGRAM ABOVE)
2. THE DIAGRAM SHOWS THAT BEFORE LAYER "A" IS PLACED THE FIRST STEP (1) IS CUT INTO THE SLOPE A MAXIMUM DISTANCE OF ABOUT 8 FEET (ABOUT 3/4 THE WIDTH OF THE TYPICAL D-8 BULLDOZER BLADE). SUCCESSIVE LAYERS B, C, AND D ARE THEN PLACED BEFORE LAYER "E" IS PLACED, THE SECOND STEP IS CUT 8 FEET INTO THE SLOPE AND SUCCESSIVE LAYERS ARE AGAIN PLACED. IF IT IS ANTICIPATED THAT THE VERTICAL PART OF THE STEP WILL EXCEED 4 FEET IF A 8 FEET HORIZONTAL CUT IS MADE, THEN THE ACTUAL CUT STOPS WHEN THE VERTICAL PART REACHES A MAXIMUM OF 4 FEET ALLOWING THE HORIZONTAL DISTANCE TO VARY.
3. THE PROCESS OF BENCHING IS CONSIDERED INCIDENTAL TO THE ITEM OF UNCLASSIFIED EXCAVATION AND BORROW OR GRADING COMPLETE IN CONSTRUCTION OF THE EMBANKMENT AND NO ADDITIONAL MEASUREMENT OF QUANTITY OR PAYMENT WILL BE MADE FOR BENCHING.

SERRATED SLOPE DETAIL

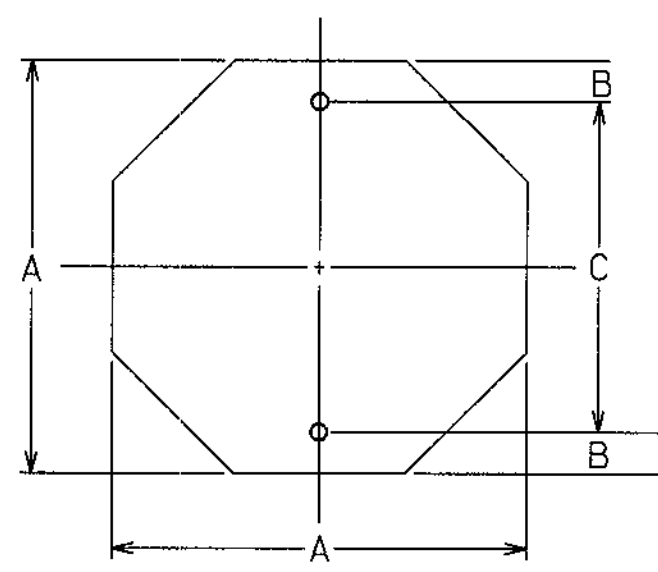


NOTES :

1. SLOPES STEEPER THAN 3:1 SHALL BE SERRATED.
2. WIDTH OF STEP SHALL BE 3 FT ± 1 FT.
3. HEIGHT OF STEP IS A FUNCTION OF WIDTH AND STAKED SLOPE.
4. TREAD OF STEP SHALL BE APPROXIMATELY HORIZONTAL.
5. SERRATED SLOPES SHALL BE USED ON ALL PROJECTS IN DISTRICTS 1, 6, AND 7, EXCEPT WHERE SPECIFICALLY EXCEPTED BY THE GEOTECHNICAL BUREAU IN THE SOIL SURVEY REPORT. SERRATED SLOPES SHALL NOT BE USED IN DISTRICTS 2, 3, 4, AND 5, UNLESS REQUIRED BY THE SOIL SURVEY.

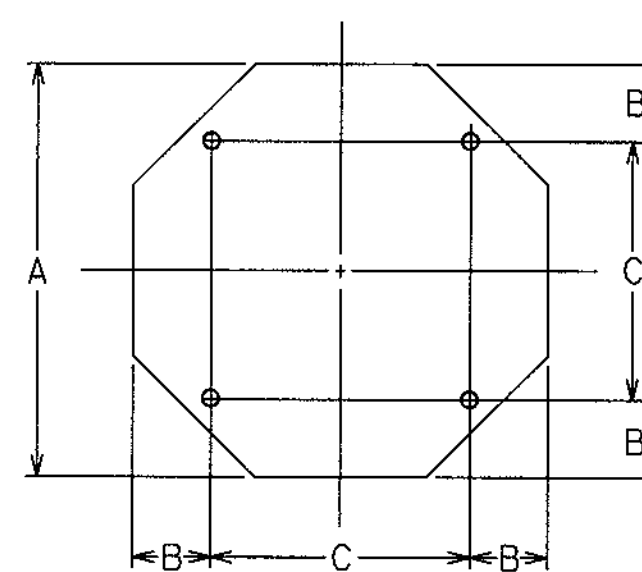
6-18-09		DEPARTMENT OF TRANSPORTATION	
REVISED BENCHING DETAIL & REVISED TITLE BLOCK.		STATE OF GEORGIA	
1-28-82		CONSTRUCTION DETAIL	
GEN. REVISION		SERRATED SLOPE DETAIL	
DATE		BENCHING DETAIL	
NO SCALE		JULY, 1981	
C.L.O.		NUMBER	
R.M.J.		S-7	
BY			

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

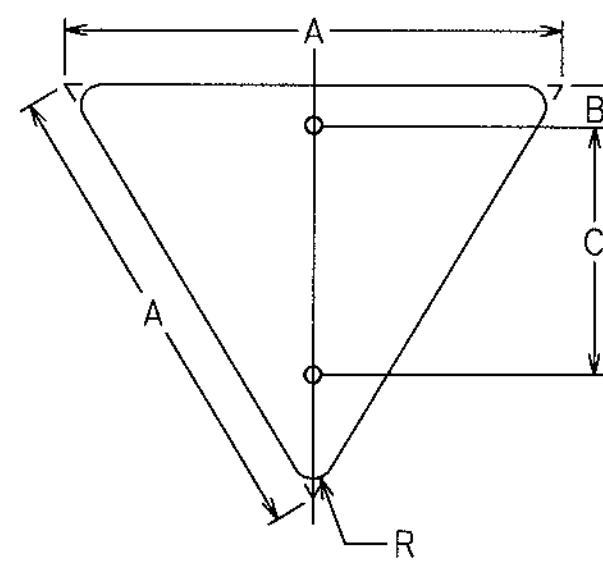


OCTAGON

A	B	C
24	3	18
30	3	24
36	3	30

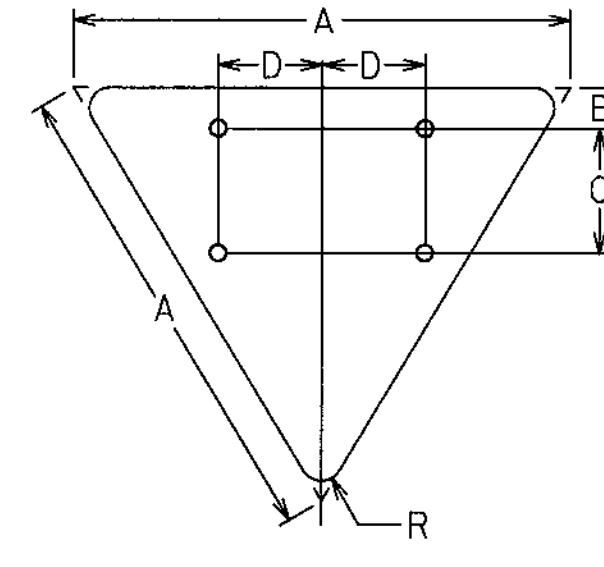


A	B	C
48	9	30

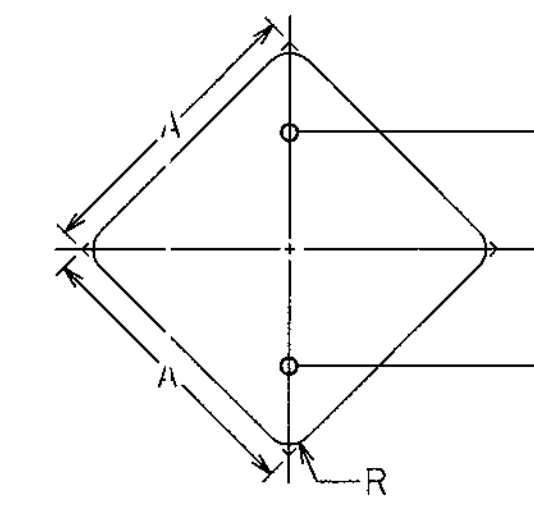


EQUILATERAL TRIANGLE

A	B	C	R
30	3	18	1 1/2
36	3	21	2
48	3	27	3

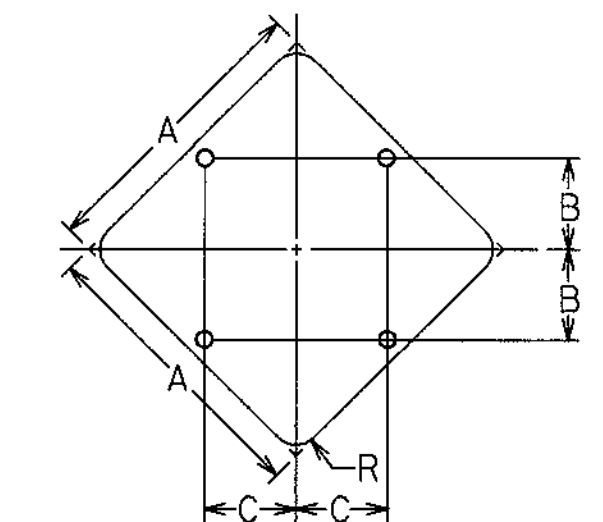


A	B	C	D	R
60	3	18	15	3



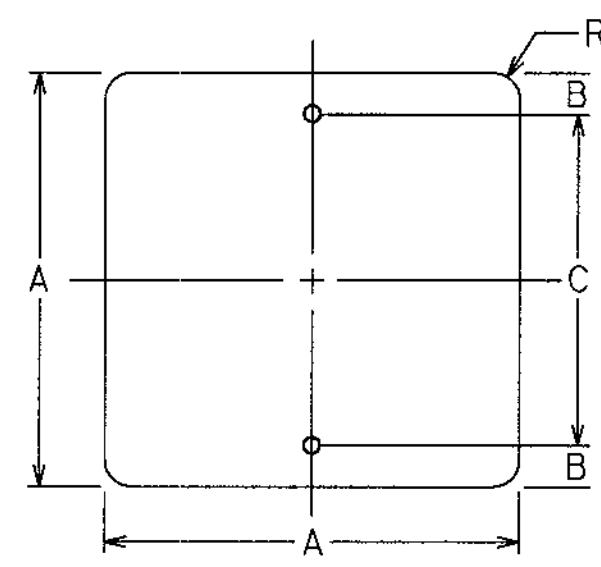
DIAMOND

A	B	R
24	12	1 1/2
30	15	1 7/8
36	18	2 1/4



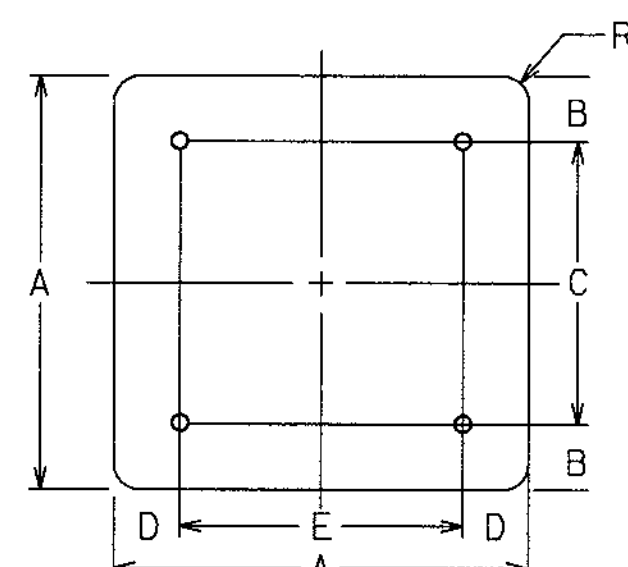
A	B	C	R
36	10	10	2 1/4
48	15	15	3
60	18	18	3 3/4

* FOR TWO POST ERECTION

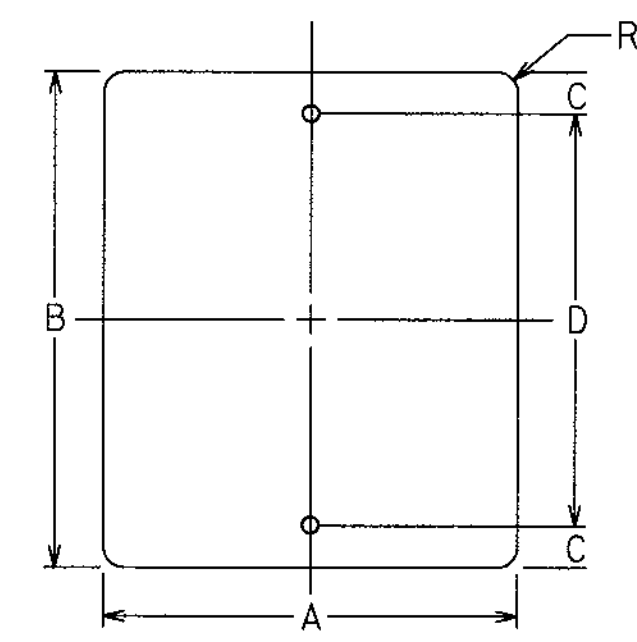


SQUARE

A	B	C	R
18	3	12	1 1/2
24	3	18	1 1/2
30	3	24	1 7/8

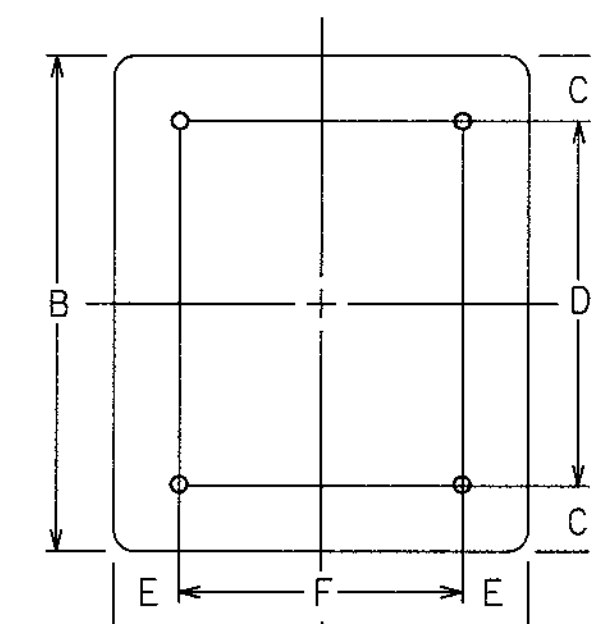


A	B	C	D	E	R
36	6	24	6	24	2 1/4
48	6	36	6	36	3

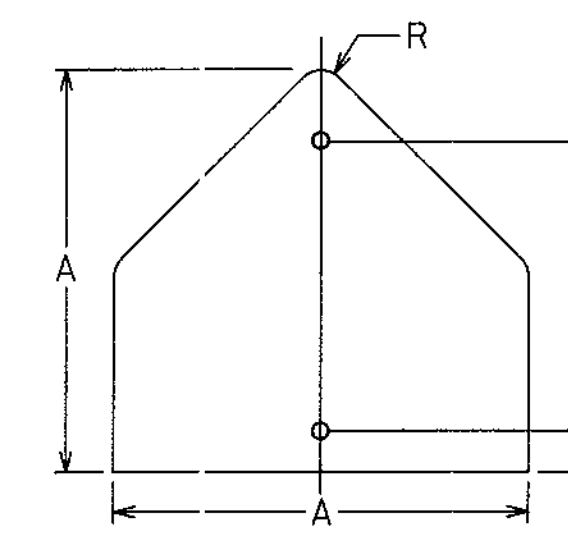


VERTICAL RECTANGLE

A	B	C	D	R
12	18	1 1/2	15	1 1/2
18	24	3	18	1 1/2
24	30	3	24	1 1/2
30	36	3	30	1 7/8

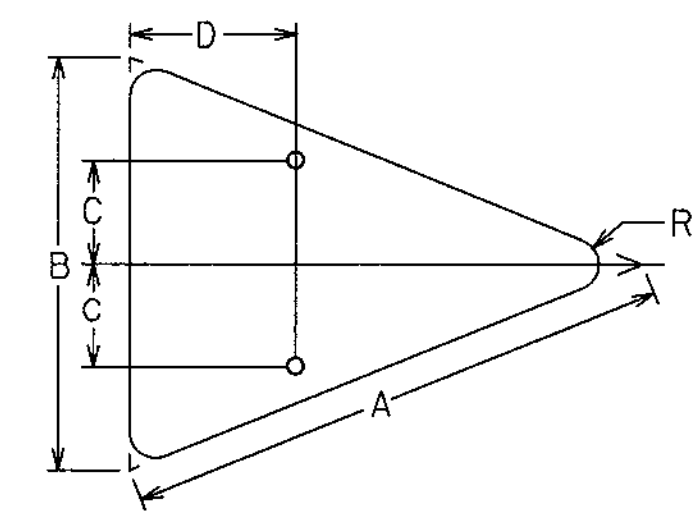


A	B	C	D	E	F	R
36	48	6	36	6	24	2 1/4
48	60	6	48	9	30	3



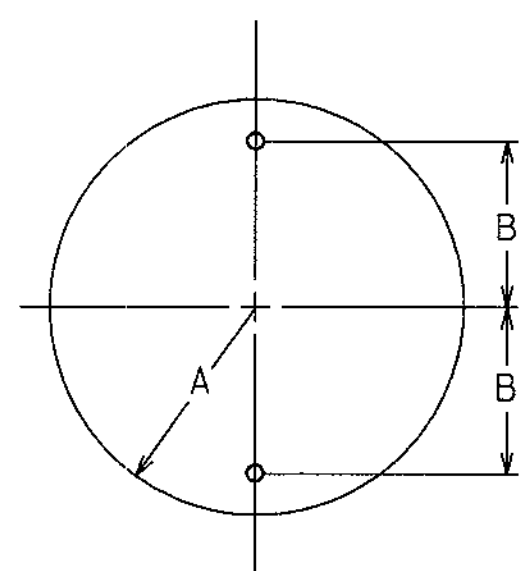
PENTAGON

A	B	C	R
30	21	3	1 7/8
36	24	3	2 1/4



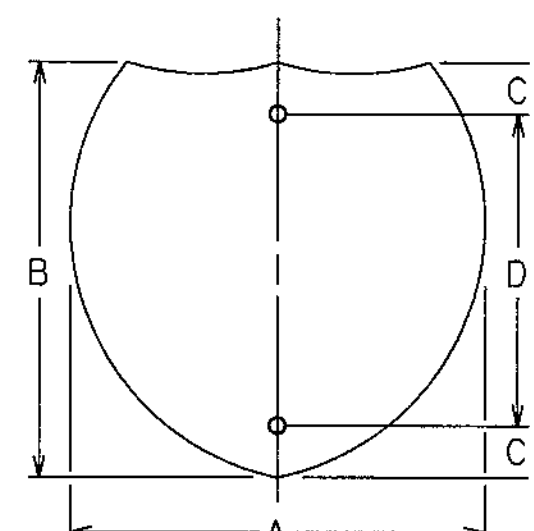
ISOSCELES TRIANGLE

A	B	C	D	R
40	30	7 1/2	12	1 7/8
48	36	9	15	2 1/4



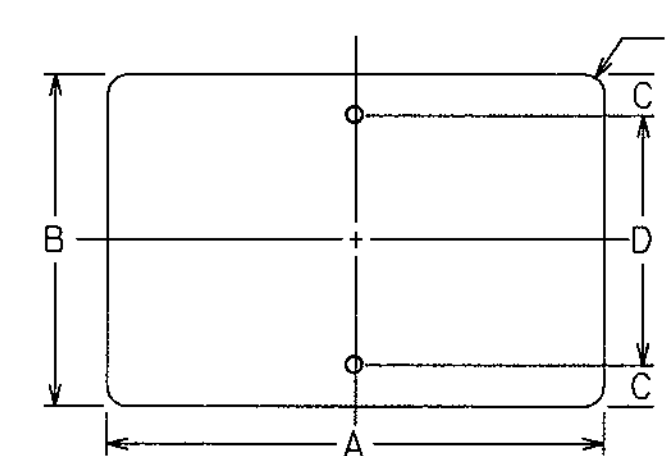
CIRCLE

A	B
15	12
18	15



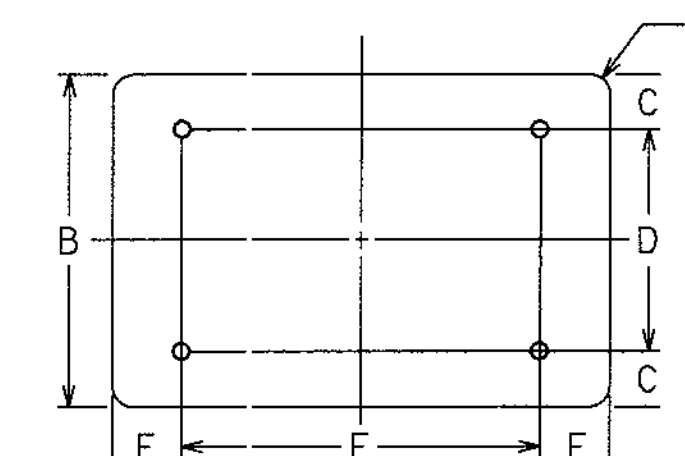
INTERSTATE SHIELD

A	B	C	D
24	24	3	18
30	24	3	18
36	36	6	24
45	36	6	24



HORIZONTAL RECTANGLE

A	B	C	D	R
21	15	1 1/2	12	1 1/2
24	12	1 1/2	9	1 1/2
24	18	3	12	1 1/2
30	15	1 1/2	12	1 1/2
30	24	3	18	1 1/2
36	12	1 1/2	9	1 1/2
36	24	3	18	1 1/2
48	12	1 1/2	9	1 1/2
48	24	3	18	1 7/8

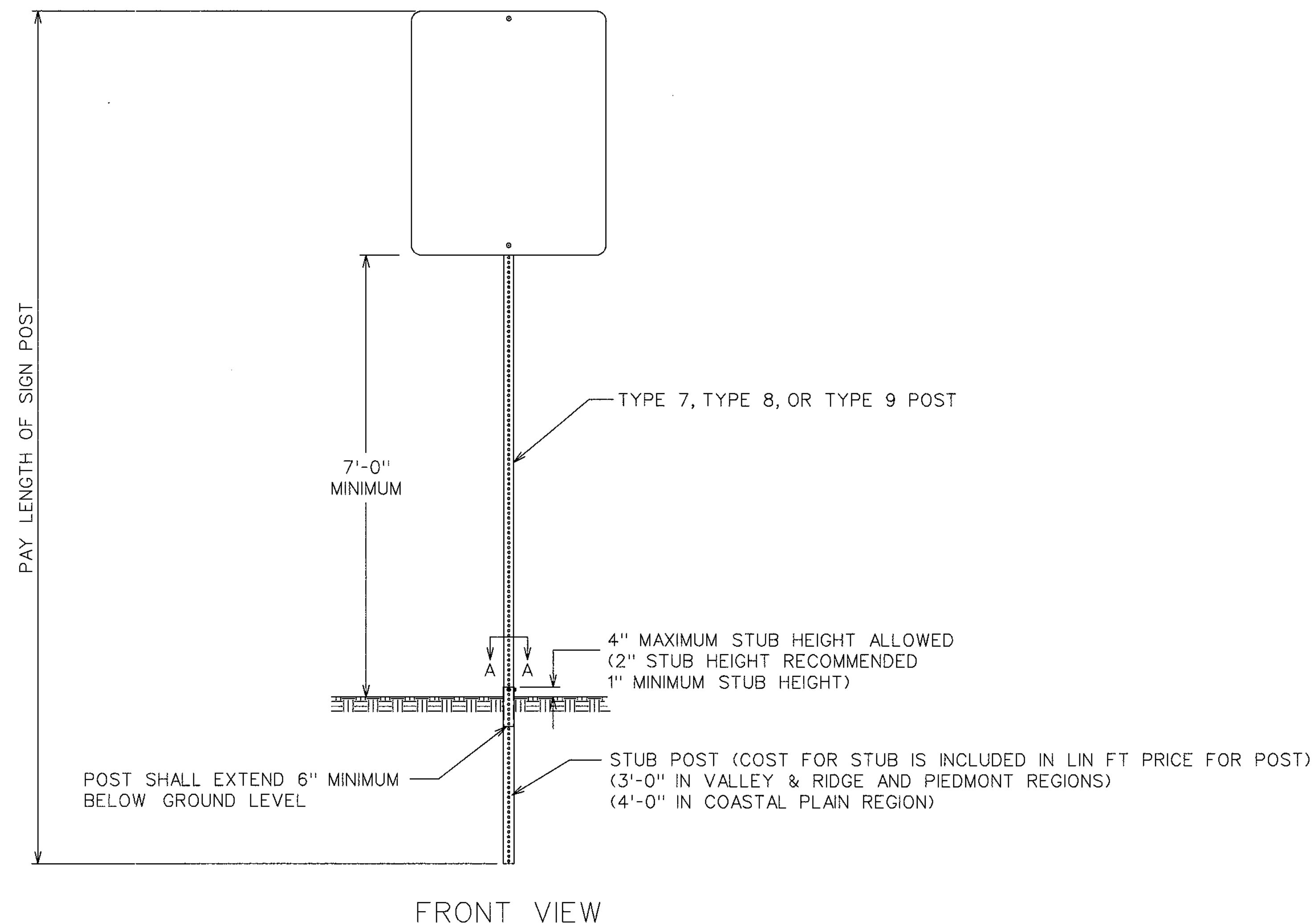


A	B	C	D	E	F	R
48	36	6	24	9	30	2 1/4
60	24	3	18	12	36	1 1/2
60	36	6	24	12	36	2 1/4

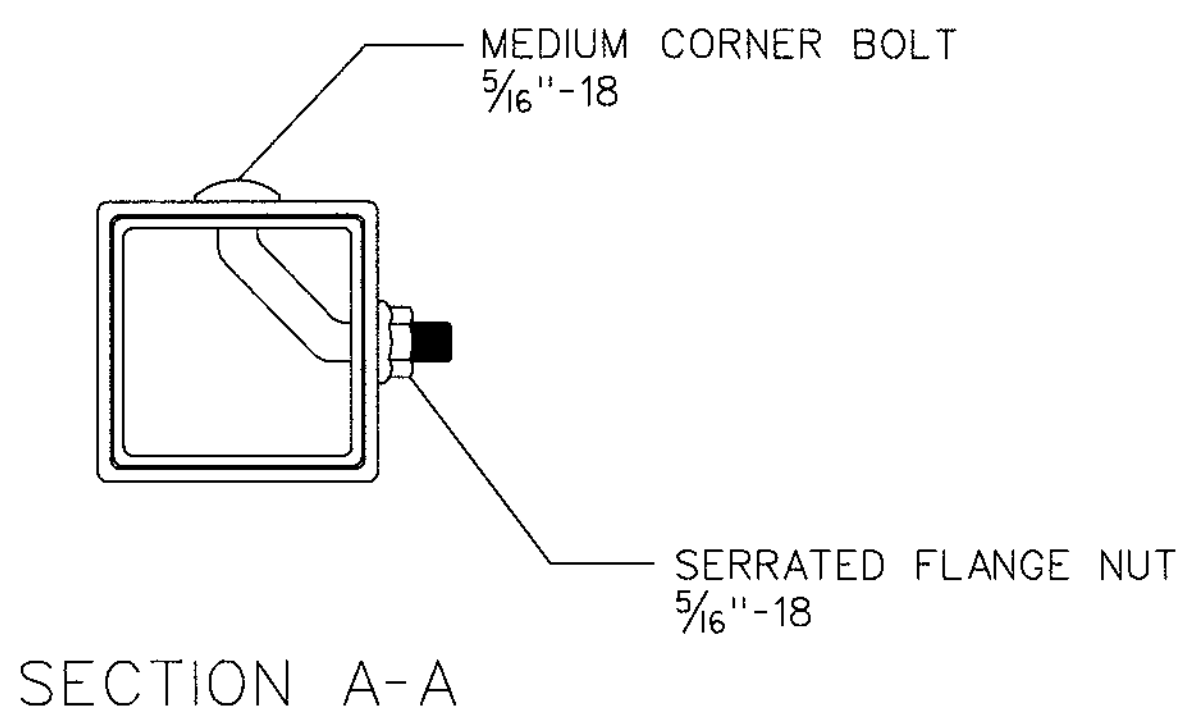
DATE	REVISIONS	GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & DESIGN

DETAILS OF SIGN PLATES
NO SCALE JANUARY 2000

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



POST	STUB SIZE
TYPE 7	2 1/4" x 2 1/4"
TYPE 8	2 3/4" x 2 3/4"
TYPE 9	2 1/2" x 2 1/2"



SIGN POST SELECTION CHART

70 MPH Wind Load Chart + 15% Gust Factor

Sign Centroid	SLIP BASE NOT REQUIRED				GROUND MOUNTED BREAKAWAY SIGN SUPPORT REQUIRED				
	TYPE 7 2" 14 ga.		TYPE 9 2-1/4" 14 ga	TYPE 8 2-1/2" 12 ga.	TYPE 8 2-1/2" 12 ga.		TYPE 8 w / TYPE 9 Insert* 2-1/2" 12 ga. W / 2-1/4" 14 ga.		
	1 Post	2 Post	1 Post	1 Post	2 Post	3 Post	1 Post	2 Post	3 Post
	SQUARE FOOTAGE				SQUARE FOOTAGE				
6'	13.50	27.00	19.25	30.00	60.00	90.00	49.25	98.50	147.75
7'	11.60	23.20	16.50	25.75	51.50	77.25	42.25	84.50	126.75
8'	10.15	20.30	14.45	22.55	45.10	67.65	37.00	74.00	111.00
9'	9.00	18.00	12.85	20.00	40.00	60.00	32.85	65.70	98.55
10'	8.10	16.20	11.55	18.00	36.00	54.00	29.55	59.10	88.65
11'	7.40	14.80	10.50	16.40	32.80	49.20	26.90	53.80	80.70
12'	6.80	13.60	9.65	15.00	30.00	45.00	24.65	49.30	73.95
13'	6.25	12.50	8.90	13.85	27.70	41.55	22.75	45.50	68.25
14'	5.80	11.60	8.25	12.90	25.80	38.70	21.15	42.30	63.45
15'	5.00	10.00	6.45	10.10	20.20	30.30	16.55	33.10	49.65
16'	4.70	9.40	6.05	9.45	18.90	28.35	15.50	31.00	46.50
17'	4.40	8.80	5.70	8.90	17.80	26.70	14.60	29.20	43.80
18'	4.15	8.30	5.40	8.40	16.80	25.20	13.80	27.60	41.40
19'	3.95	7.90	5.10	7.95	15.90	23.85	13.05	26.10	39.15
20'	3.75	7.50	4.85	7.55	15.10	22.65	12.40	24.80	37.20

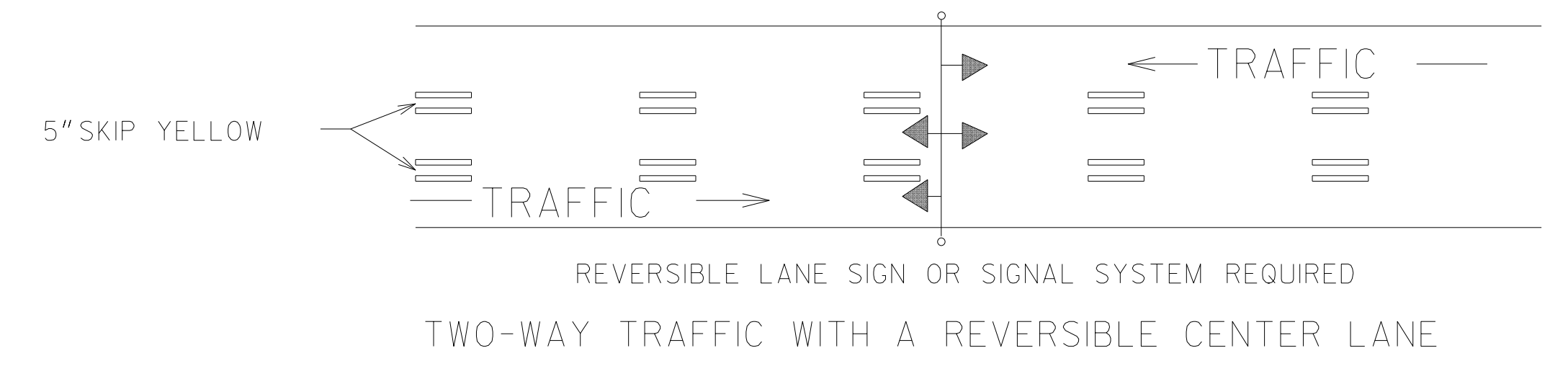
SIGN CENTROID IS DISTANCE FROM GROUND LEVEL TO BOTTOM OF SIGN PLUS HALF THE HEIGHT OF SIGN.
 EXAMPLE: 24" X 48" SIGN THAT IS 7 FEET FROM GROUND TO BOTTOM OF SIGN. ADD HALF OF 48" (24" OR 2 FT) PLUS 7 FT. = 9' CENTROID.

SIGN PLATE SHALL NOT EXCEED 48" IN WIDTH ON A SINGLE POST.

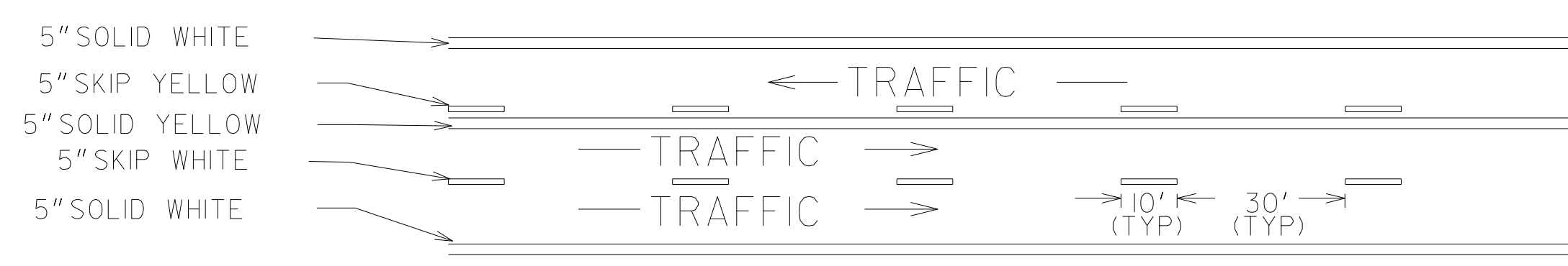
* TYPE 9 INSERT SHALL BE A CONTINUOUS POST INSERTED INTO THE TYPE 8 POST WHERE REQUIRED. THE INSERT POST SHALL EXTEND FROM THE BOTTOM OF THE SLIP BASE UPPER ASSEMBLY TO 4" BELOW THE BOTTOM OF THE SIGN. THE INSERT POST SHALL NOT EXTEND ABOVE THE BOTTOM OF THE SIGN. PAYMENT FOR THE INSERT POST SHALL BE PER LINEAR FOOT OF TYPE 9 POST.

GROUND MOUNTED BREAKAWAY SIGN SUPPORT WILL BE MEASURED AND PAID FOR SEPARATELY. THE COST FOR THIS WORK SHALL INCLUDE THE UPPER AND LOWER ASSEMBLY, STUB POST, CLASS "A" CONCRETE, ALL HARDWARE NECESSARY TO COMPLETE THE INSTALLATION, AND BE INCLUDED IN THE BID PRICE SUBMITTED FOR ITEM 636-3010.

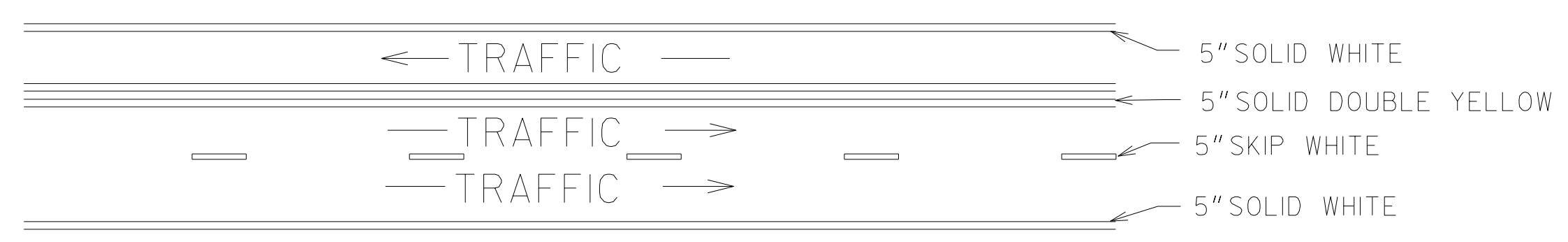
DATE	REVISIONS	GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & DESIGN
		TYPE 7, 8, AND 9 SQUARE TUBE POST INSTALLATION DETAIL
		NO SCALE JULY 2002



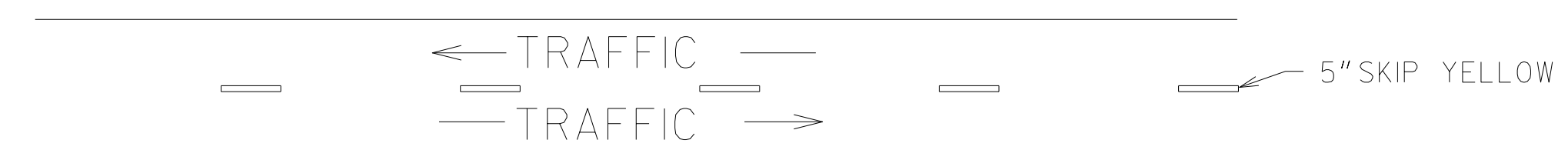
REVERSIBLE LANE SIGN OR SIGNAL SYSTEM REQUIRED
TWO-WAY TRAFFIC WITH A REVERSIBLE CENTER LANE



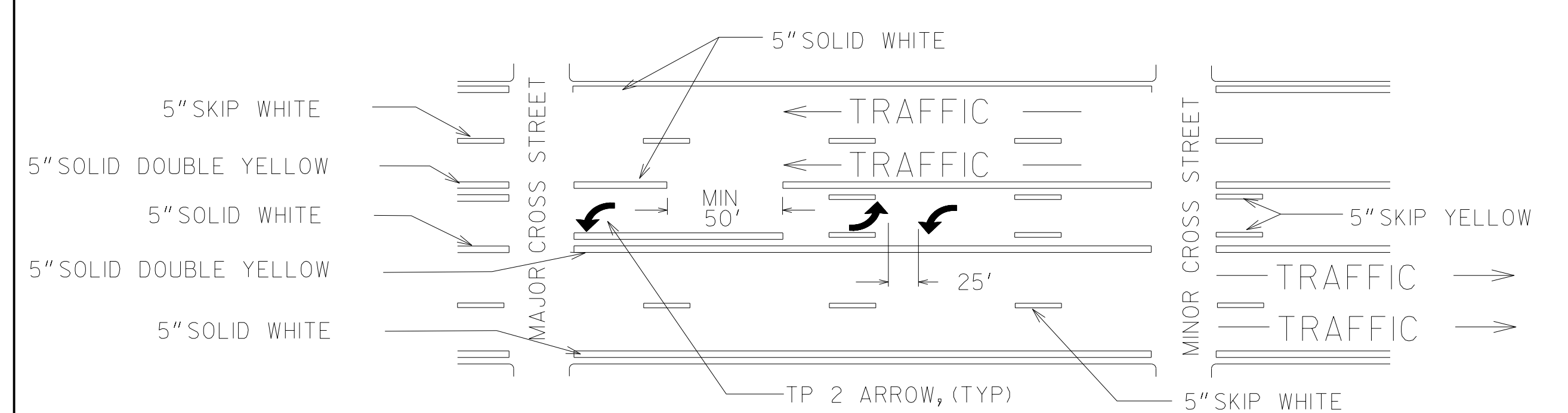
TWO-WAY TRAFFIC WHERE MOTORISTS IN A SINGLE LANE ARE PERMITTED TO PASS



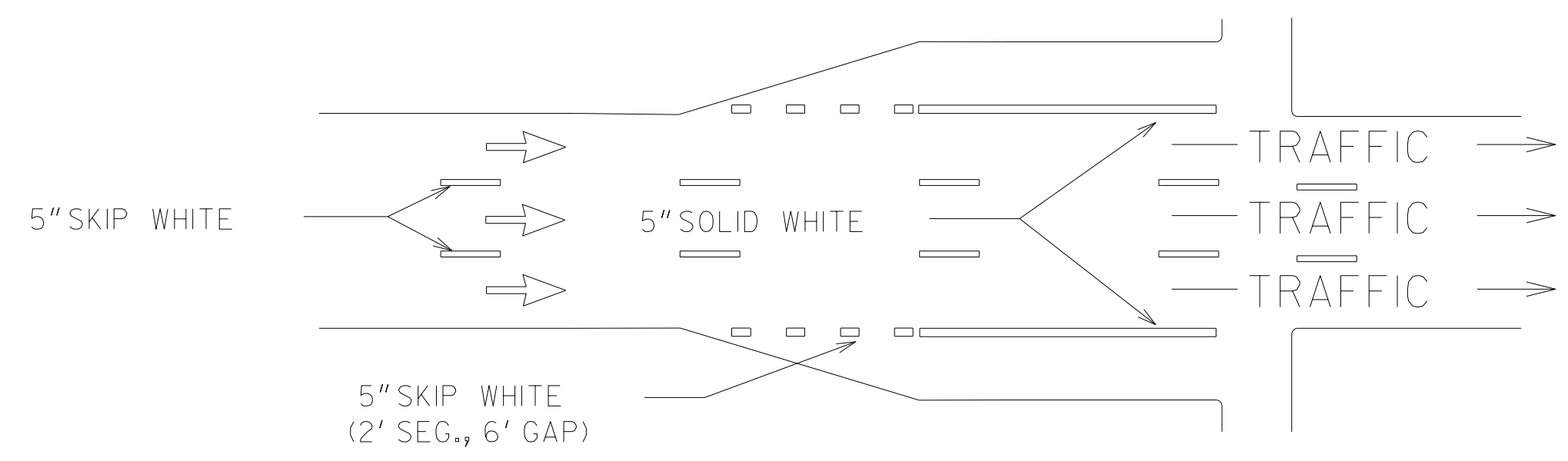
TWO-WAY TRAFFIC WHERE MOTORISTS IN A SINGLE LANE ARE NOT PERMITTED TO PASS



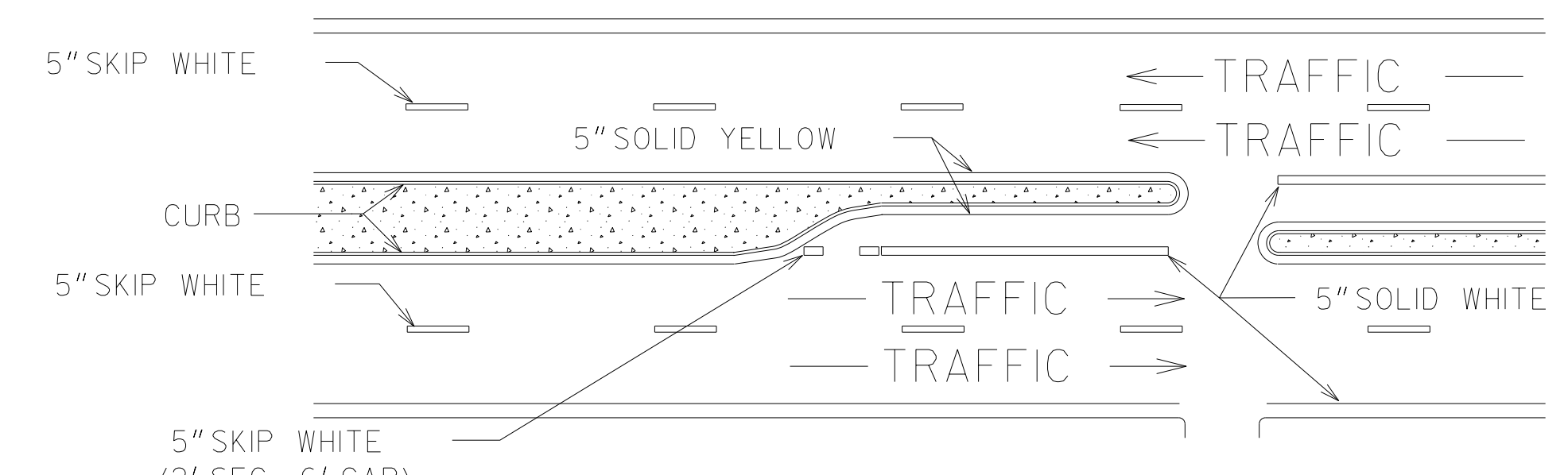
TWO-LANE, TWO-WAY TRAFFIC WITH PASSING PERMITTED



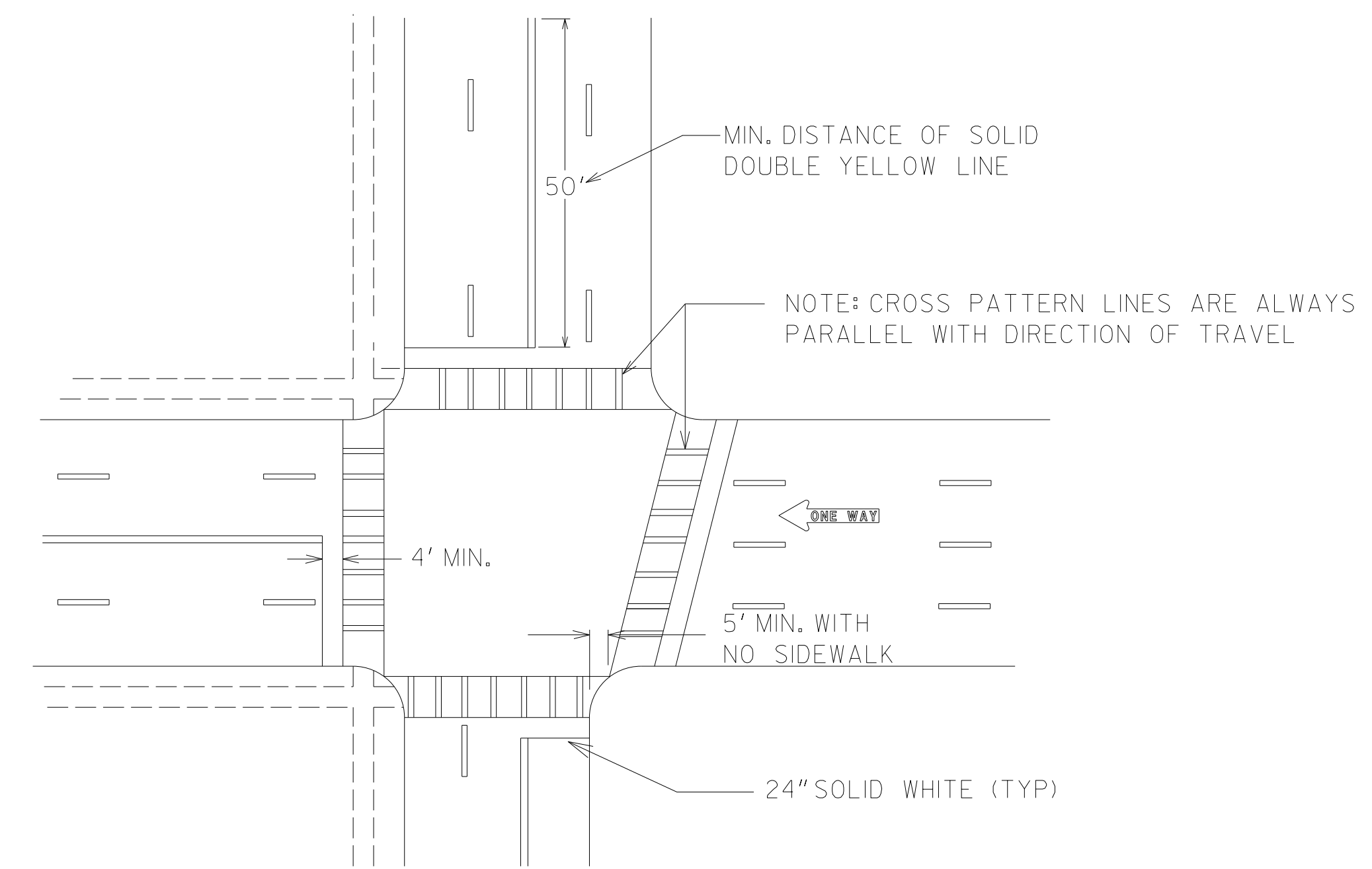
MULTI-LANE, TWO-WAY TRAFFIC WITH SINGLE LANE, TWO-WAY LEFT TURN CHANNELIZATION



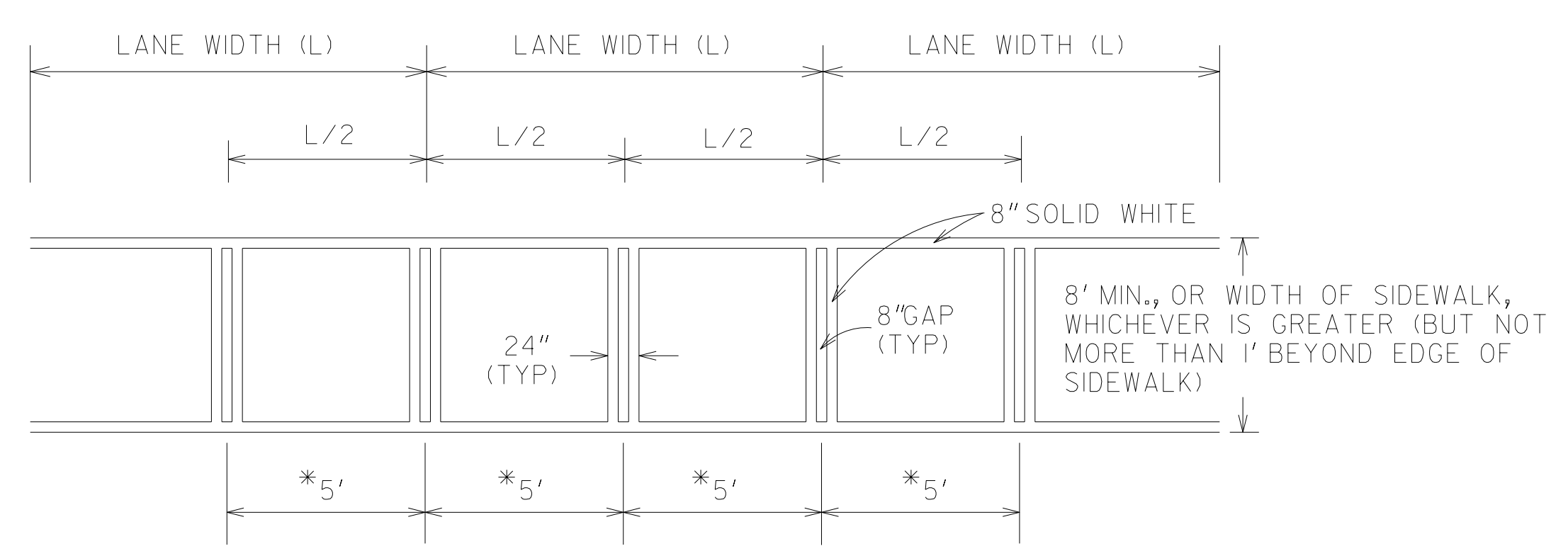
ONE-WAY TRAFFIC WITH ADDED TURN LANES



DIVIDED HIGHWAY WITH RAISED MEDIAN



TYPICAL LOCATION OF CROSSWALKS AND STOP BARS



*USE WHERE THE LANE WIDTH EXCEEDS 12'
OR WHERE LANE LINES HAVE BEEN OMITTED

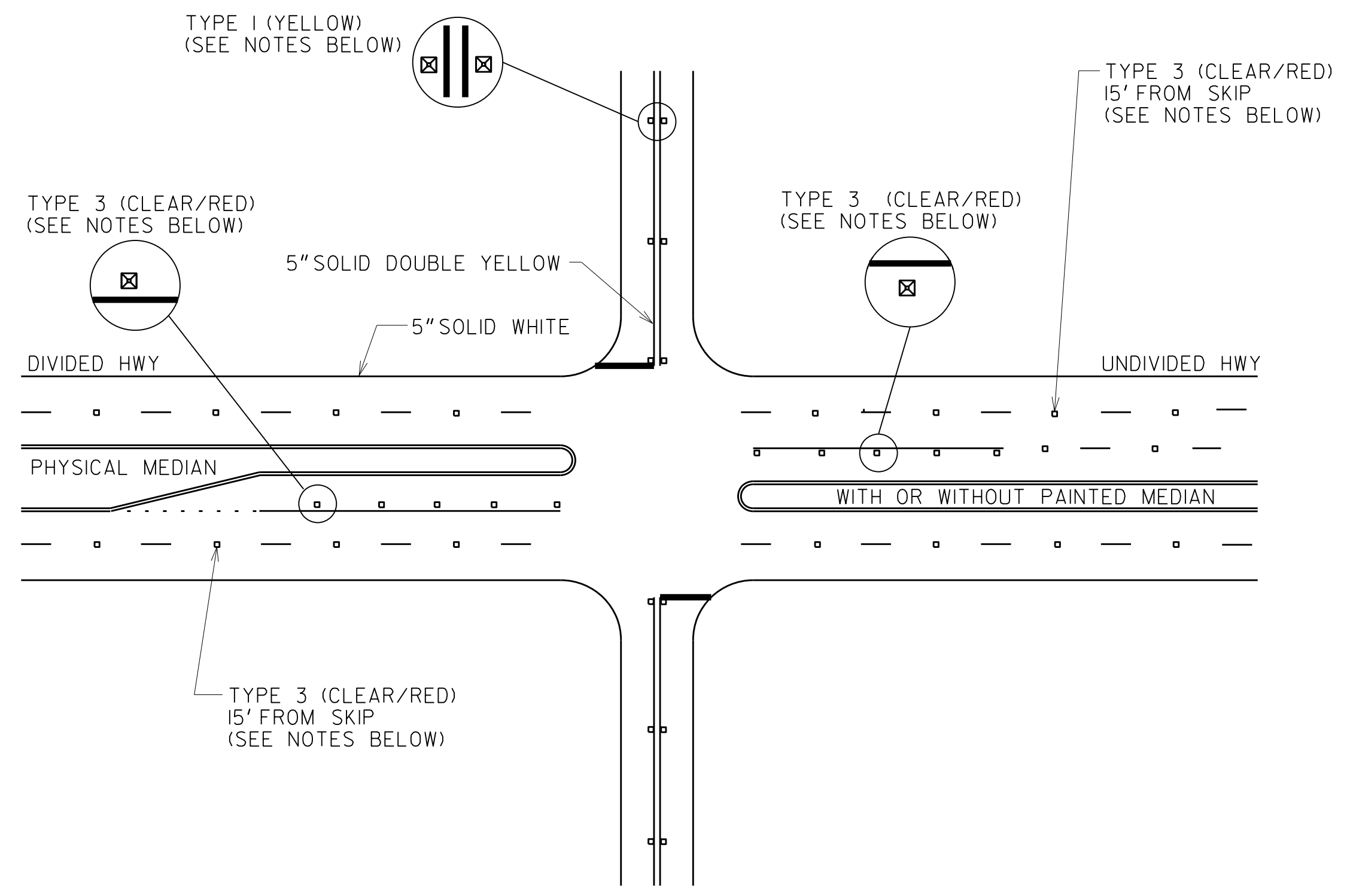
CROSSWALK DETAIL

- GENERAL NOTES:
1. SPACING BETWEEN DOUBLE LINES SHALL BE EQUAL TO THE LINE WIDTH.
 2. EDGE LINES SHALL BE PLACED A MINIMUM OF 4 INCHES FROM THE NORMAL EDGE OF PAVEMENT.
 3. CONTRAST MARKINGS FOR SKIP STRIPING SHALL BE AS SHOWN IN DETAIL T-II B.

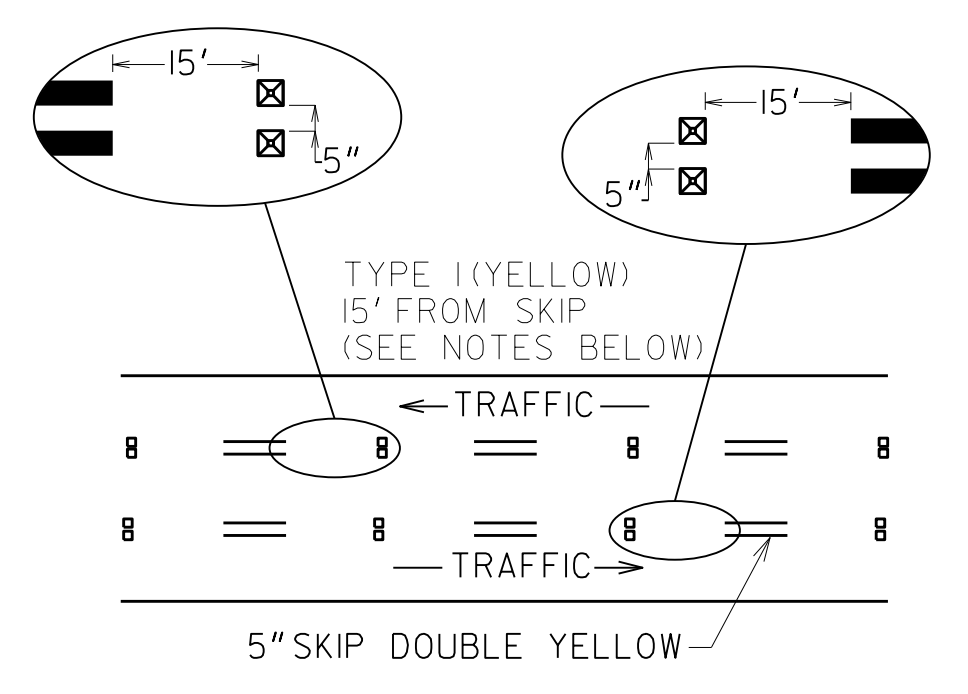
9-15-16		DATE		DEPARTMENT OF TRANSPORTATION	
STATE OF GEORGIA				CONSTRUCTION DETAILS	
PAVEMENT MARKING PLACEMENT		NON-LIMITED ACCESS ROADWAY		NO SCALE	
JANUARY 2000				NUMBER	
T-IIA					

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

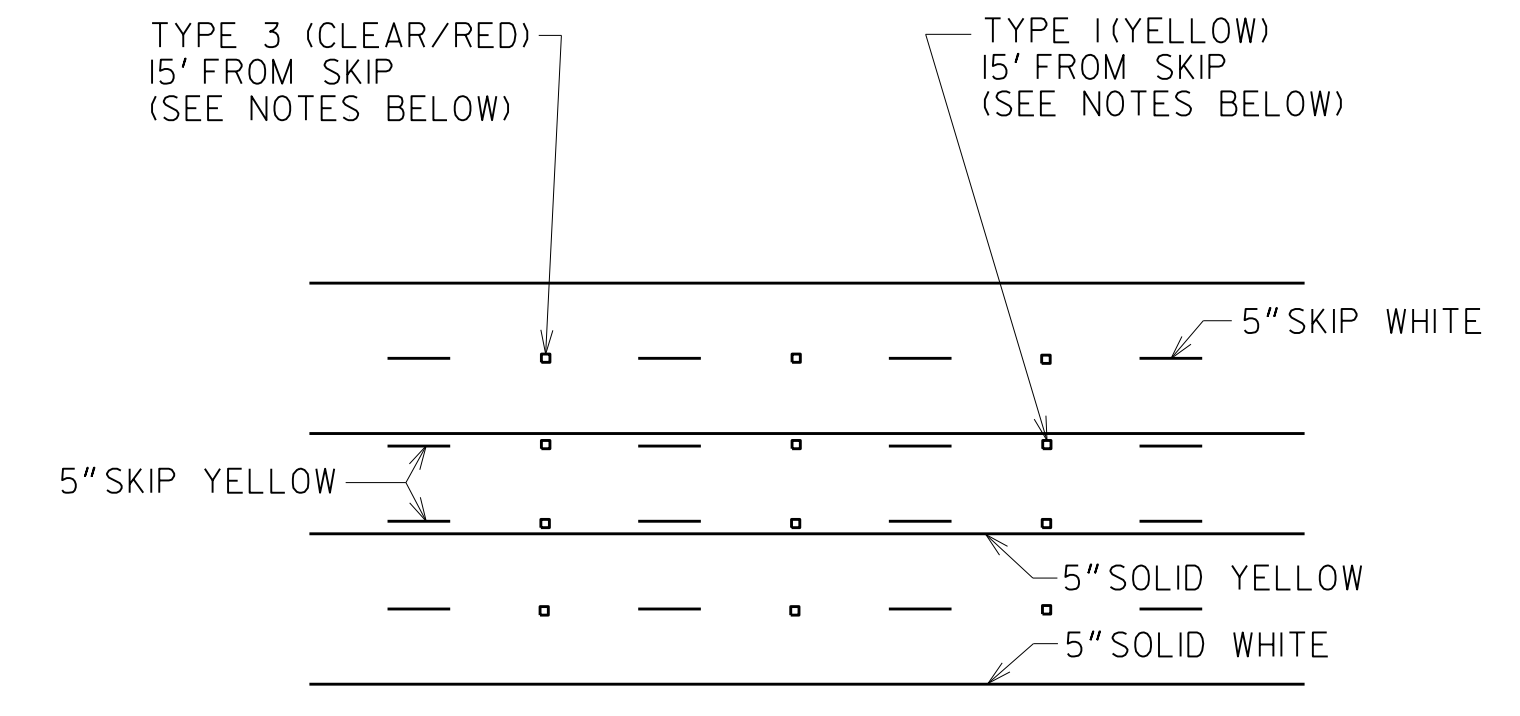
DIVIDED / UNDIVIDED HIGHWAY



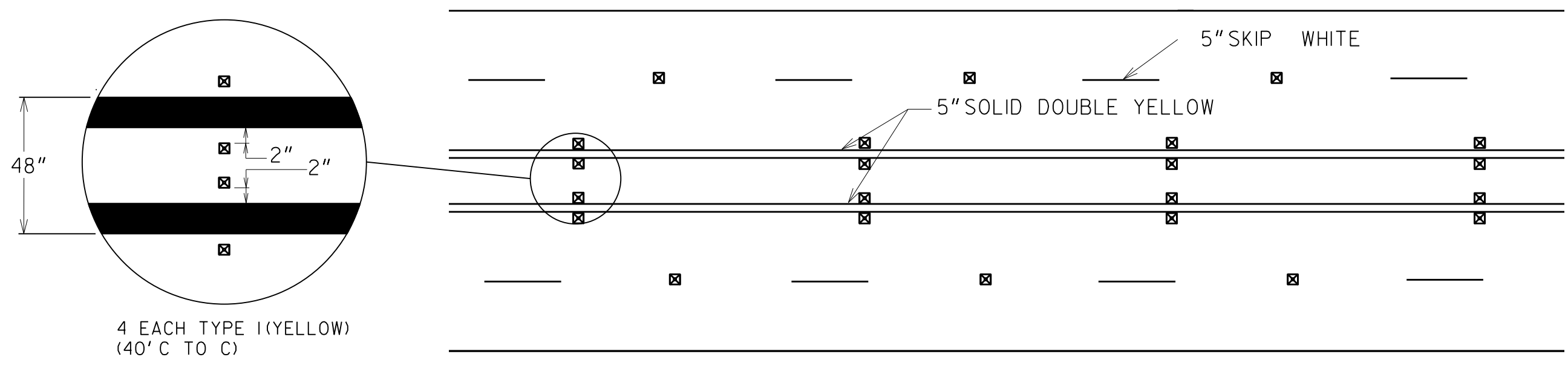
REVERSIBLE LANE



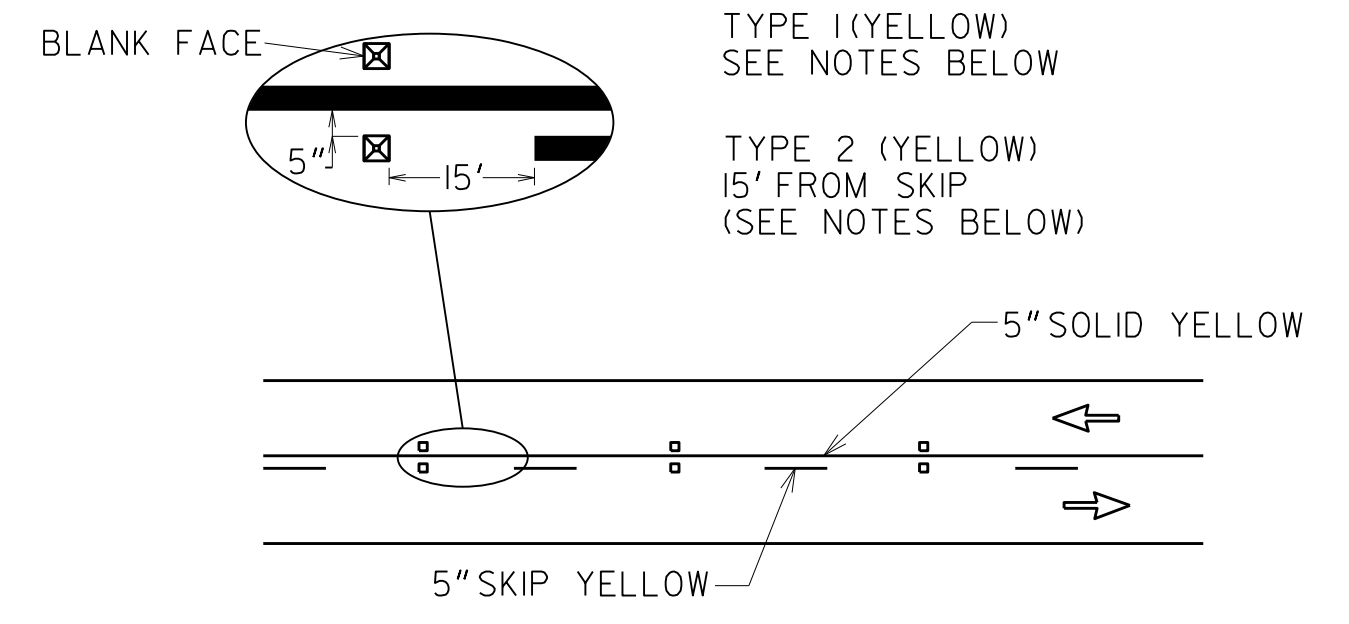
TWO WAY LEFT TURN LANE



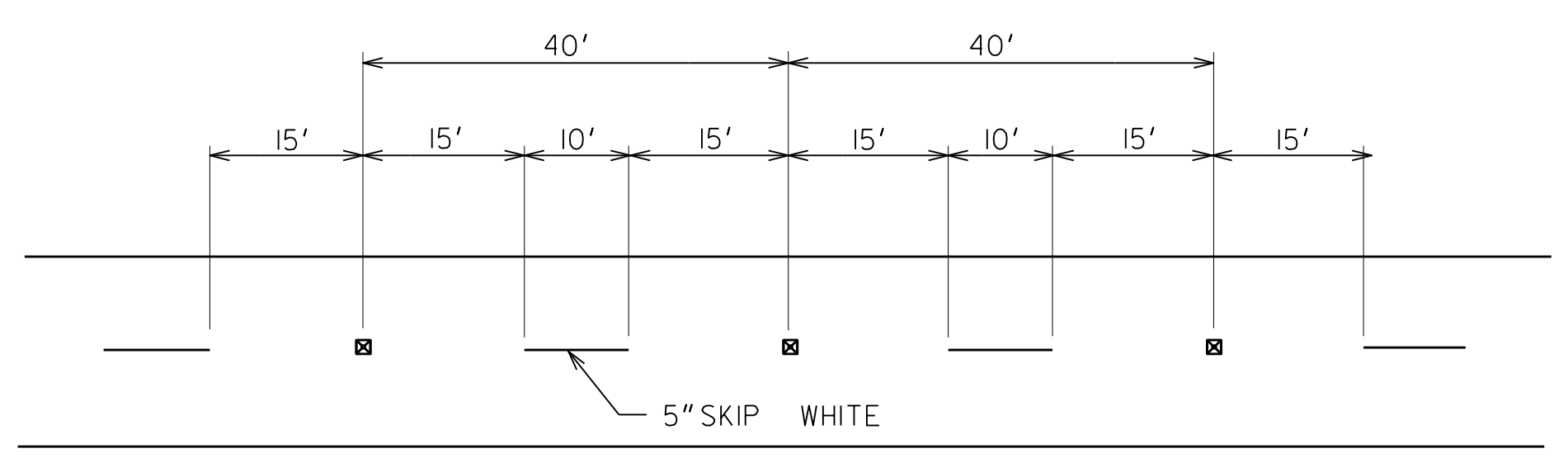
4'-0" STRIPED FLUSH MEDIAN



NO PASSING ZONE



TYPICAL RPM/STRIPE SPACING

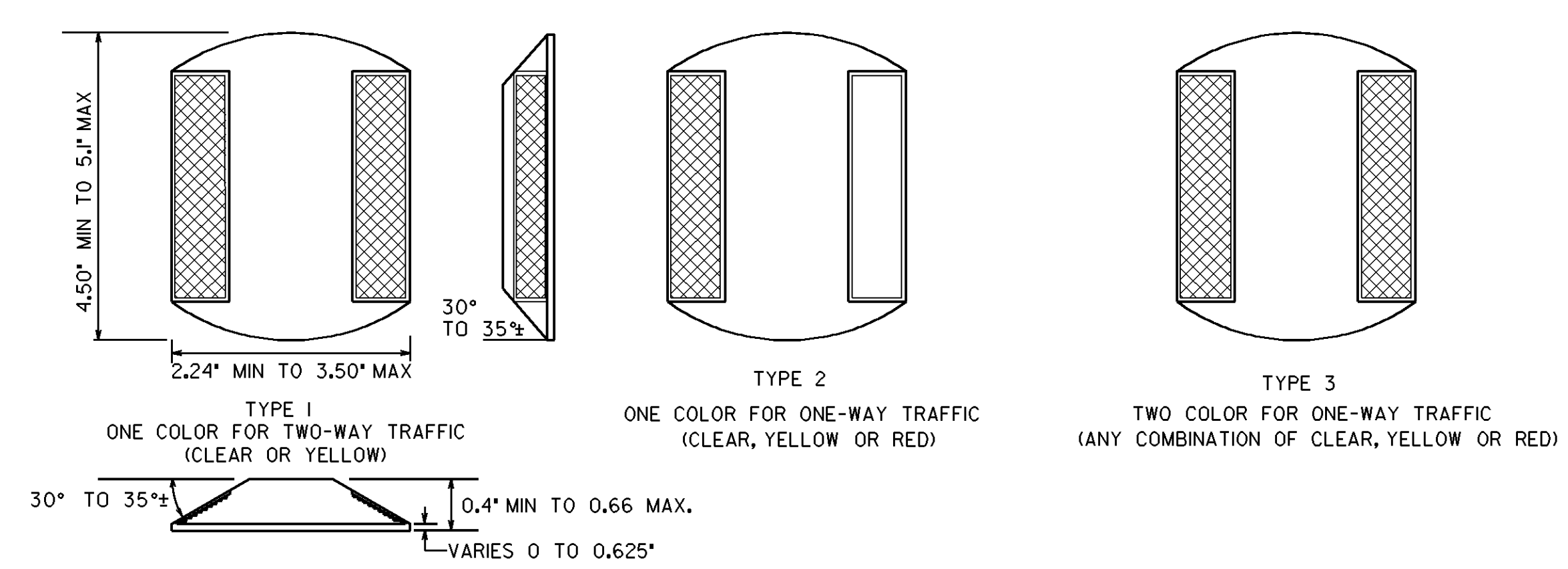


GENERAL NOTES:

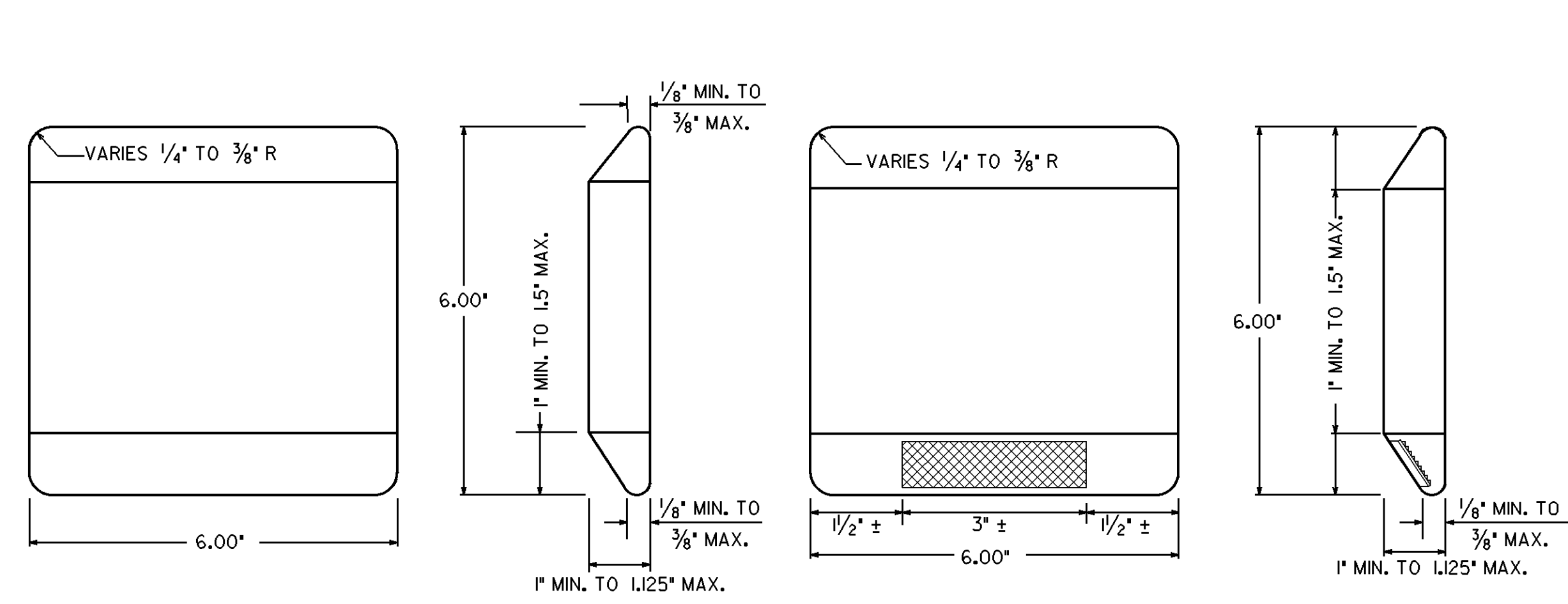
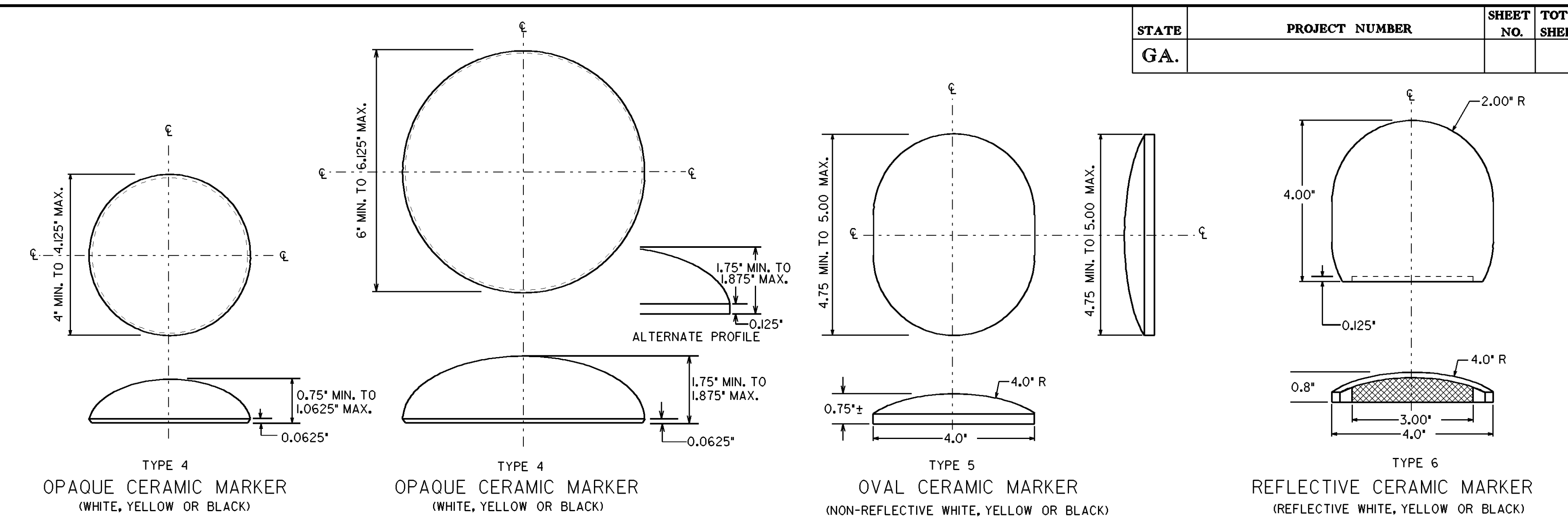
1. RAISED PAVEMENT MARKERS SHALL BE SPACED EVERY 40 FT UNLESS OTHERWISE SPECIFIED.
2. ON SOLID WHITE TURN BAY LINES, SPACING SHALL BE 20 FT.
3. RAISED PAVEMENT MARKERS SHALL BE OFFSET 5 INCHES FROM SOLID LANE LINES.
4. CLEAR FACE OF TYPE 3 RAISED PAVEMENT MARKERS SHALL BE ORIENTED TOWARD ONCOMING TRAFFIC.

9-15-2016 DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REV. RPM SPACING TO 40' REVISION		CONSTRUCTION DETAILS RAISED PAVEMENT MARKER LOCATION NON-LIMITED ACCESS ROADWAY	
NO SCALE		REV. AND REDRAWN, JUNE 2015	
CDR BY	DESIGNED _____ DRAWN _____ TRACED _____ CHECKED _____	NUMBER T-15A	

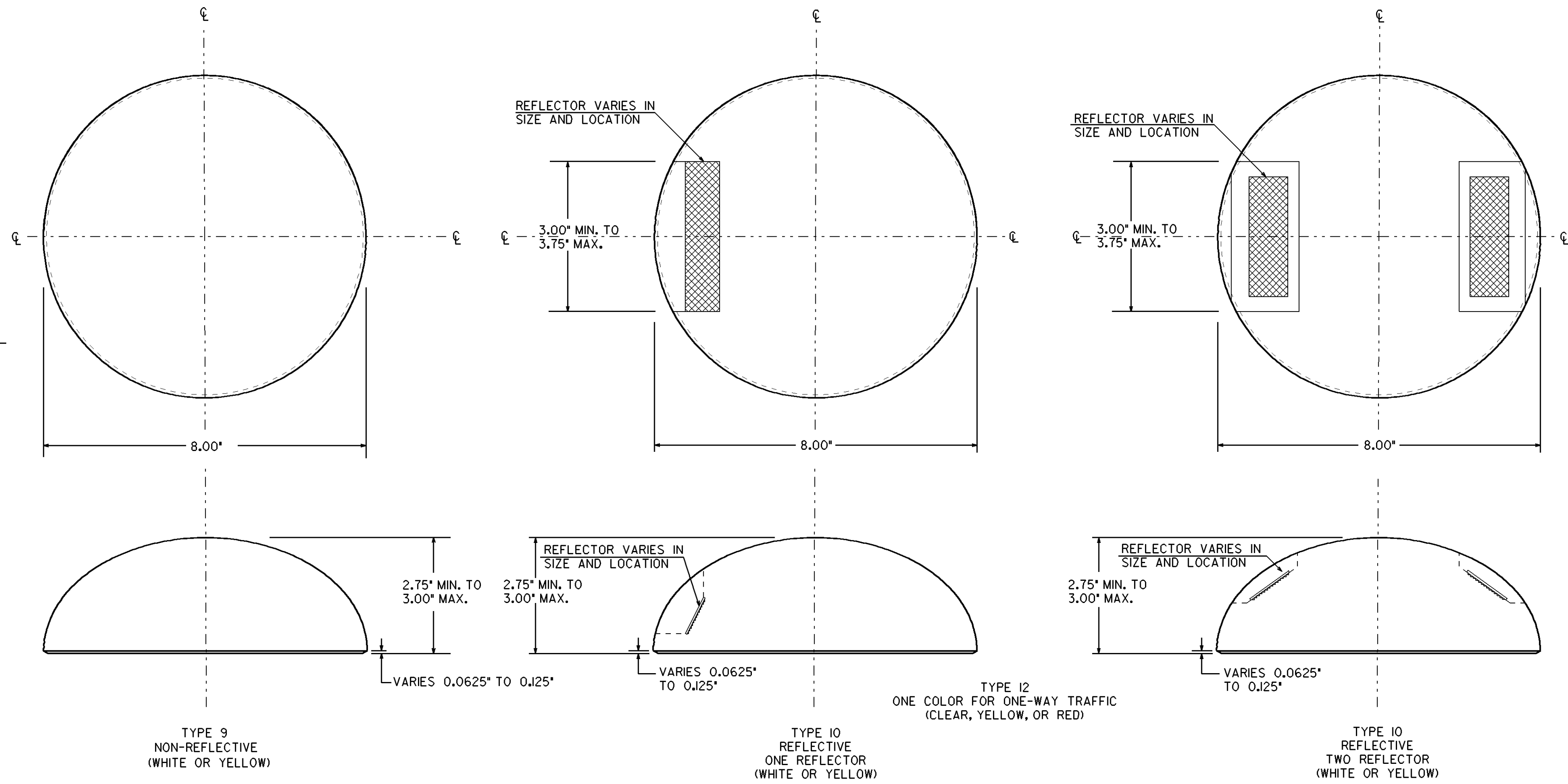
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



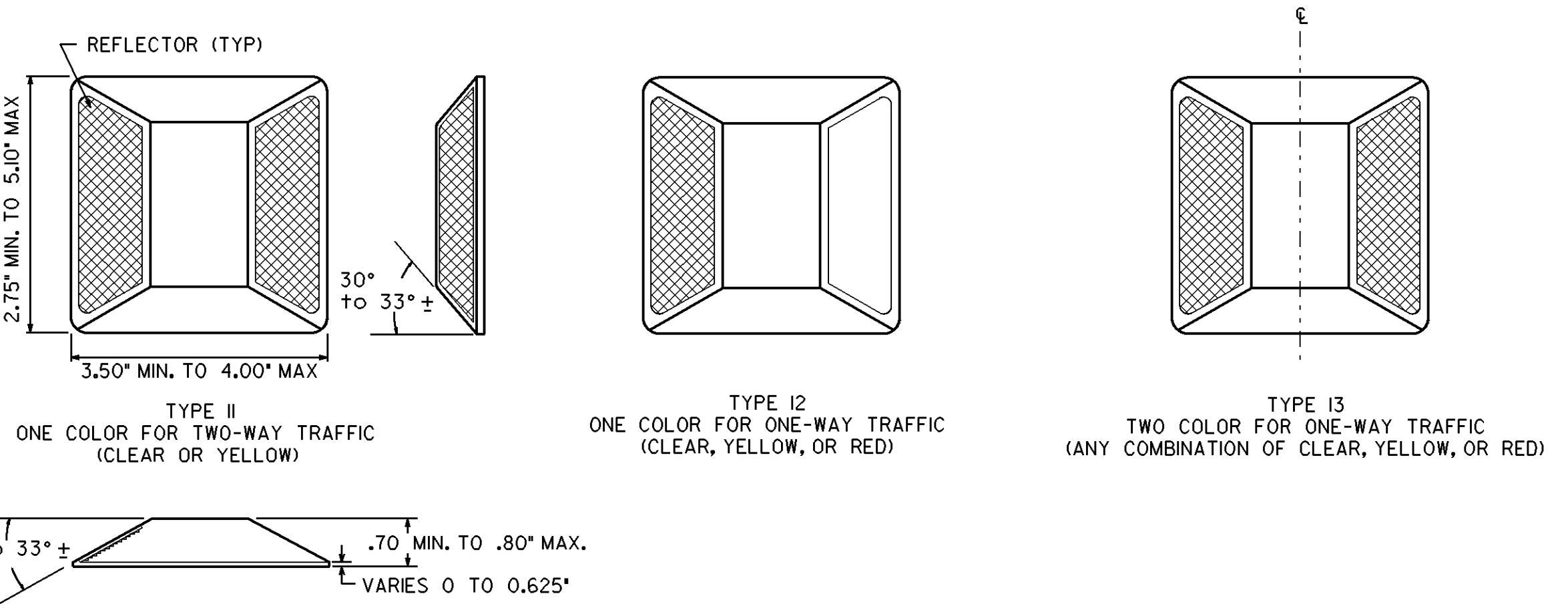
RAISED REFLECTIVE MARKERS



CERAMIC JIGGLE BAR MARKER



CERAMIC CHANNEL MARKER



ALTERNATE RAISED REFLECTIVE MARKERS

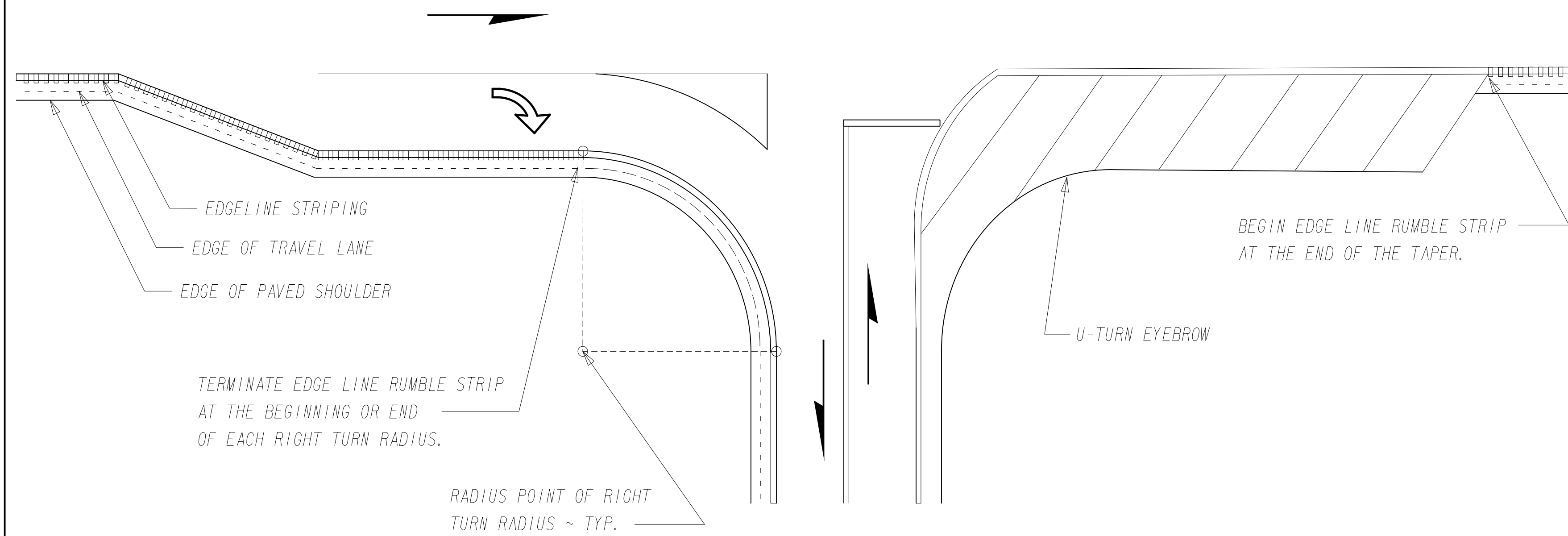
GENERAL NOTES:

- SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION, AND SUPPLEMENTS THERE TO.
- THE CONTRACTOR SHALL USE RAISED PAVEMENT MAKER SOURCES AS LISTED IN OPL 76.
- COLORS FOR REFLECTIVE ELEMENTS SHALL BE EITHER CLEAR, YELLOW, OR RED AS SPECIFIED.
- THE SHELL OF THE REFLECTIVE MARKERS SHALL BE OF ONE COLOR OR OF A COMBINATION OF TWO COLORS, WHICH SHALL BE THE SAME AS THE REFLECTIVE ELEMENT.
- THE SURFACE OF OPAQUE CERAMIC MARKERS SHALL BE GLAZED AND OF THE COLOR SPECIFIED IN THE PLANS WITH A WHITE, VITREOUS, CERAMIC BASE.
- COLORS FOR ALL RAISED PAVEMENT MARKERS SHALL BE AS SPECIFIED IN THE PLANS.

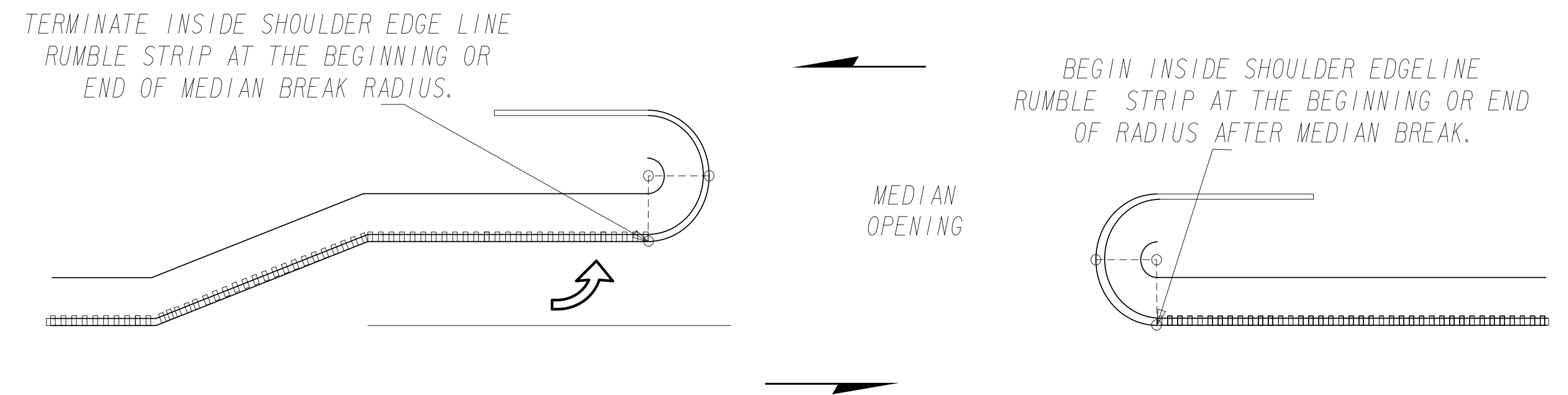
DATE	REVISIONS	GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & DESIGN
9-22-11	REV. DIMENSIONS, ADDED NOTES TO MARKERS AND REV. GEN. NOTES.	
		DETAILS OF RAISED PAVEMENT MARKERS
		NO SCALE
		JANUARY 2000

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

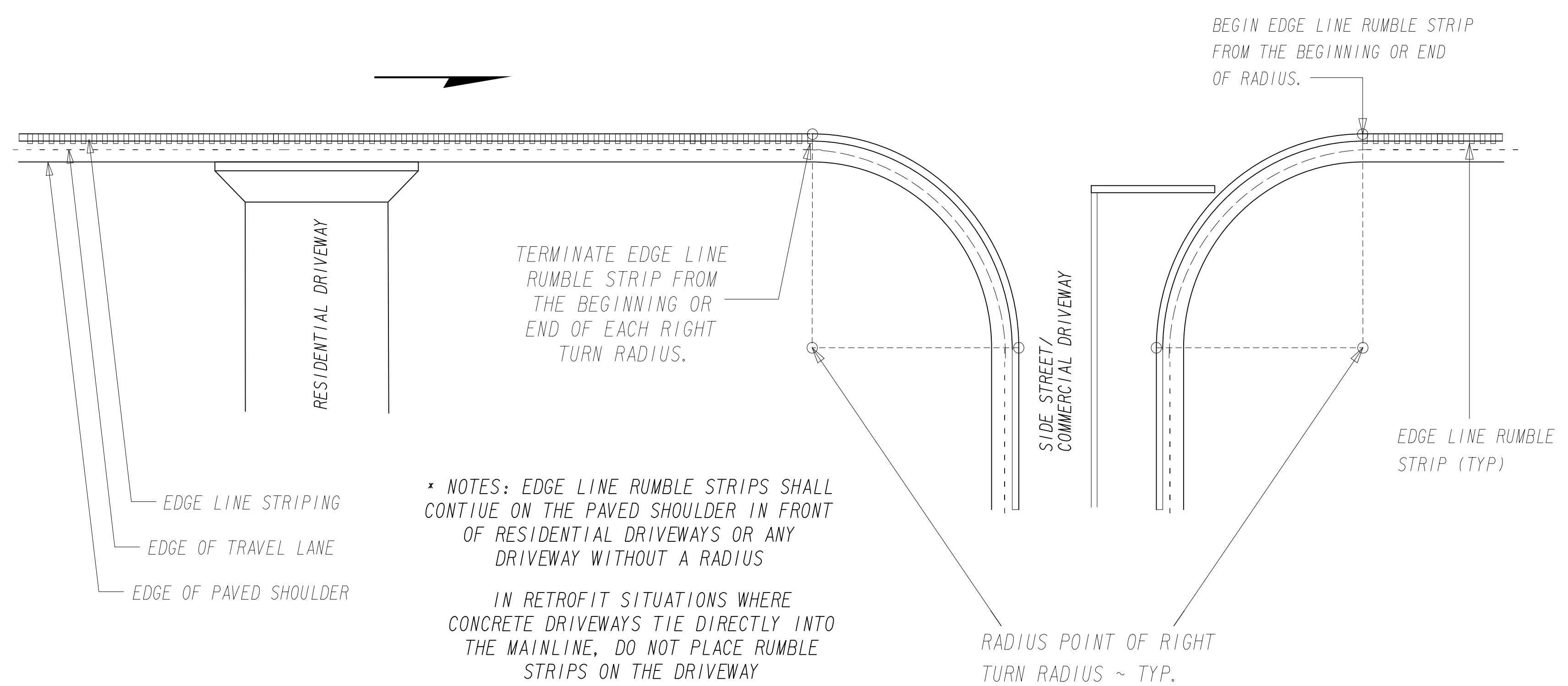
**OUTSIDE SHOULDER EDGE LINE RUMBLE STRIP
PLACEMENT AT INTERSECTIONS WITH RIGHT
TURN LANES OR TURNING EYEBROWS**



**INSIDE SHOULDER EDGE LINE RUMBLE STRIP
PLACEMENT AT MEDIAN OPENINGS/
INTERSECTIONS WITH TURN LANES**



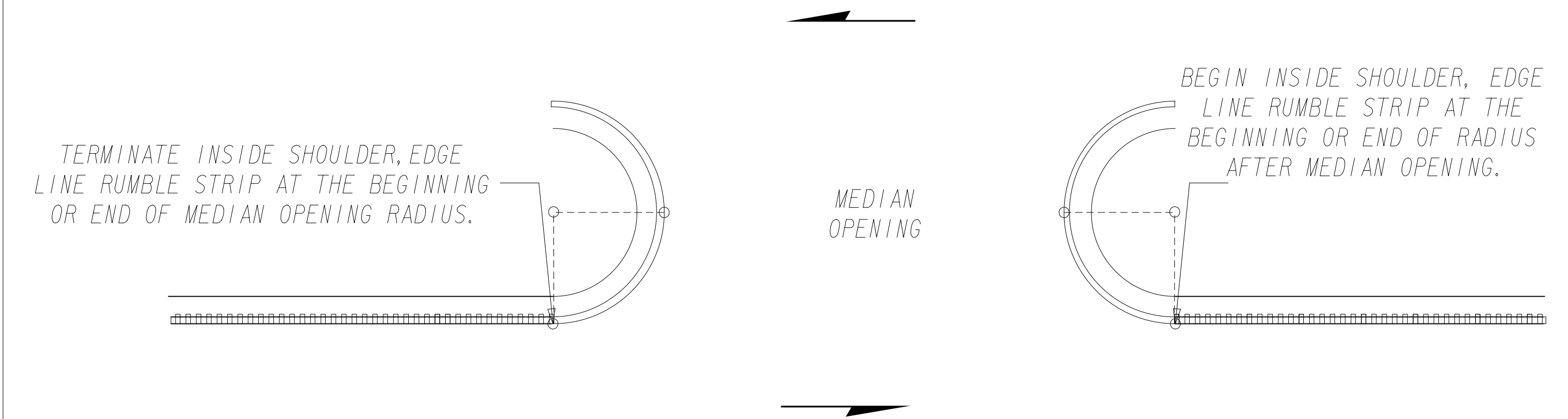
**OUTSIDE SHOULDER EDGE LINE RUMBLE STRIP
PLACEMENT AT DRIVEWAYS AND SIDE STREETS**



* NOTES: EDGE LINE RUMBLE STRIPS SHALL CONTINUE ON THE PAVED SHOULDER IN FRONT OF RESIDENTIAL DRIVEWAYS OR ANY DRIVEWAY WITHOUT A RADIUS

IN RETROFIT SITUATIONS WHERE CONCRETE DRIVEWAYS TIE DIRECTLY INTO THE MAINLINE, DO NOT PLACE RUMBLE STRIPS ON THE DRIVEWAY

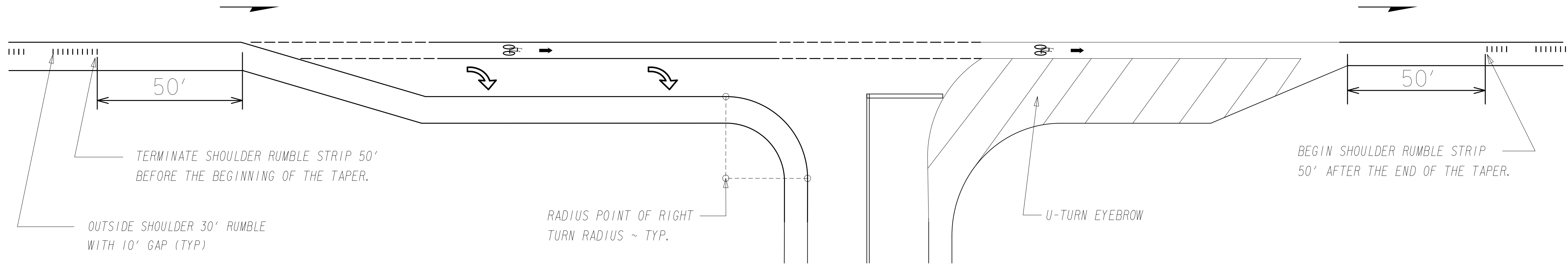
**INSIDE SHOULDER EDGE LINE RUMBLE STRIP
PLACEMENT AT MEDIAN OPENINGS/
INTERSECTIONS WITHOUT TURN LANES**



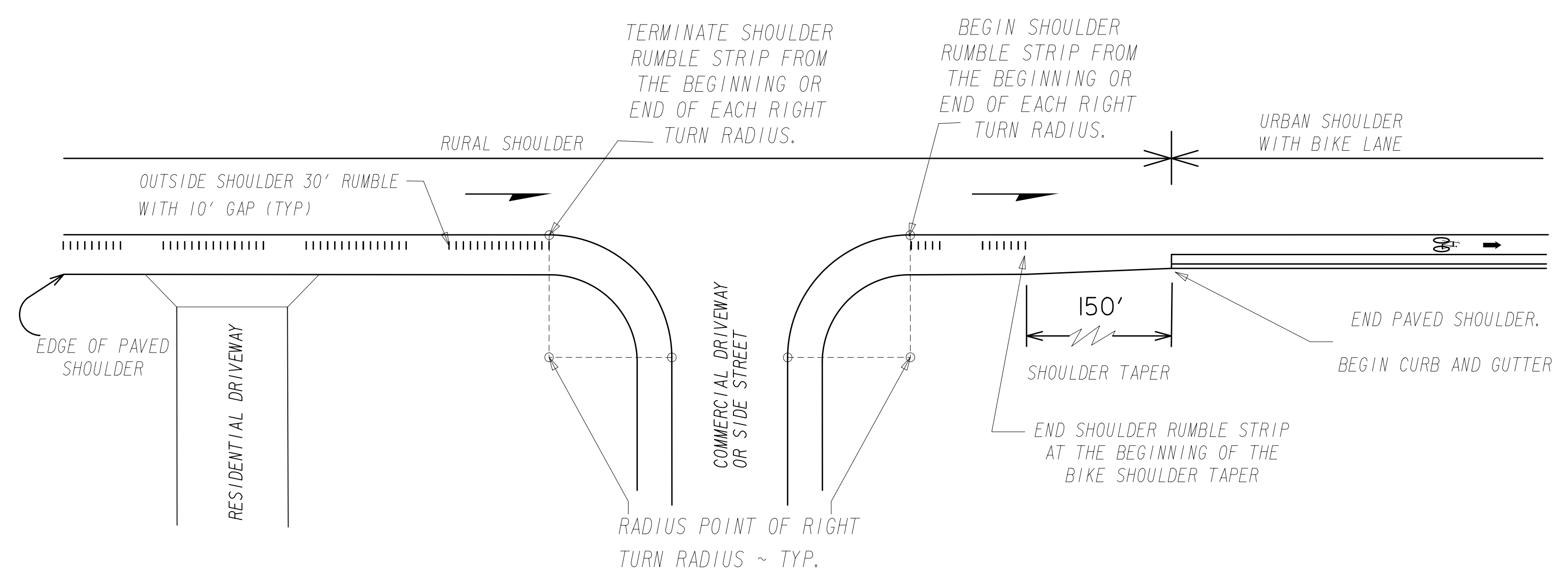
GENERAL NOTES:
REFER TO T-25 FOR RUMBLE STRIP DETAILS

DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		CONSTRUCTION DETAILS EDGE LINE RUMBLE STRIP	
NO SCALE		DATE: SEPTEMBER 2017	
BY	DESIGNED _____ DRAWN _____ TRACED _____ CHECKED _____	NUMBER T-23A	

**OUTSIDE SHOULDER RUMBLE STRIP
PLACEMENT AT INTERSECTIONS WITH
RIGHT TURN LANES OR TURNING EYEBROWS**



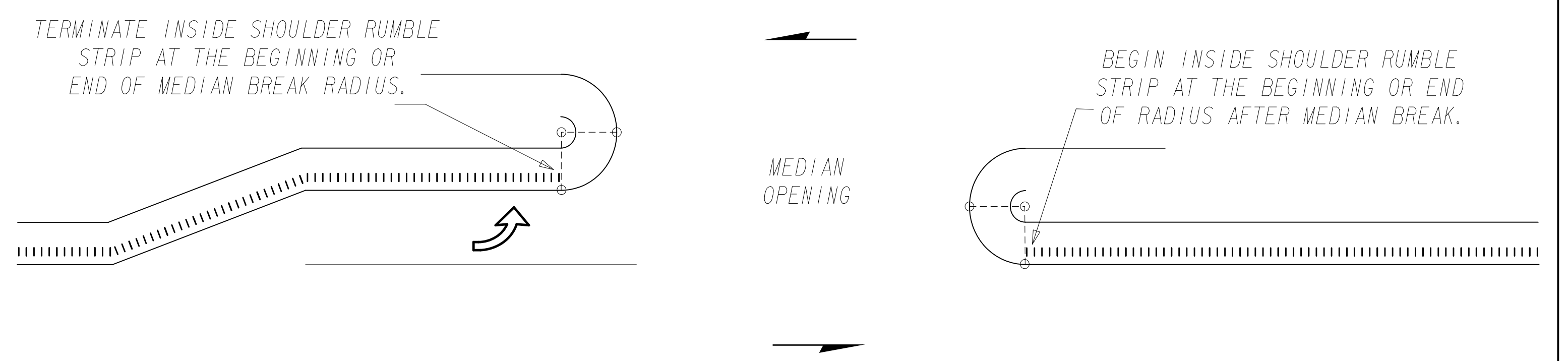
**OUTSIDE SHOULDER RUMBLE STRIP PLACEMENT AT DRIVEWAYS/
SIDESTREETS AND TRANSITION FROM RURAL TO URBAN SHOULDER**



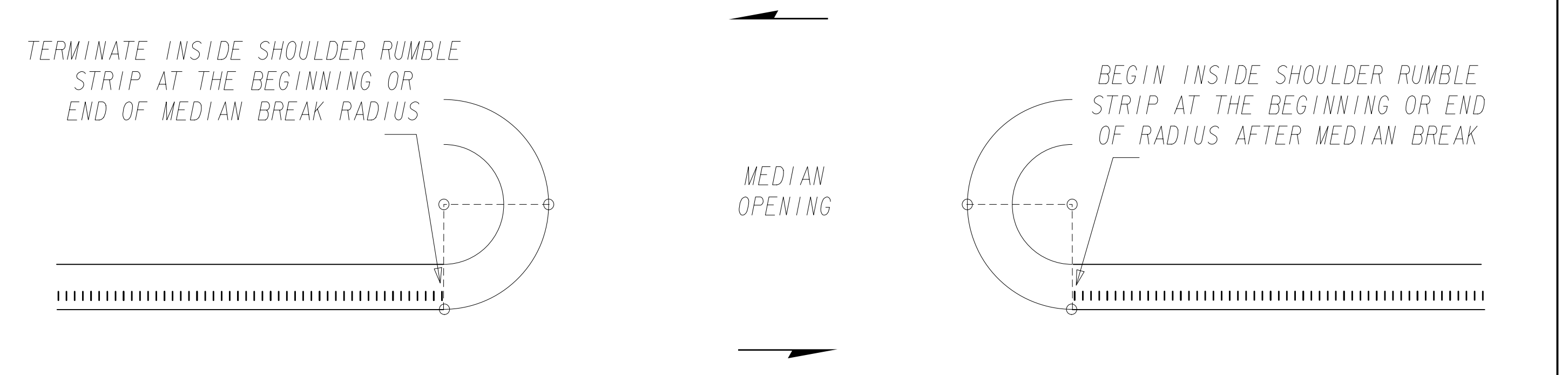
* NOTES: SHOULDER RUMBLE STRIPS SHALL CONTINUE ON THE PAVED SHOULDER IN FRONT OF RESIDENTIAL DRIVEWAYS OR ANY DRIVEWAY WITHOUT A RADIUS

IN RETROFIT SITUATIONS WHERE CONCRETE DRIVEWAYS TIE DIRECTLY INTO THE MAINLINE, DO NOT PLACE RUMBLE STRIPS ON THE DRIVEWAY

**INSIDE SHOULDER RUMBLE STRIP PLACEMENT
AT INTERSECTIONS WITH TURN LANES**



**INSIDE SHOULDER RUMBLE STRIP PLACEMENT
AT INTERSECTIONS WITHOUT TURN LANES**

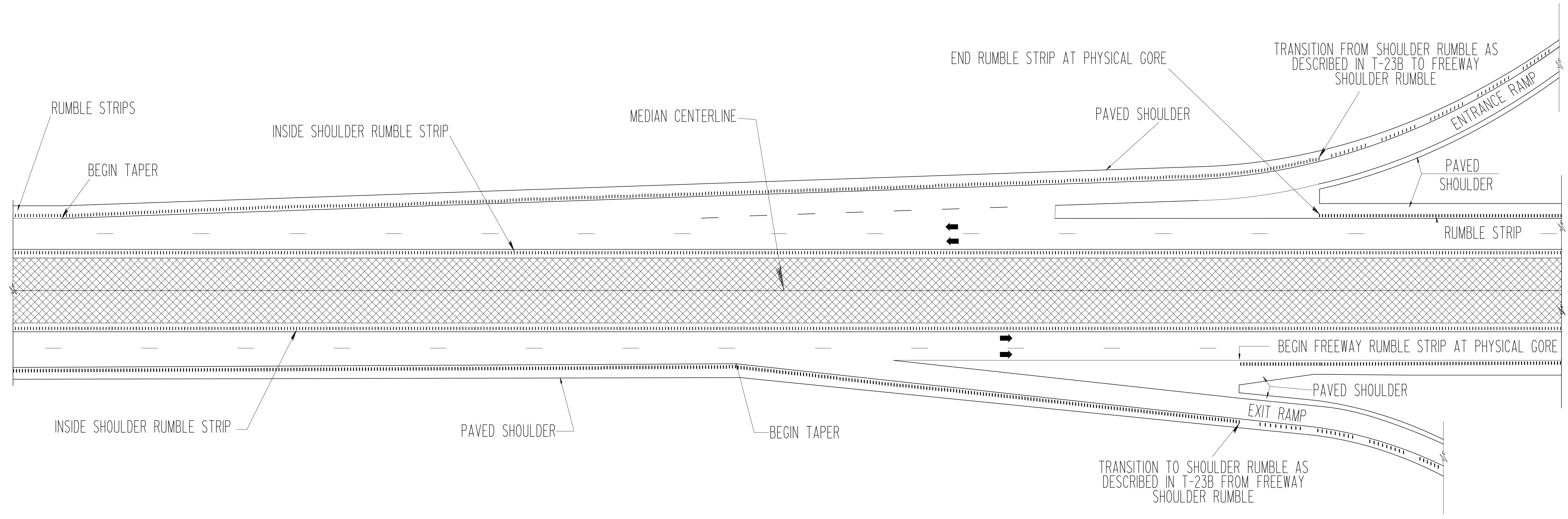


GENERAL NOTES:
REFER TO T-25 FOR RUMBLE STRIP DETAILS

DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		CONSTRUCTION DETAILS SHOULDER RUMBLE STRIP: NON-FREEWAY	
NO SCALE		DATE: SEPTEMBER 2017	
BY	DESIGNED _____ DRAWN _____ TRACED _____ CHECKED _____	NUMBER T-23B	

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

ENTRANCE RAMP

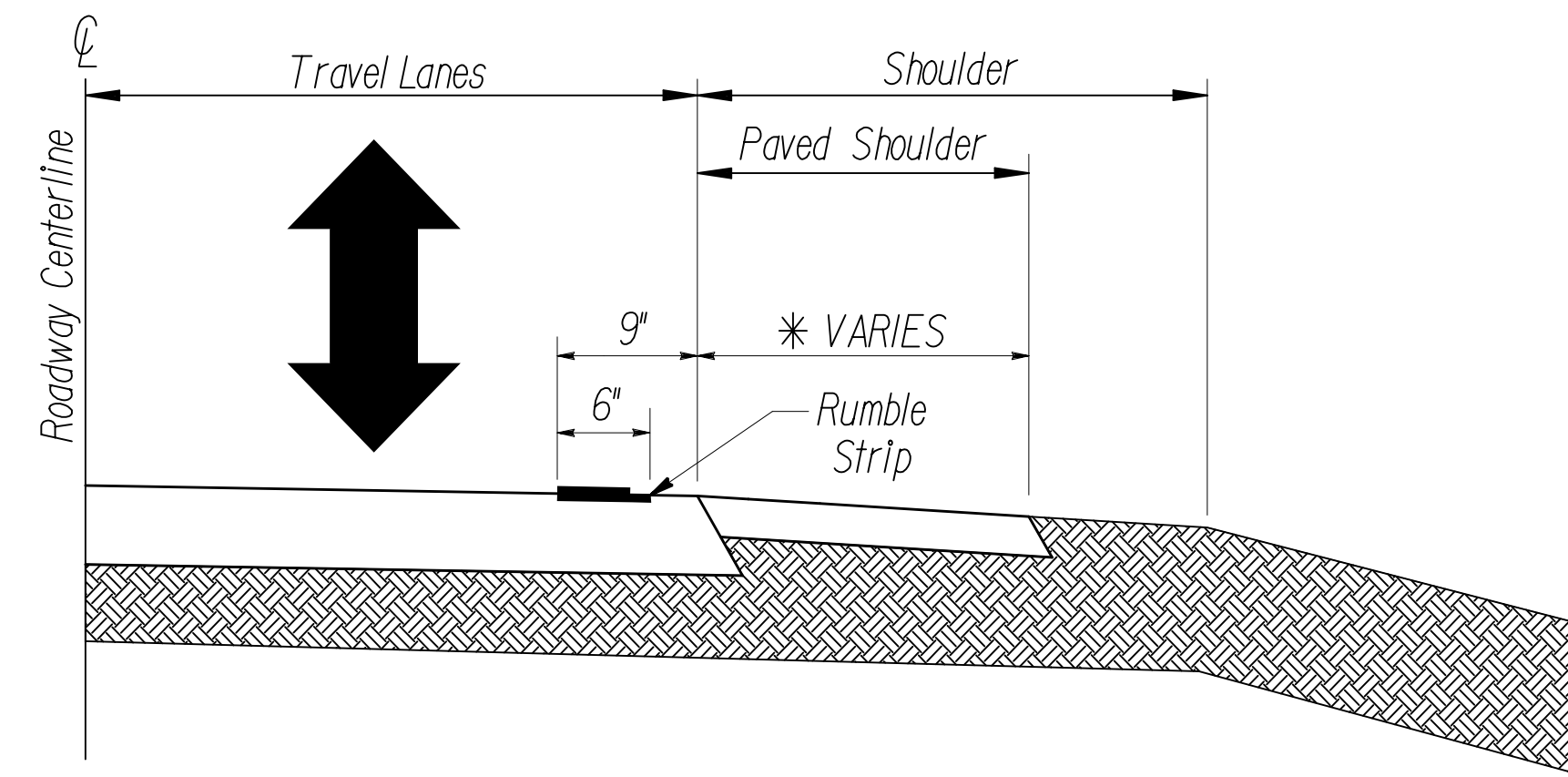


EXIT RAMP

GENERAL NOTES:
REFER TO T-25 FOR RUMBLE STRIP DETAILS

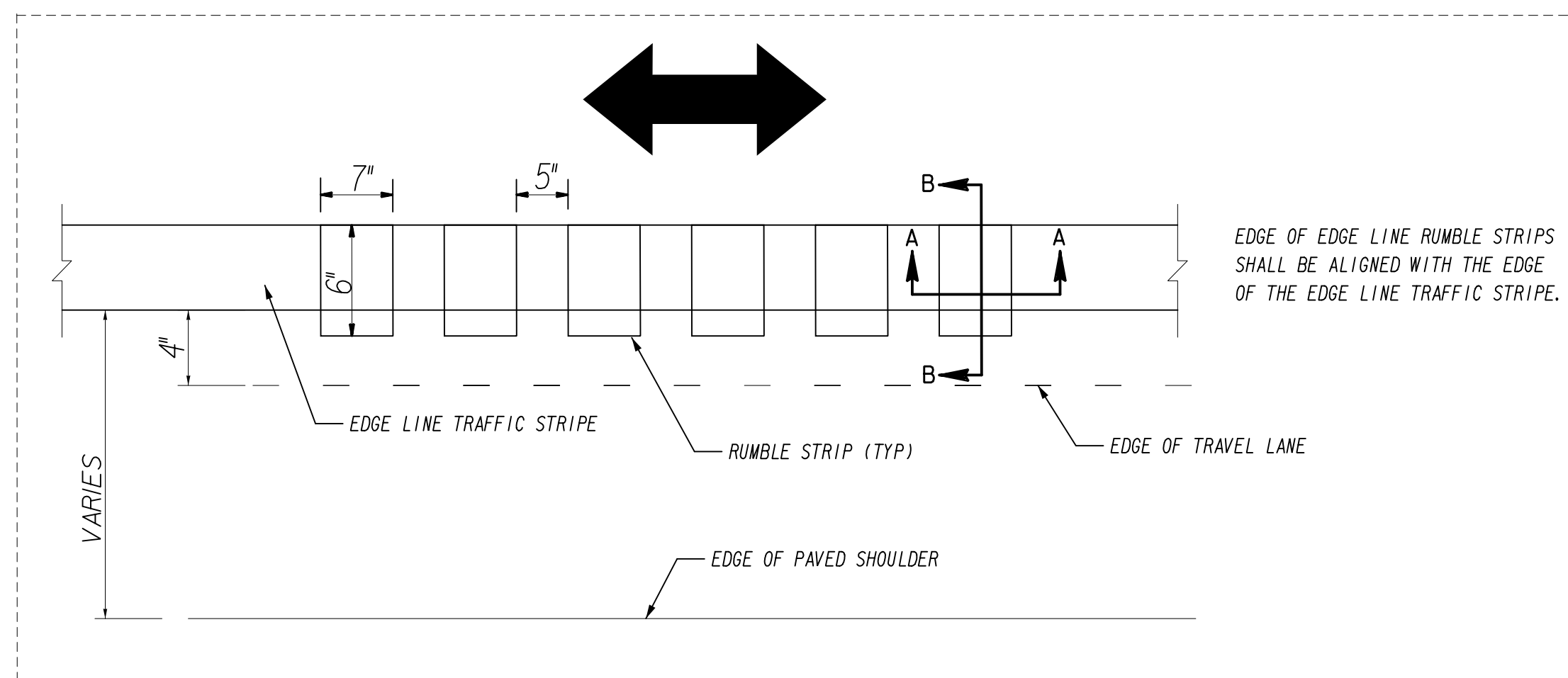
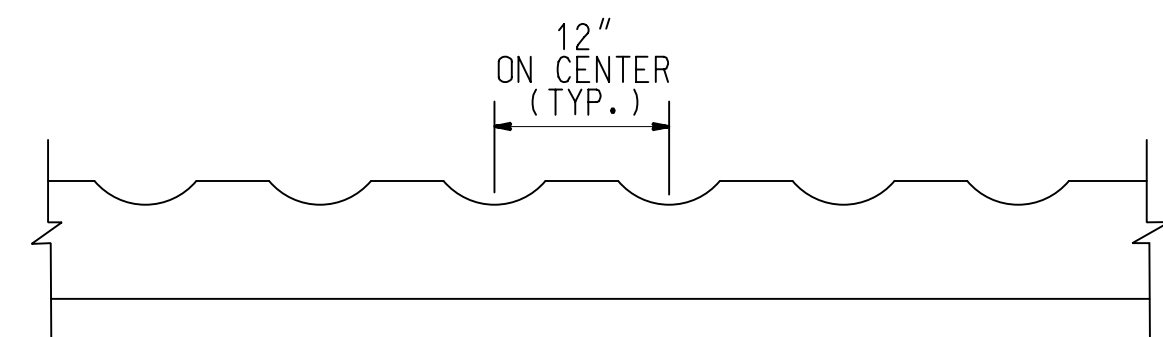
DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		CONSTRUCTION DETAILS SHOULDER RUMBLE STRIP: ASPHALT FREEWAYS	
NO SCALE		DATE: SEPTEMBER 2017	
BY	DESIGNED _____ DRAWN _____ TRACED _____ CHECKED _____	NUMBER T-23C	

EDGE LINE RUMBLE STRIP DETAILS

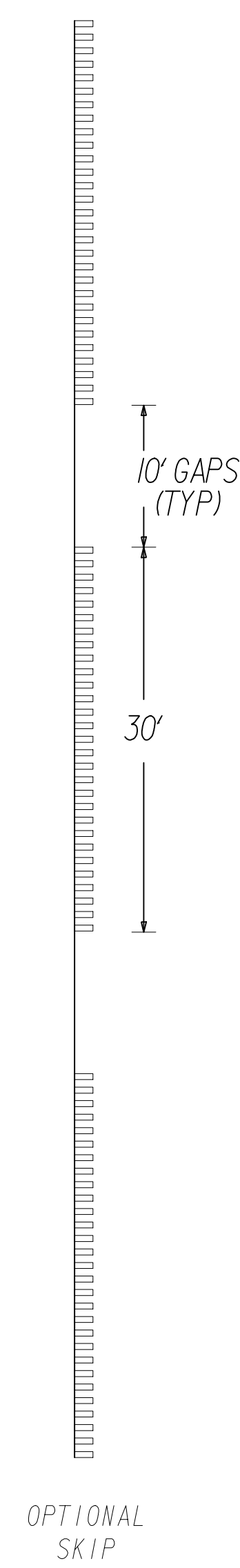
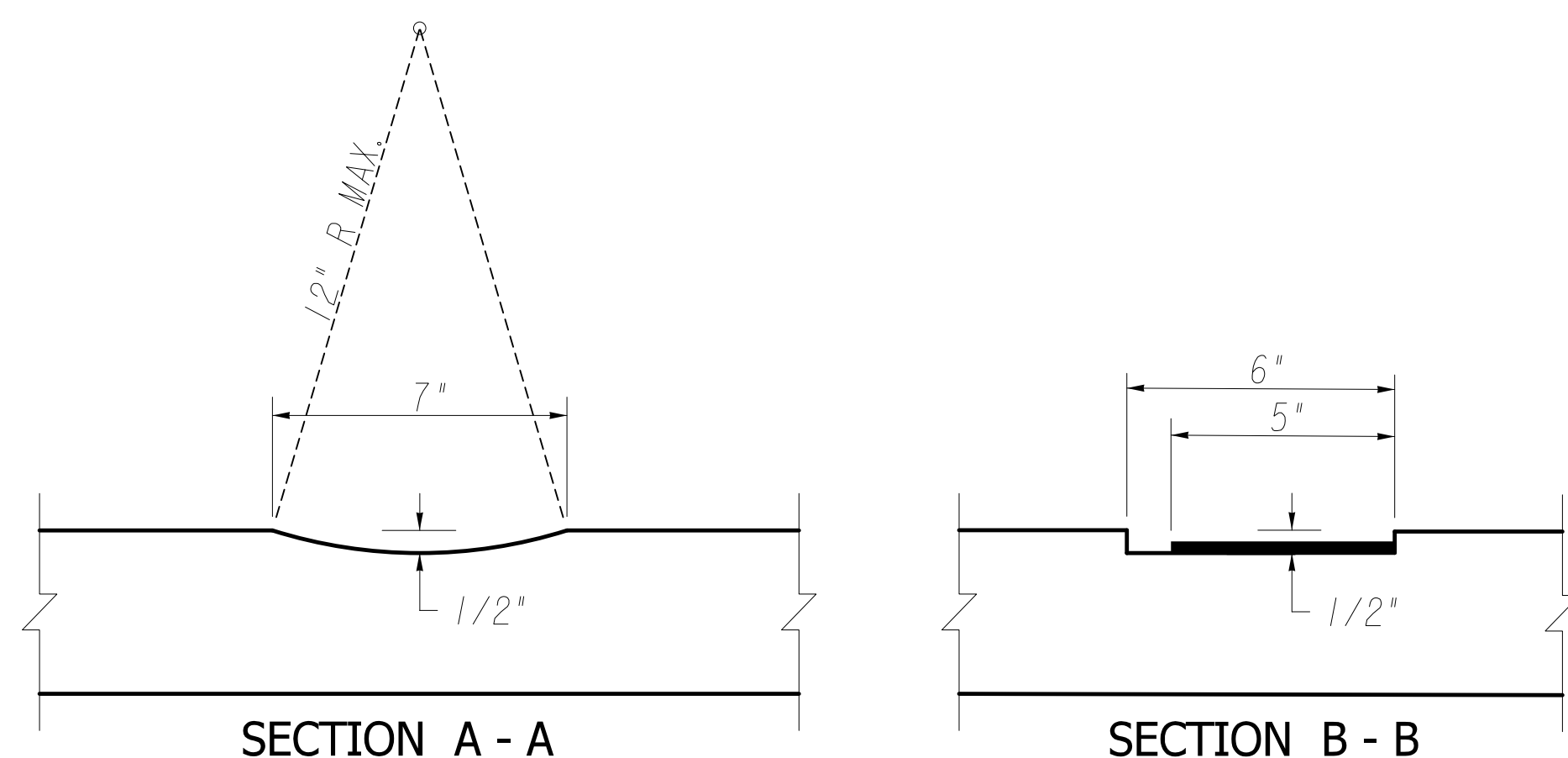


* < 4' PAVED OUTSIDE SHOULDER WITH 6" MILLED RUMBLE STRIPS ON ROADS WITH OTHER PAVEMENT MIX

* < 2' PAVED INSIDE SHOULDER WITH 6" MILLED RUMBLE STRIPS ON ROADS WITH OTHER PAVEMENT MIX



EDGE OF EDGE LINE RUMBLE STRIPS SHALL BE ALIGNED WITH THE EDGE OF THE EDGE LINE TRAFFIC STRIPE.

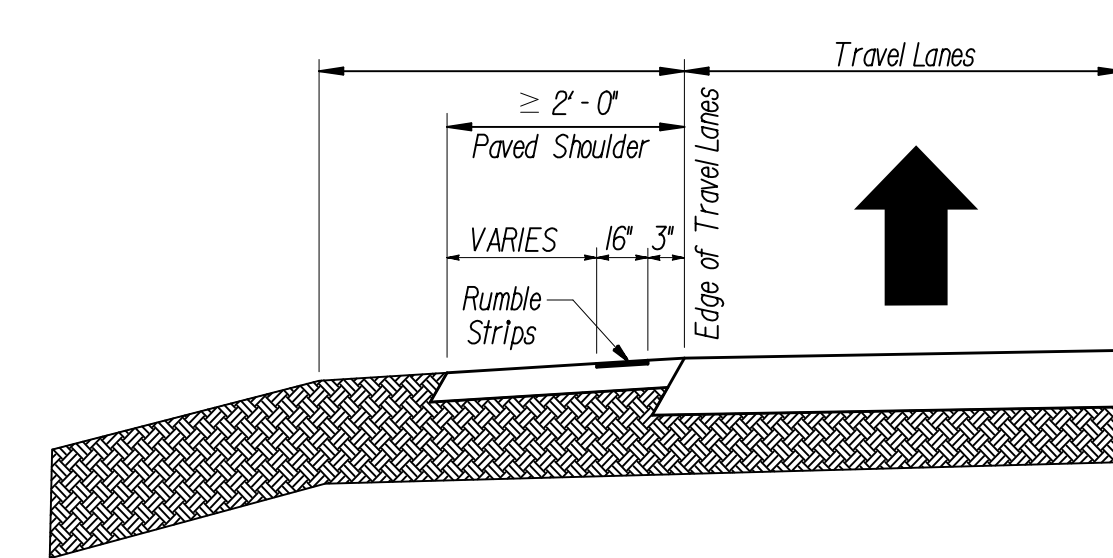


OPTIONAL SKIP

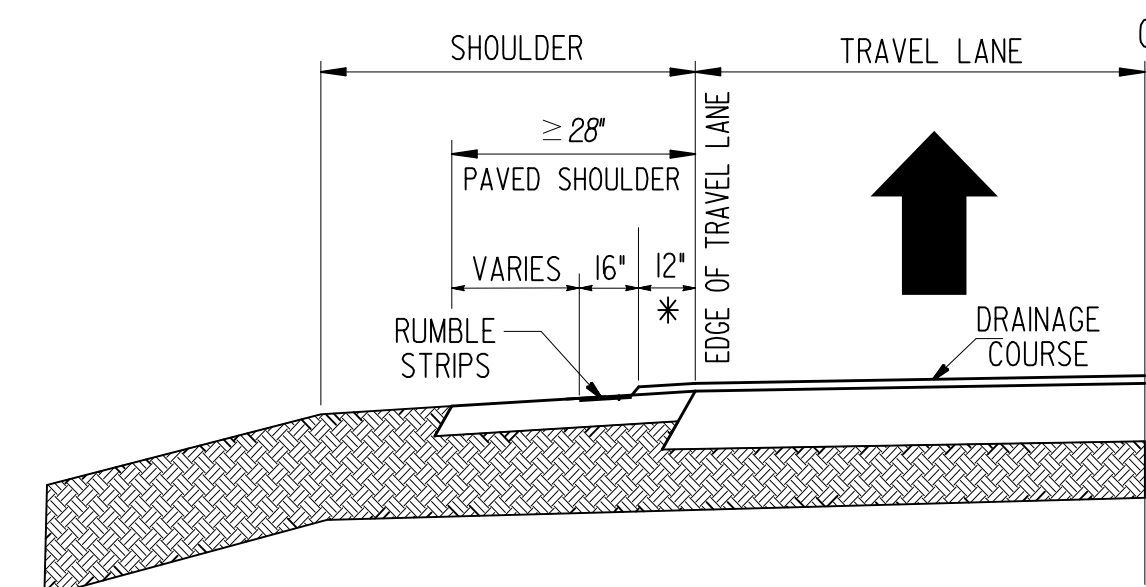
SHOULDER RUMBLE STRIP DETAILS

INSIDE

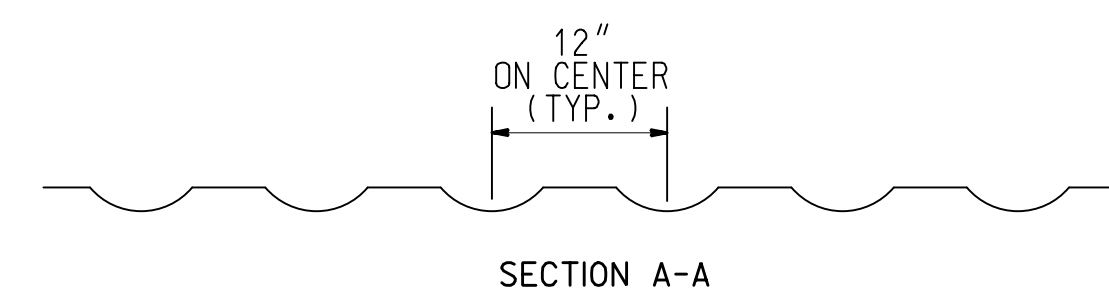
≥ 2' PAVED INSIDE SHOULDER WITH 16" MILLED RUMBLE STRIPS ON ROADS WITH OTHER PAVEMENT MIX



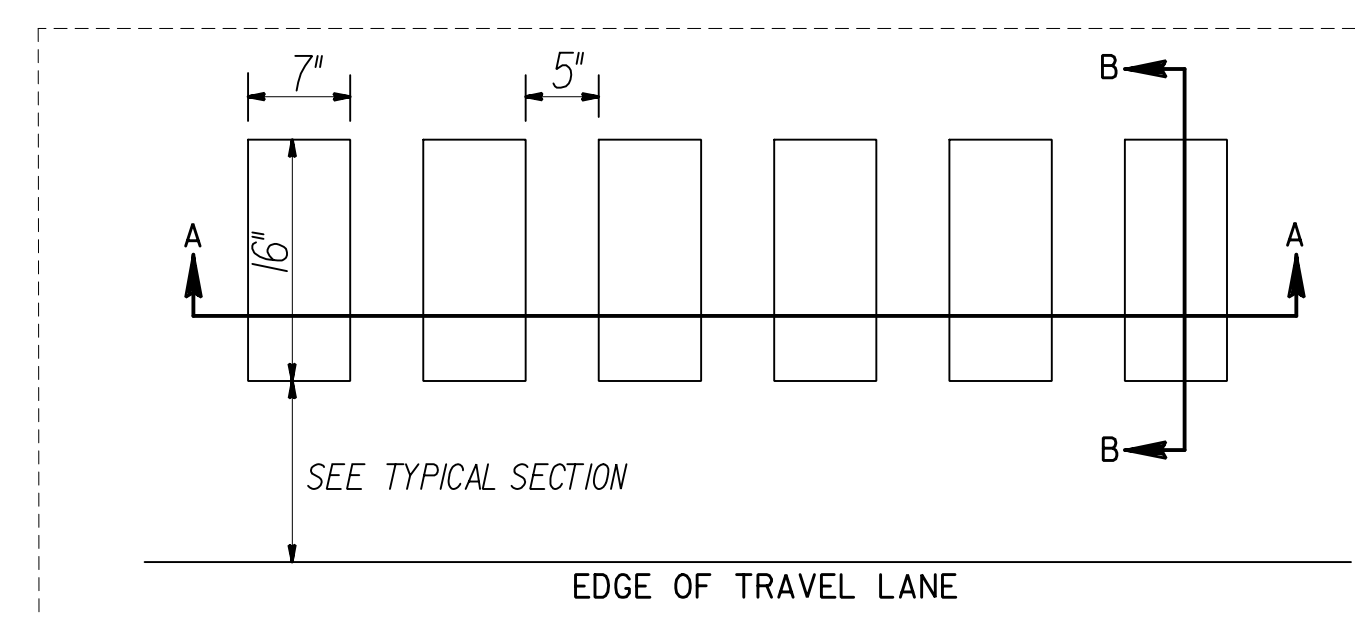
OGFC OR PEM, INSIDE PAVED SHOULDER WITH 16" MILLED RUMBLE STRIPS



* NOTE: DRAINAGE COURSE OGFC OR PEM TO BE PLACED ON TO THE SHOULDER PAVING A DISTANCE OF 12" ON THE INSIDE SHOULDER.

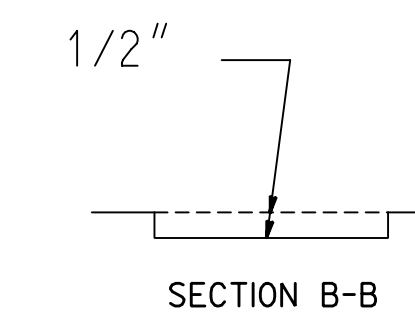


SECTION A-A



SEE TYPICAL SECTION

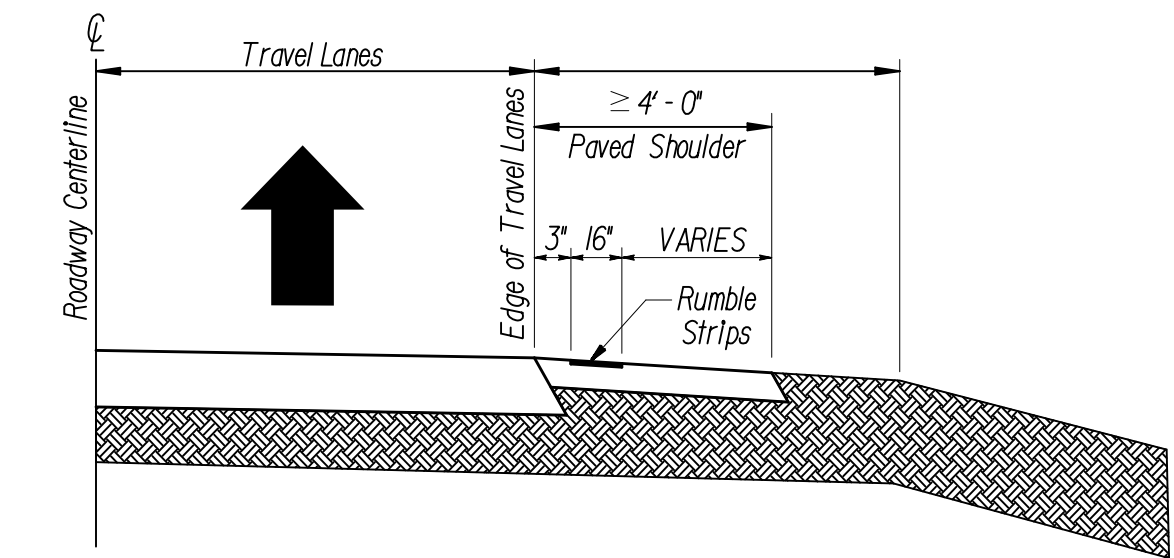
EDGE OF TRAVEL LANE



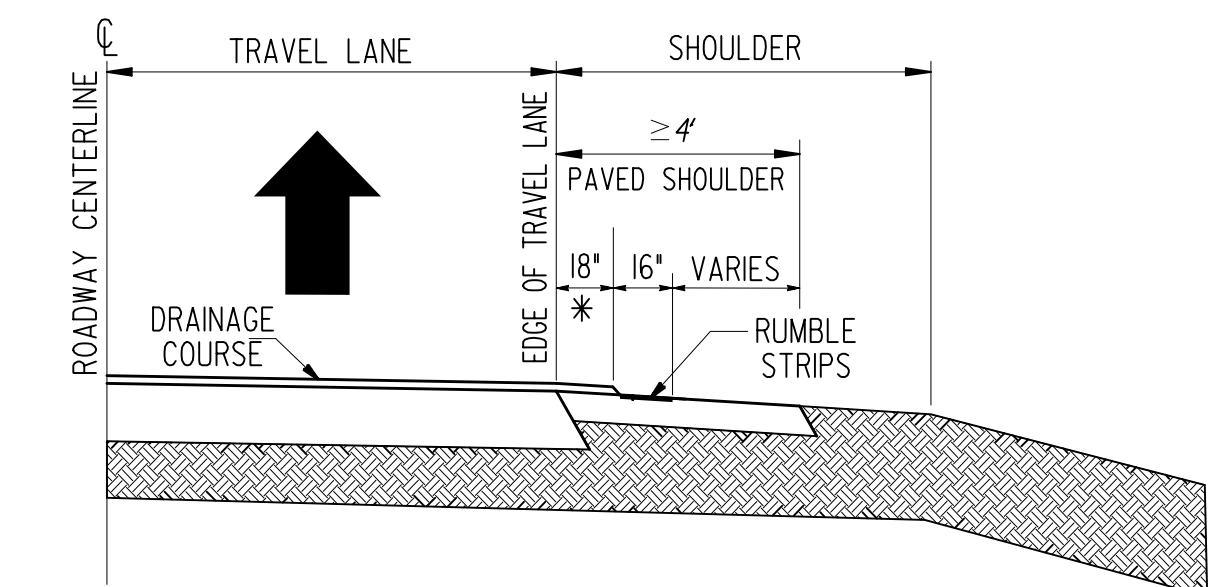
SECTION B-B

OUTSIDE

≥ 4' PAVED SHOULDER WITH 16" MILLED RUMBLE STRIPS ON ROADS WITH OTHER PAVEMENT MIX



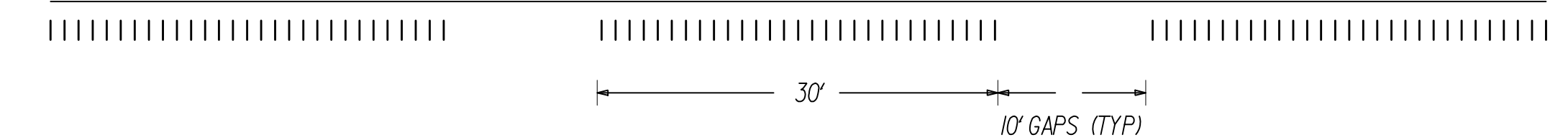
OGFC OR PEM, ≥ 4' ** PAVED SHOULDER WITH 16" MILLED RUMBLE STRIPS



* NOTE: DRAINAGE COURSE OGFC OR PEM TO BE PLACED ON TO THE SHOULDER PAVING A DISTANCE OF 18" ON THE OUTSIDE SHOULDER.

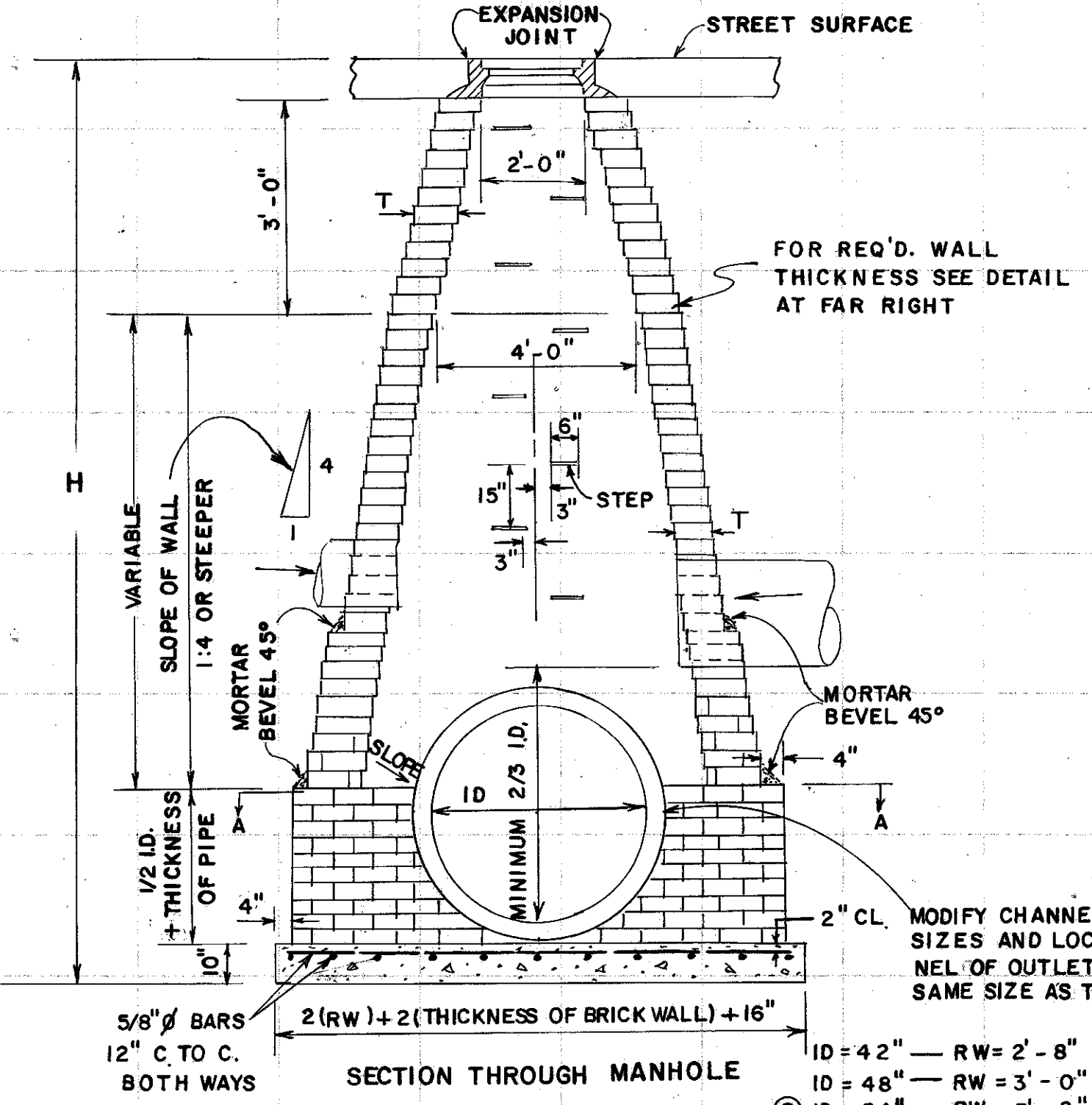
** NOTE: IF OGFC OR PEM SHOULDER IS UTILIZED TO ACCOMMODATE BIKING ON THE SHOULDER, PAVED SHOULDER MUST BE A MINIMUM OF 7' WIDE.

OUTSIDE SKIP PATTERN (FOR NON-FREEWAY, USE CONTINUOUS PATTERN FOR FREEWAY)

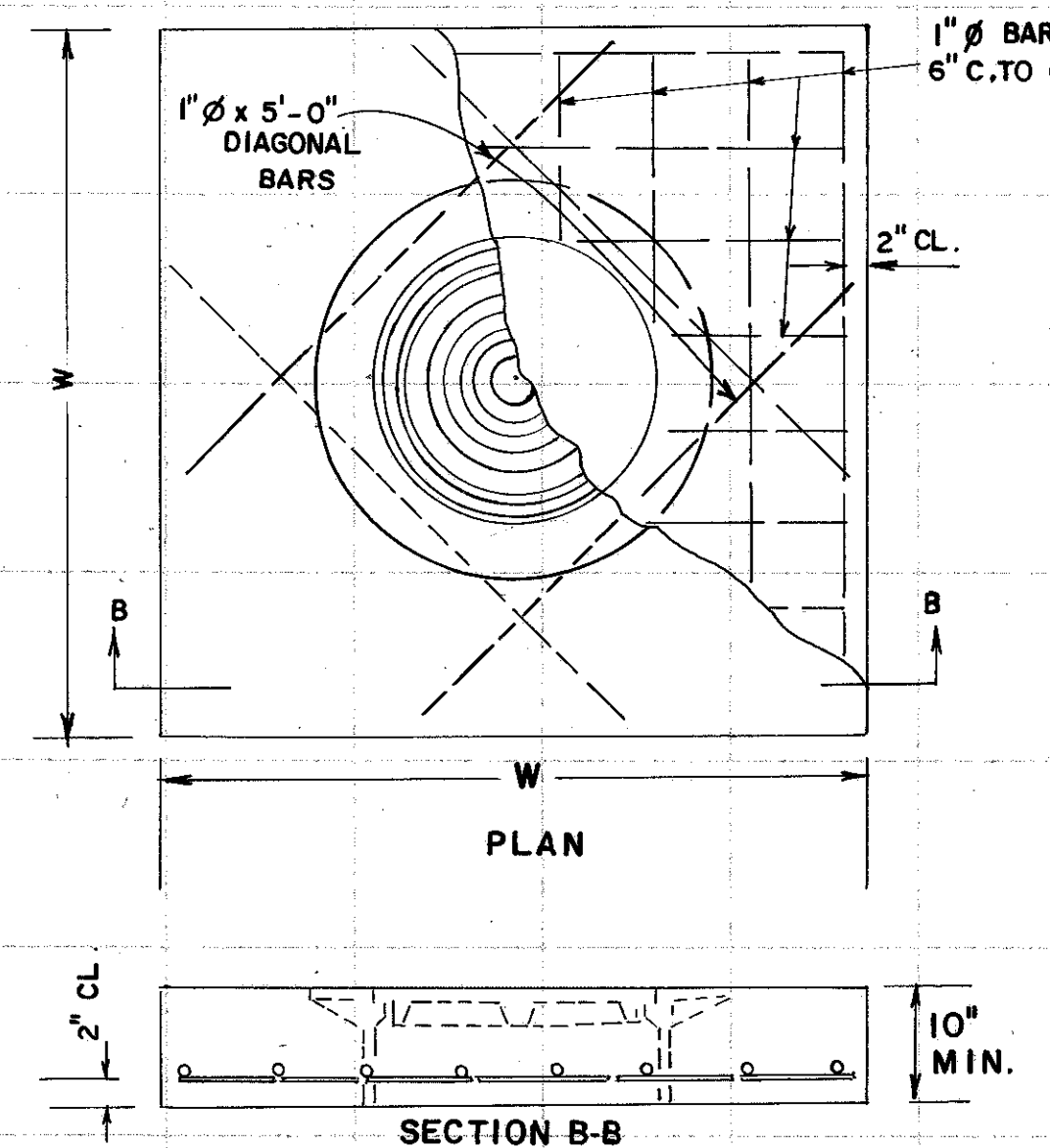


DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		CONSTRUCTION DETAILS RUMBLE STRIP DETAILS FOR SHOULDER, EDGELINE AND FREEWAY	
NO SCALE		DATE: SEPTEMBER 2017	
BY	DESIGNED _____ DRAWN _____ TRACED _____ CHECKED _____	NUMBER T-25	

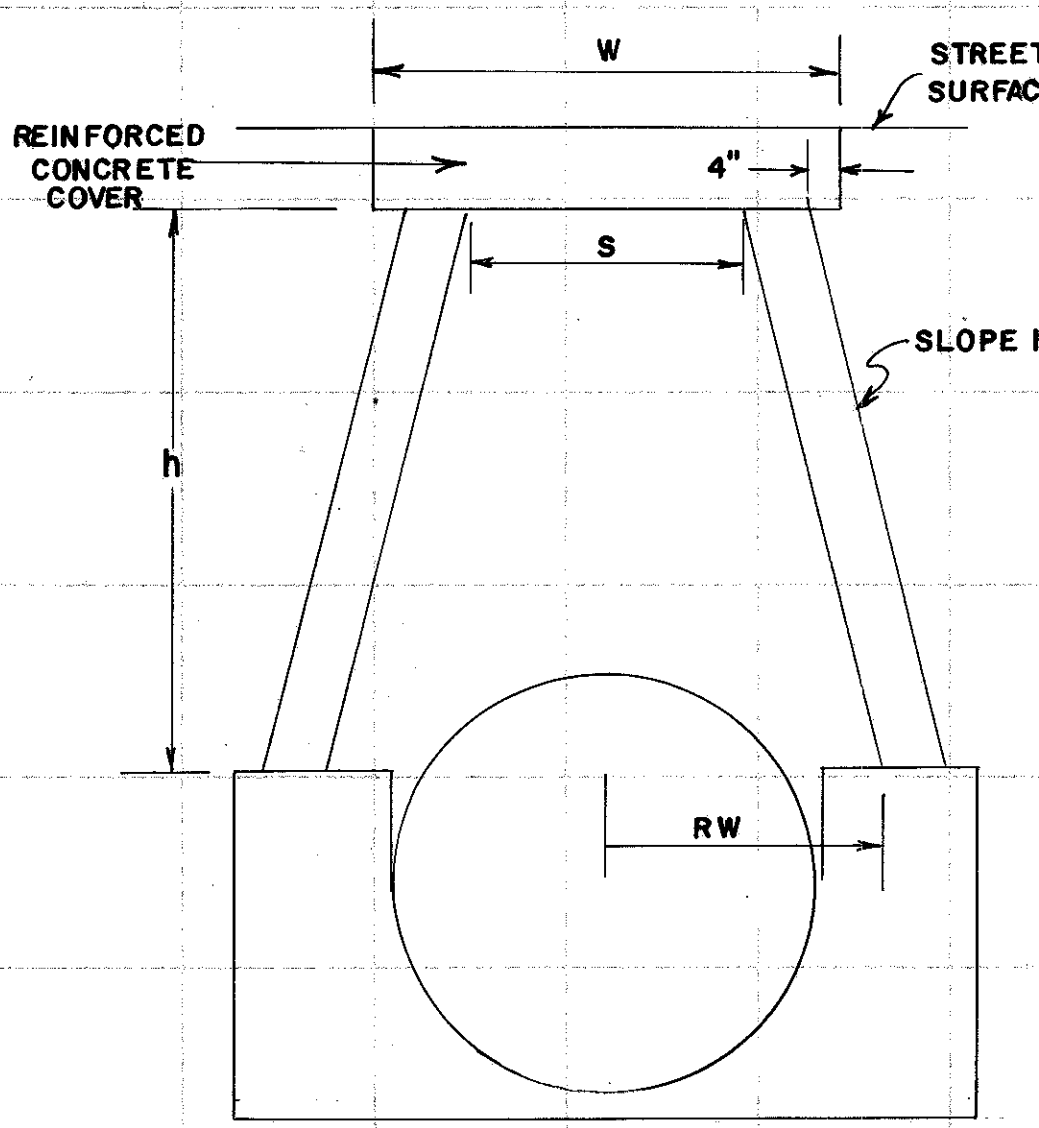
BRICK MANHOLE SECTION (PIPE OUTSIDE DIAMETER IS 48" OR MORE)



REINFORCED CONCRETE COVER



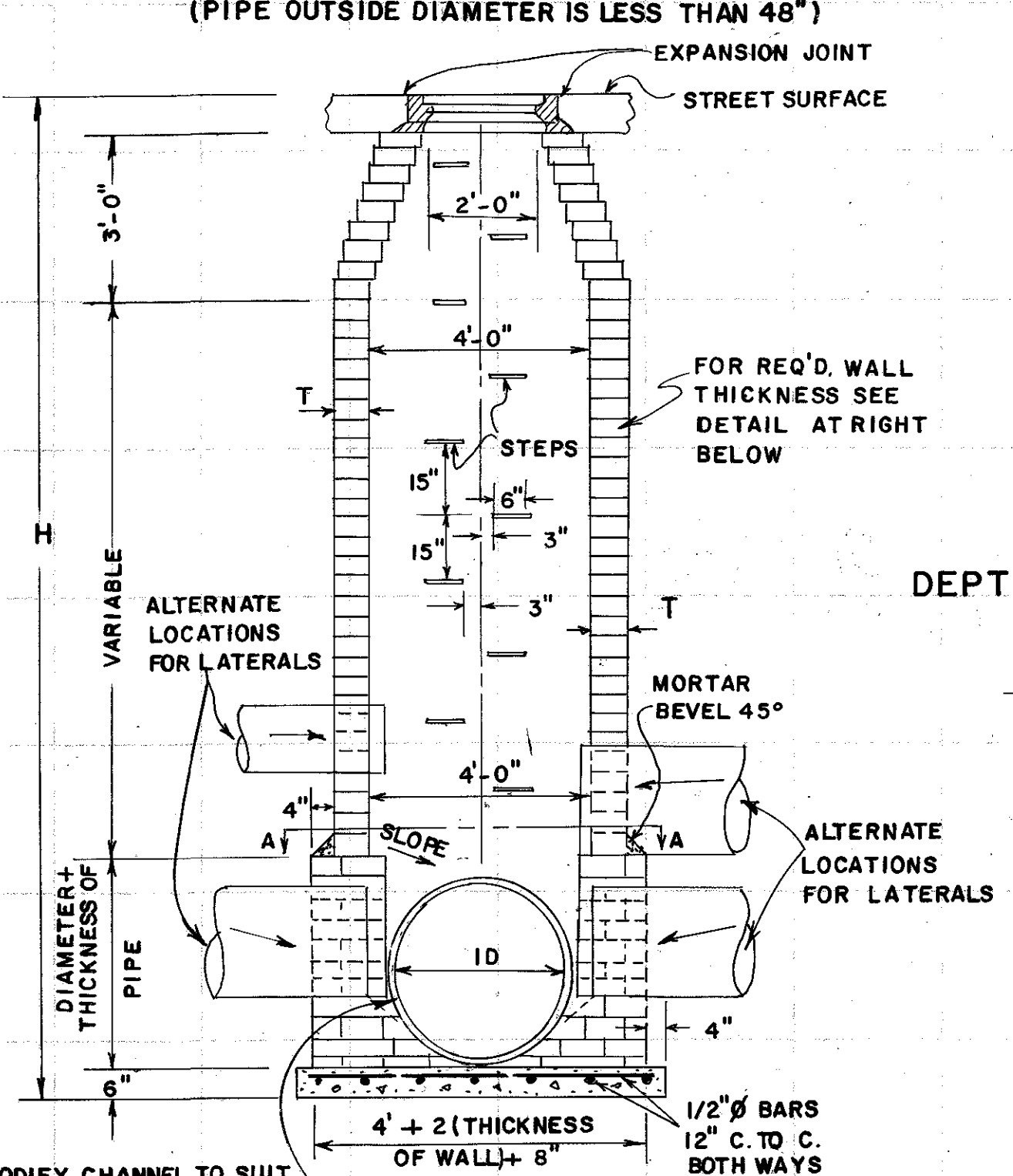
PLACEMENT FOR CONCRETE COVER



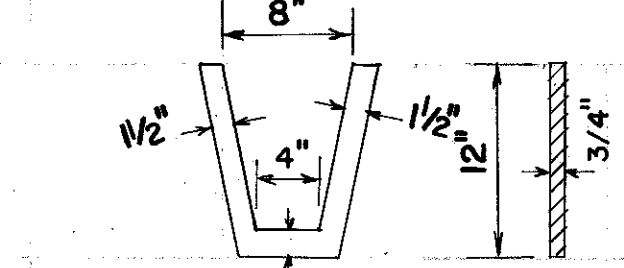
FORMULA FOR COMPUTING W
RW = INSIDE RADIUS OF WALL
 $W = 2RW - 1/2$
 $W = S + 24$

NOTE: USE CONCRETE COVER WITH MANHOLE CASTINGS IF FILL FROM TOP OF PIPE TO FINISHED SURFACE IS LESS THAN:
 4'-6" FOR 42" PIPE
 5'-0" FOR 48" PIPE
 5'-6" FOR 54" PIPE
 6'-0" FOR 60" PIPE
 6'-6" FOR 66" PIPE
 7'-0" FOR 72" PIPE
 7'-6" FOR 78" PIPE
 8'-0" FOR 84" PIPE

BRICK MANHOLE SECTION (PIPE OUTSIDE DIAMETER IS LESS THAN 48")

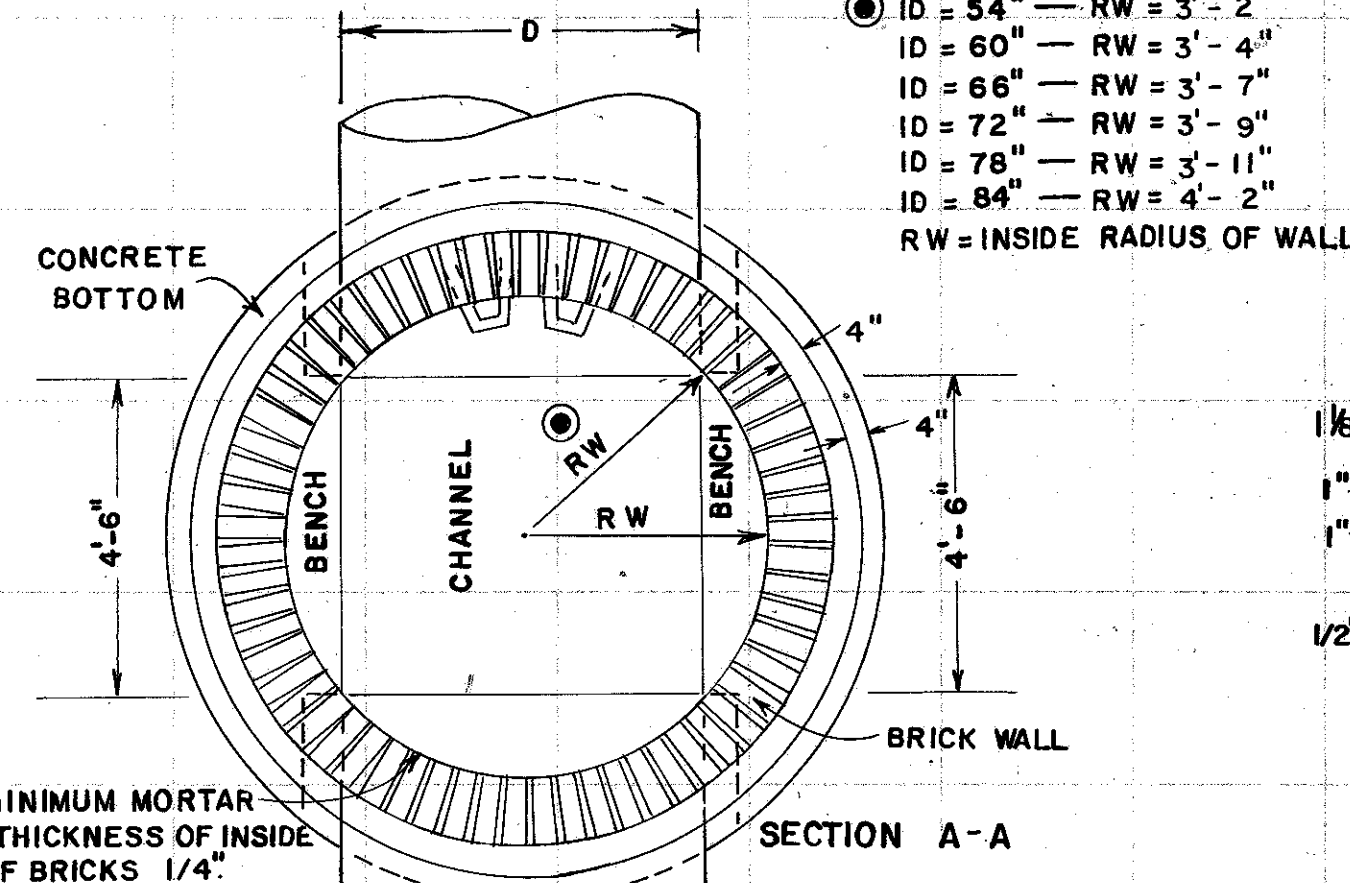
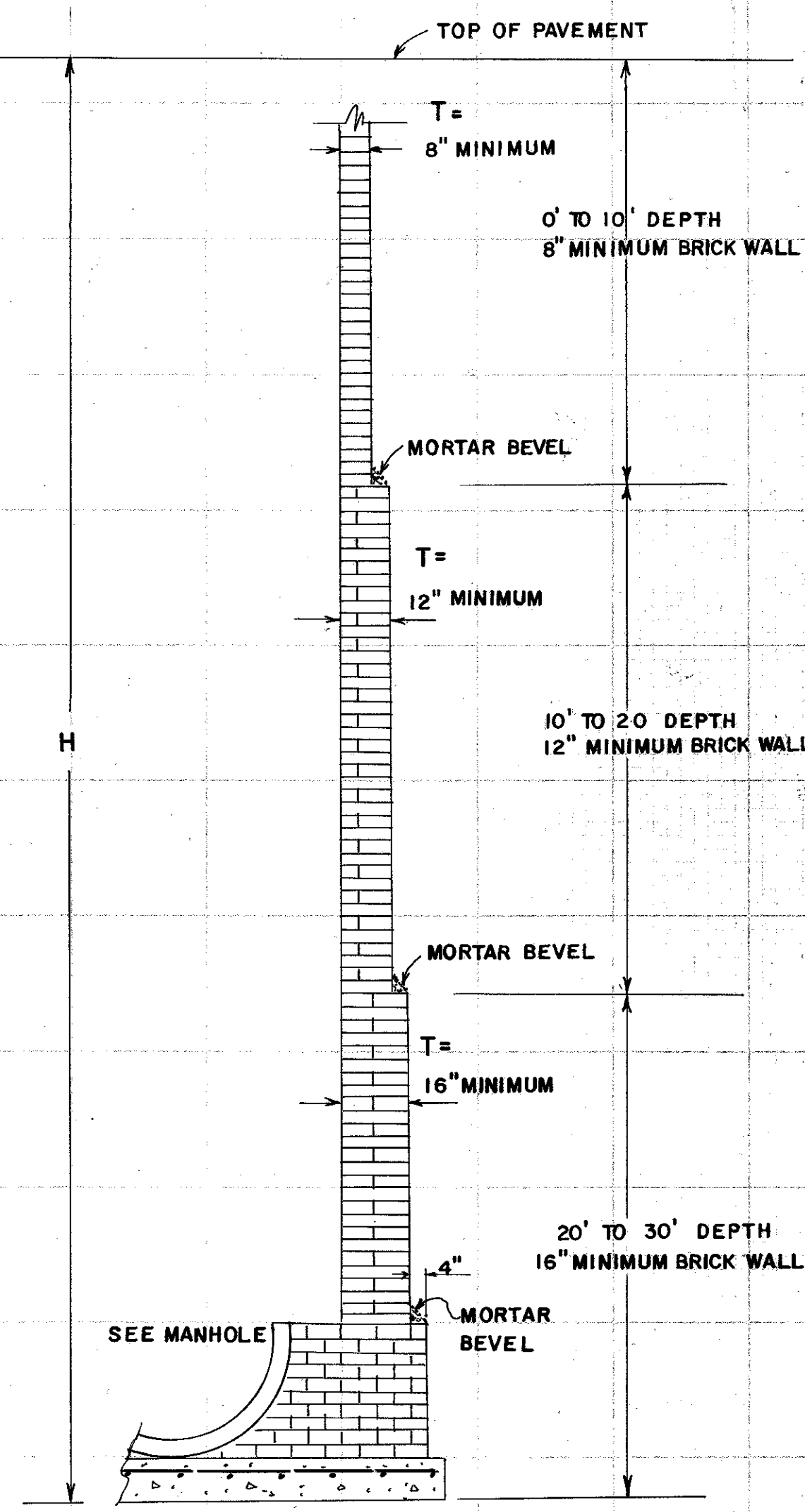


CAST IRON STEP

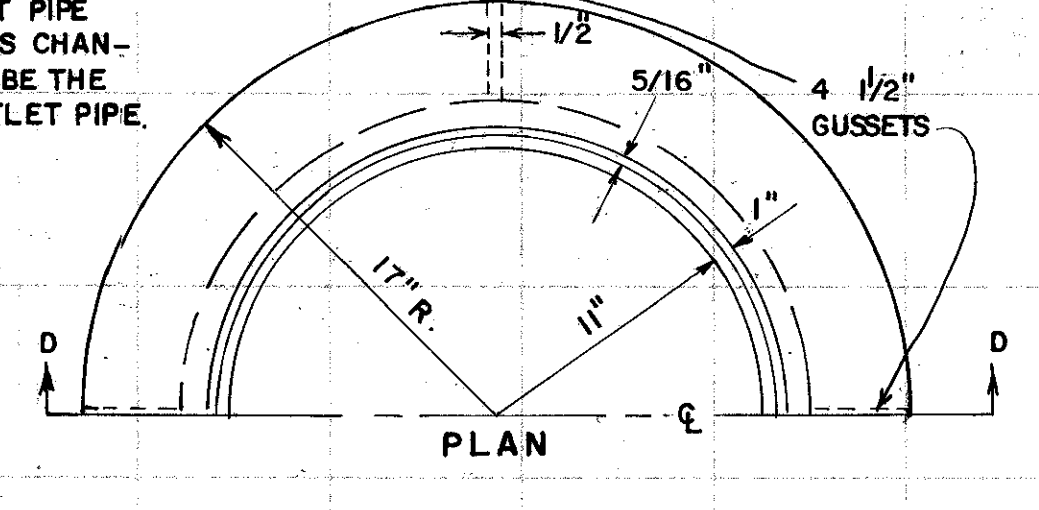


NOTE: STEPS ARE REQUIRED IN ALL MANHOLES WHERE "H" IS GREATER THAN 4'-0". NUMBER AND LOCATION OF STEPS TO BE AS DIRECTED BY THE ENGINEER. PLASTIC OR RUBBER COATED STEPS LISTED IN THE GA. D.O.T. QUALIFIED PRODUCTS MANUAL MAY BE SUBSTITUTED.

DEPTH LIMITS FOR INCREASING WALL THICKNESS



FRAME TO BE USED WITH CONCRETE COVER

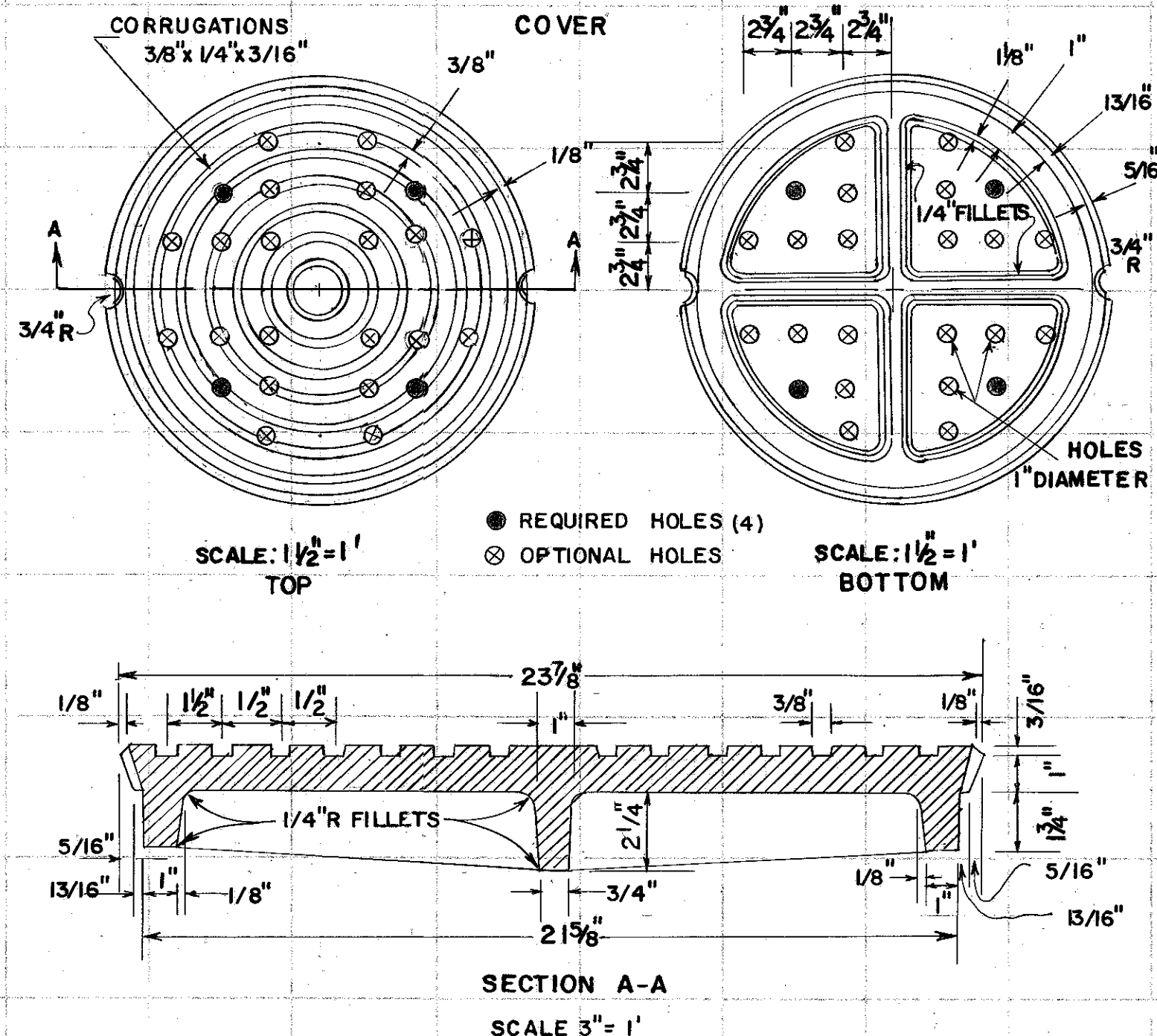


THICKNESS OF BRICK WALL (SEE DETAIL AT FAR RIGHT)

DEPTH	THICKNESS (T)
TO 10'	* 8" MIN.
10' TO 20'	12" MIN.
20' TO 30'	16" MIN.

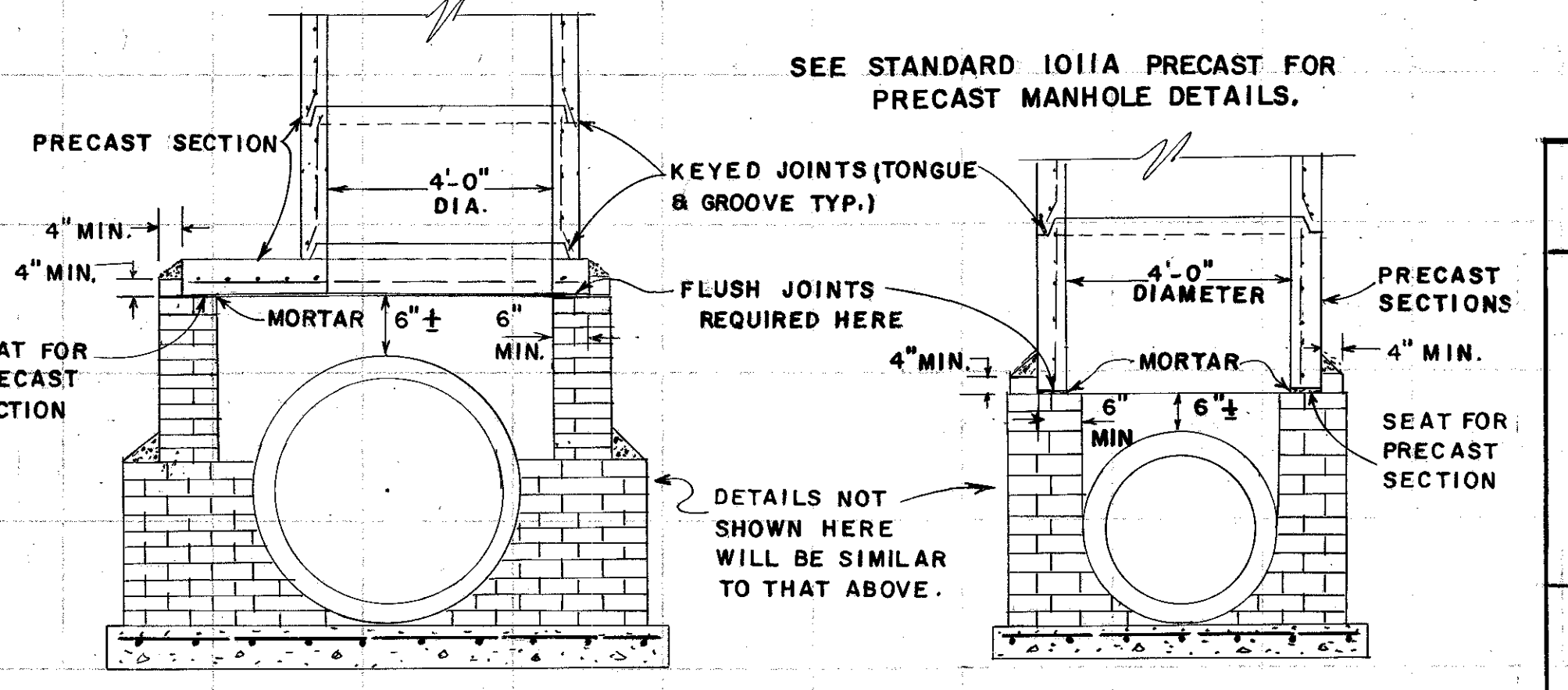
* FOR COMBINATION BRICK & PRECAST M.H. (SEE BELOW) ONLY 12" OR 16" BRICK WALL THICKNESS IS TO BE USED FOR BASE.

MANHOLE CASTINGS



ALTERNATE - COMBINATION BRICK & PRECAST MANHOLES

NOTES FOR COMBINATION MANHOLE:
 - BRICK PORTION OF MANHOLE WILL BE CONSTRUCTED WITH SEAT TO GIVE BEST POSSIBLE FIT FOR PRECAST UNIT. MINIMUM THICKNESS FOR BRICK WALL WILL BE 12" FOR H TO 20 FT. AND 16" FOR H=20 FT. TO 30 FT.
 - PRECAST UNIT WITHOUT TONGUE OR GROOVE AT BOTTOM SHALL BE PLACED IN BRICK SEAT WITH MORTAR IN JOINT ALL ROUND. BRICK BASE SHALL SET FOR 24 HOURS MIN. BEFORE PRECAST SECTIONS ARE INSTALLED.
 - STEPS IN THE BRICK PORTION OF MANHOLE WILL BE IN ALIGNMENT WITH AND MATCH THE STEPS IN THE PRECAST SECTIONS RATHER THAN AS SHOWN FOR THE ALL BRICK MANHOLES.



DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

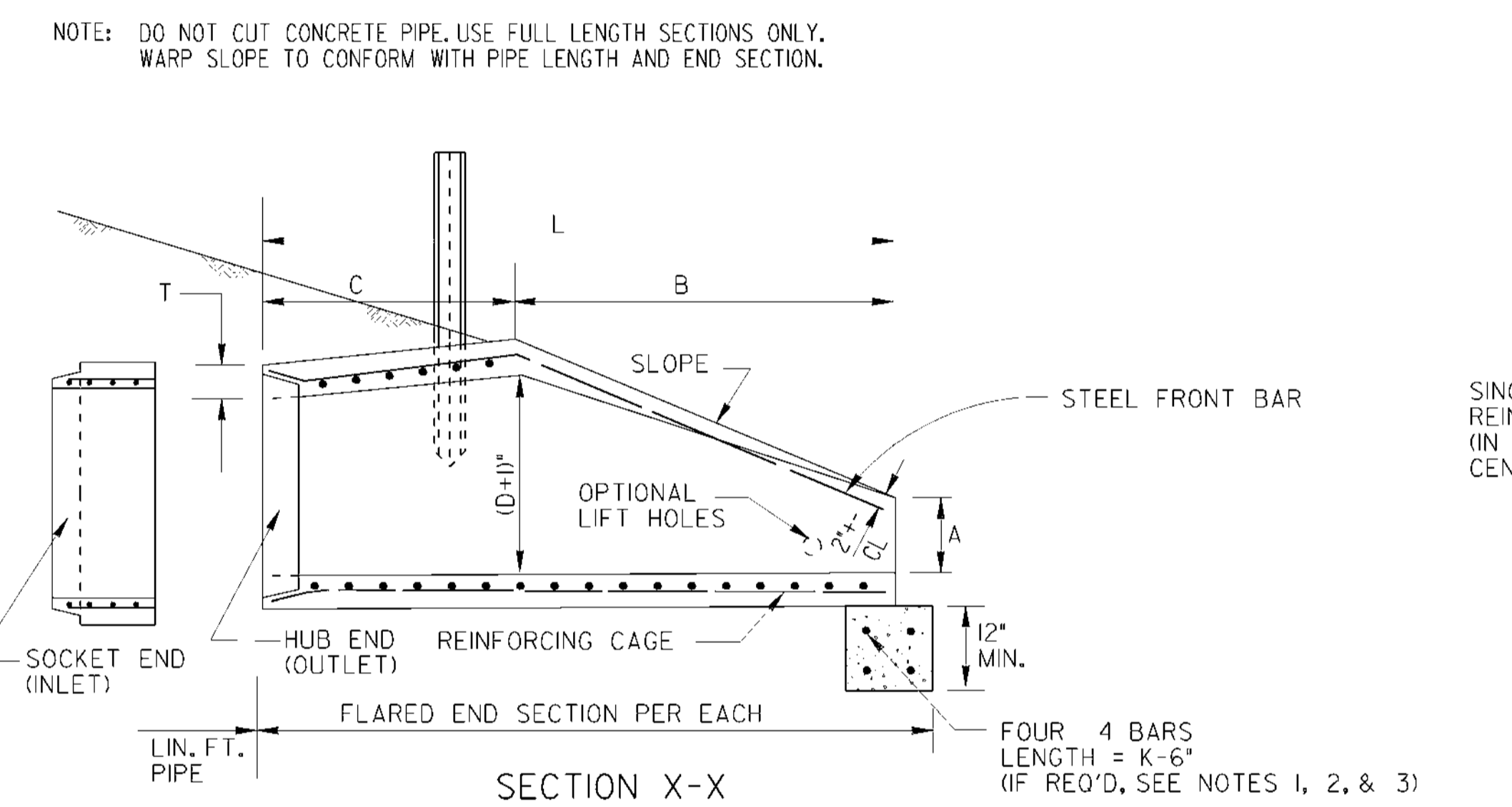
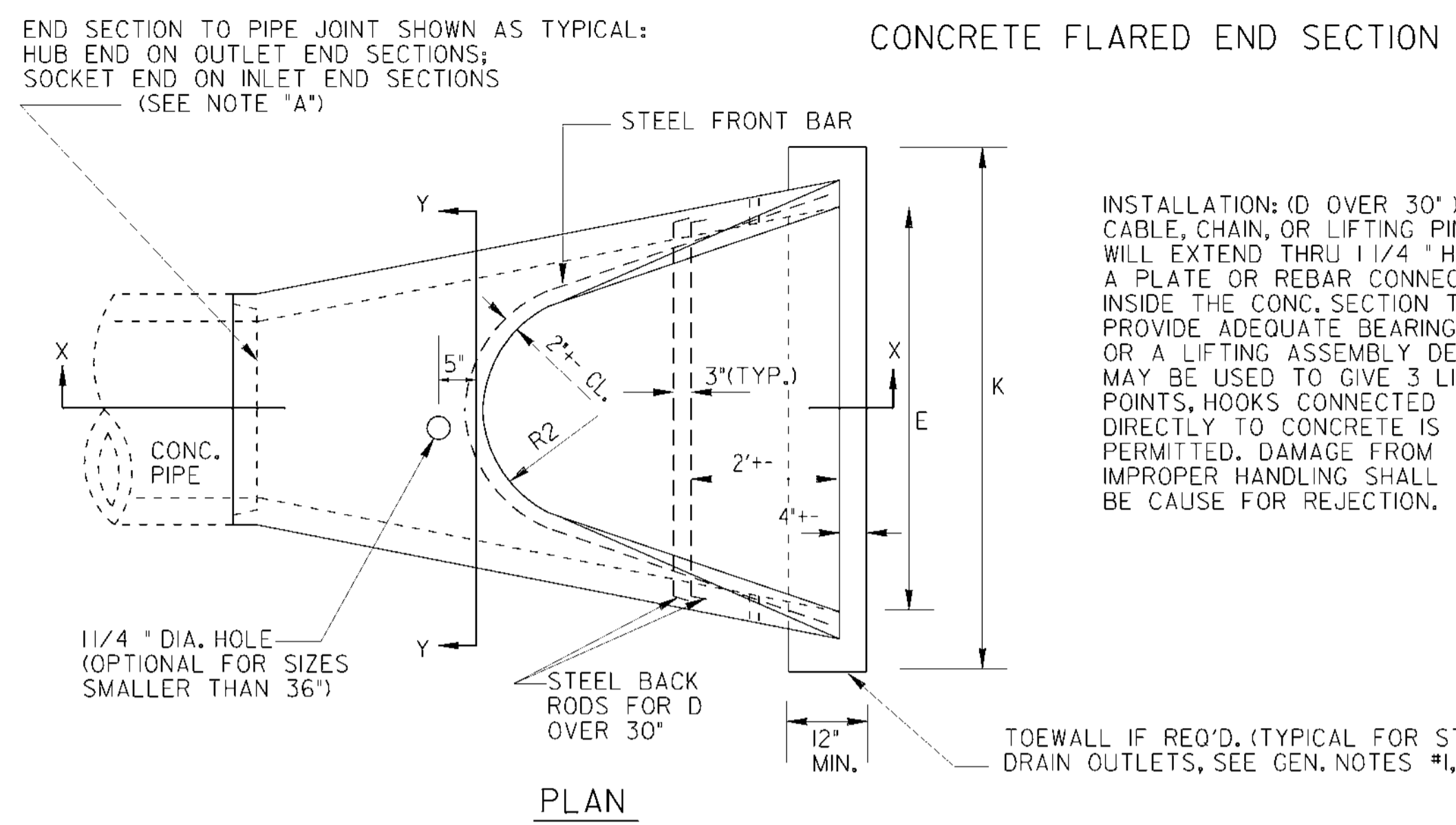
STANDARD BRICK MANHOLES

SCALE AS SHOWN REV. & REDR. OCTOBER, 1981

DES. 8-58 (SUBMITTED) *Hand E. Hacks* STATE ROAD & AIRPORT DESIGN ENGR. NUMBER
 DRW. R.M.U. TRAFFIC ENGINEER
 TRAFFIC ENGINEER
 CHK. R.K.C. (APPROVED) *Thomas D. Moreland* STATE HIGHWAY ENGINEER 1011A

NOTE: COVER AND FRAME MUST BE FITTED BEFORE LEAVING SHOP. PAINT ACTUAL WEIGHT OF EACH CASTING ON ITS FACE.
 MANHOLE FRAME & COVER SHOWN ON STD. 1011A PRECAST MAY BE USED AN ALTERNATE TO CASTINGS SHOWN HERE.

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



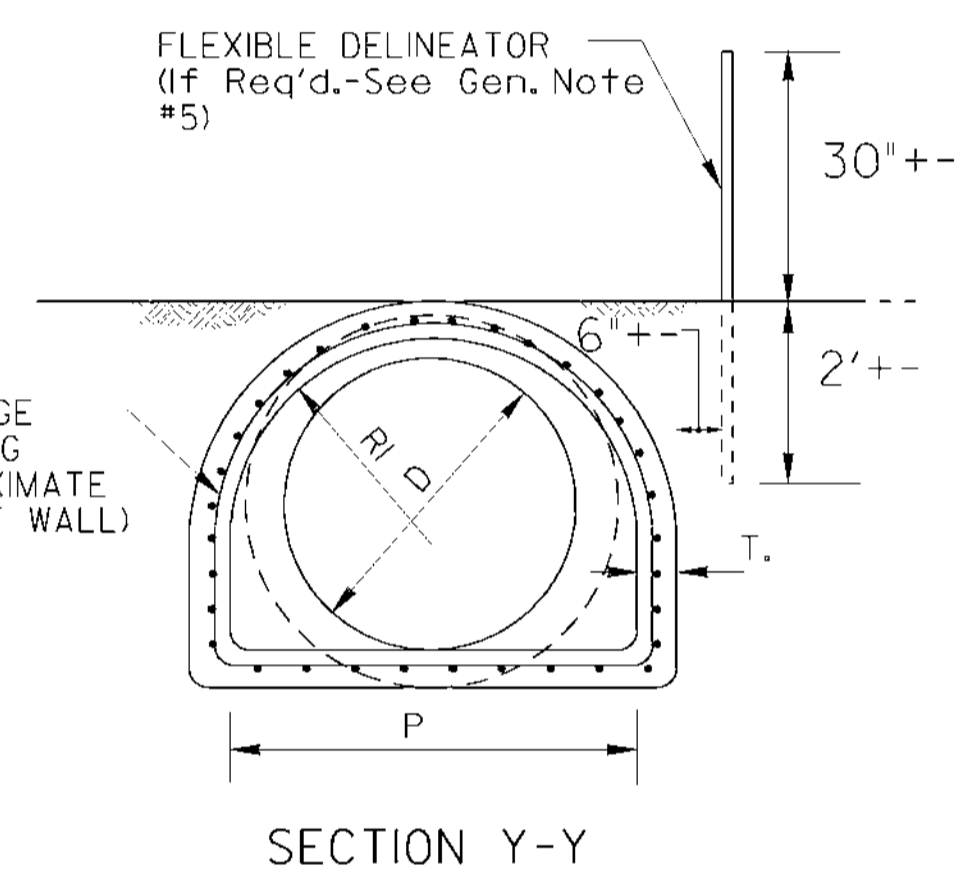
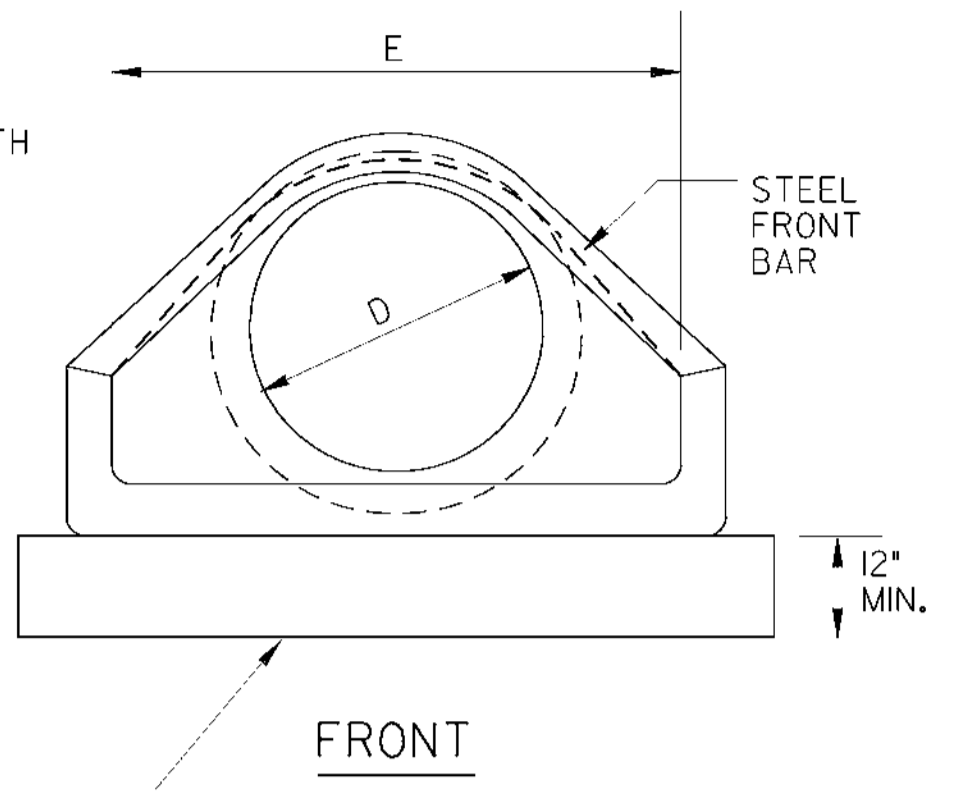
NOTE "A":
CONTRACTOR WILL INFORM PRODUCER IF CONCRETE FLARED END SECTION IS FOR INLET OR FOR OUTLET END. SOCKET (TONGUE OR SPIGOT) END IS REQUIRED FOR INLETS. HUB (GROOVE OR BELL) END IS REQUIRED FOR OUTLETS. SOCKET TO SOCKET OR HUB TO HUB JOINT WILL NOT BE ACCEPTED UNLESS A REINFORCED CONCRETE COLLAR IS BUILT AROUND THE JOINT WITH NO PAYMENT BEING MADE FOR THE COLLAR. FLARED END SECTIONS SHALL BE JOINTED TO PIPE WITH ALL SPACE IN THE JOINT FILLED WITH EITHER BITUMINOUS PLASTIC CEMENT OR PREFORMED PLASTIC GASKET (SEC. 848).

WALL THICKNESS (T) IS SHOWN AS NOMINAL AND MAY BE INCREASED AT PRODUCER'S OPTION FOR DESIRED JOINT DESIGN OR TO ALLOW A FLAT OUTSIDE BOTTOM ON THE FLARE, WITH INSIDE DIMENSIONS OF FLARE RETAINED AS SHOWN.
T = PIPE WALL THICKNESS (0.0833D + 1"± TYPICAL)

DIMENSIONS AND REINFORCING FOR CONCRETE FLARED END SECTIONS (+/- 1" TOLERANCE)											OUTLET TOEWALL (IF REQ'D)		
PIPE DIA	FRONT BAR	BACK RODS	SLOPE +/-	A	B	C	L	E	P	R1	R2	K = E + 2'	CU. YDS. CONC.
12"	1-#3 x 5' 4"	NOT REQ'D.	2.2%	4"	2'0"	4'1"	6'1"	2'0"	1'8"	10"	9"	4'-0"	.148
15"	1-#3 x 6' 0"	NOT REQ'D.	2.2%	6"	2'3"	3'10"	6'1"	2'6"	2'0"	1'0"	11"	4'-6"	.167
18"	1-#3 x 7' 2"	NOT REQ'D.	2.2%	9"	2'3"	3'10"	6'1"	3'0"	2'5"	1'4"	1'0"	5'-0"	.185
24"	1-#3 x 9' 10"	NOT REQ'D.	2.4%	10"	3'8"	2' 6"	6'2"	4'0"	2'9"	1'5"	1'2"	6'-0"	.222
30"	1-#4 x 11' 8"	NOT REQ'D.	2.4%	12"	4'6"	1' 8"	6'2"	5'0"	3'1"	1'6"	1'3"	7'-0"	.259
36"	1-#4 x 13' 10"	2-#4 x 6' 3"	2.4%	15"	5'3"	2'11"	8'2"	6'0"	4'0"	2'0"	1'8"	8'-0"	.296
42"	1-#4 x 13' 10"	2-#4 x 7' 4"	2.4%	21"	5'3"	2'11"	8'2"	6'6"	4'6"	2'4"	1'10"	8'-6"	.315

NOTE: SPECIFIED REINFORCING IS MINIMAL AND MAY BE INCREASED AT PRODUCER'S OPTION TO AID CASTING & HANDLING. ALTERNATE REINFORCEMENT PERMITTED IF APPROVED.

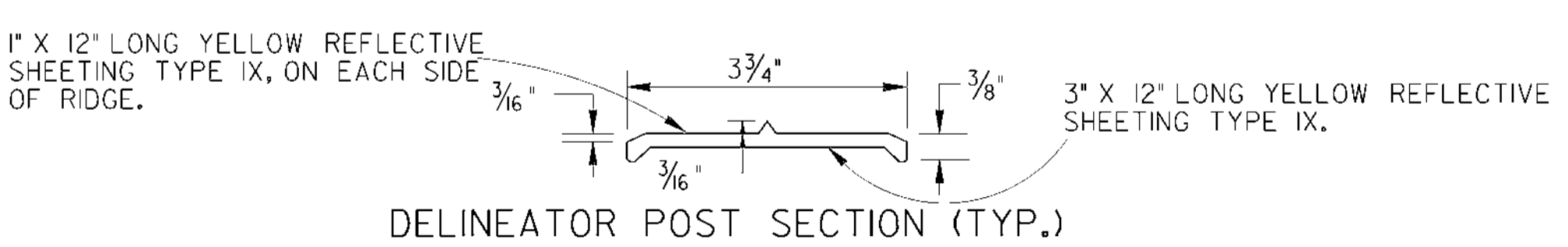
NOTE: "C" AND "L" DIMENSION MAY BE MEASURED TO EITHER END OF JOINT CONNECTION AT PIPE.



SPECIAL NOTE:
FLARED END SECTIONS ARE NORMALLY LIMITED TO USE OUTSIDE THE CLEAR ZONE OR BEHIND BARRIER AND WHERE HYDRAULICS PERMIT. SEE OTHER STANDARDS OR DETAILS FOR TAPERED HEADWALLS, SAFETY SLOPE END SECTIONS OR OTHER PIPE END STRUCTURES.

GENERAL NOTES :

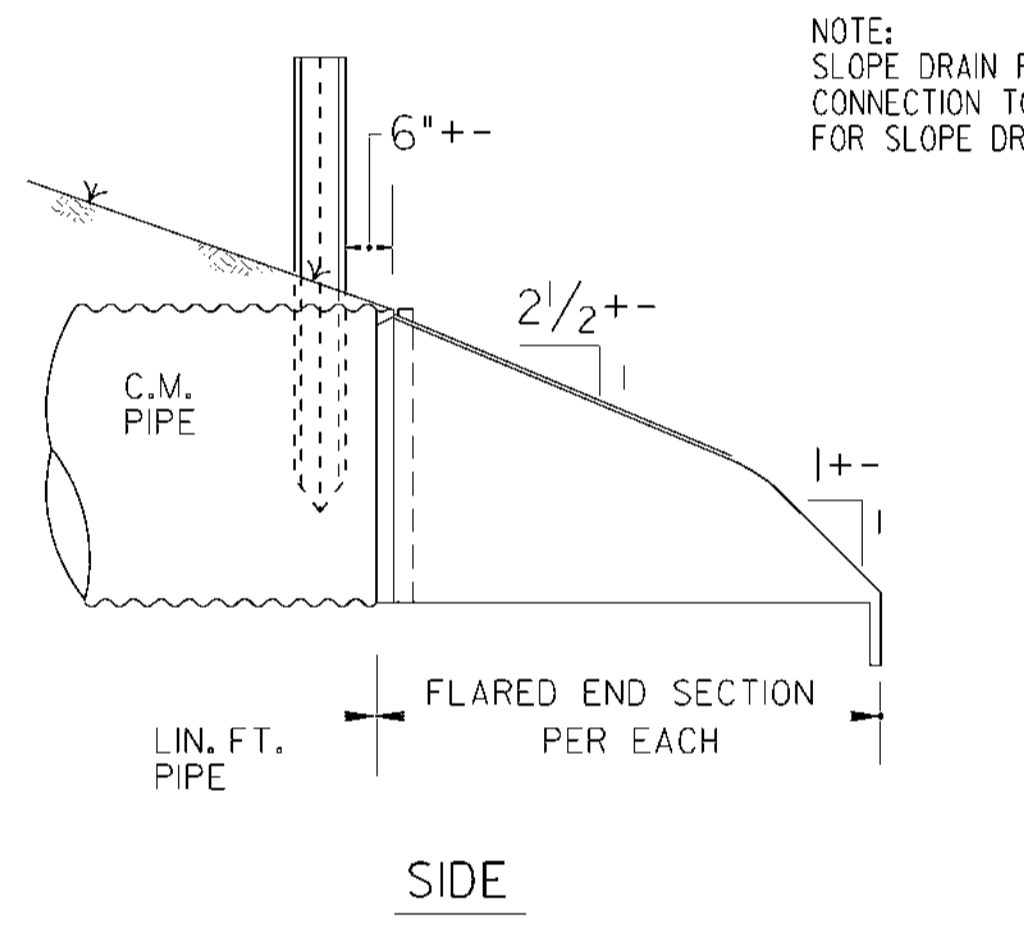
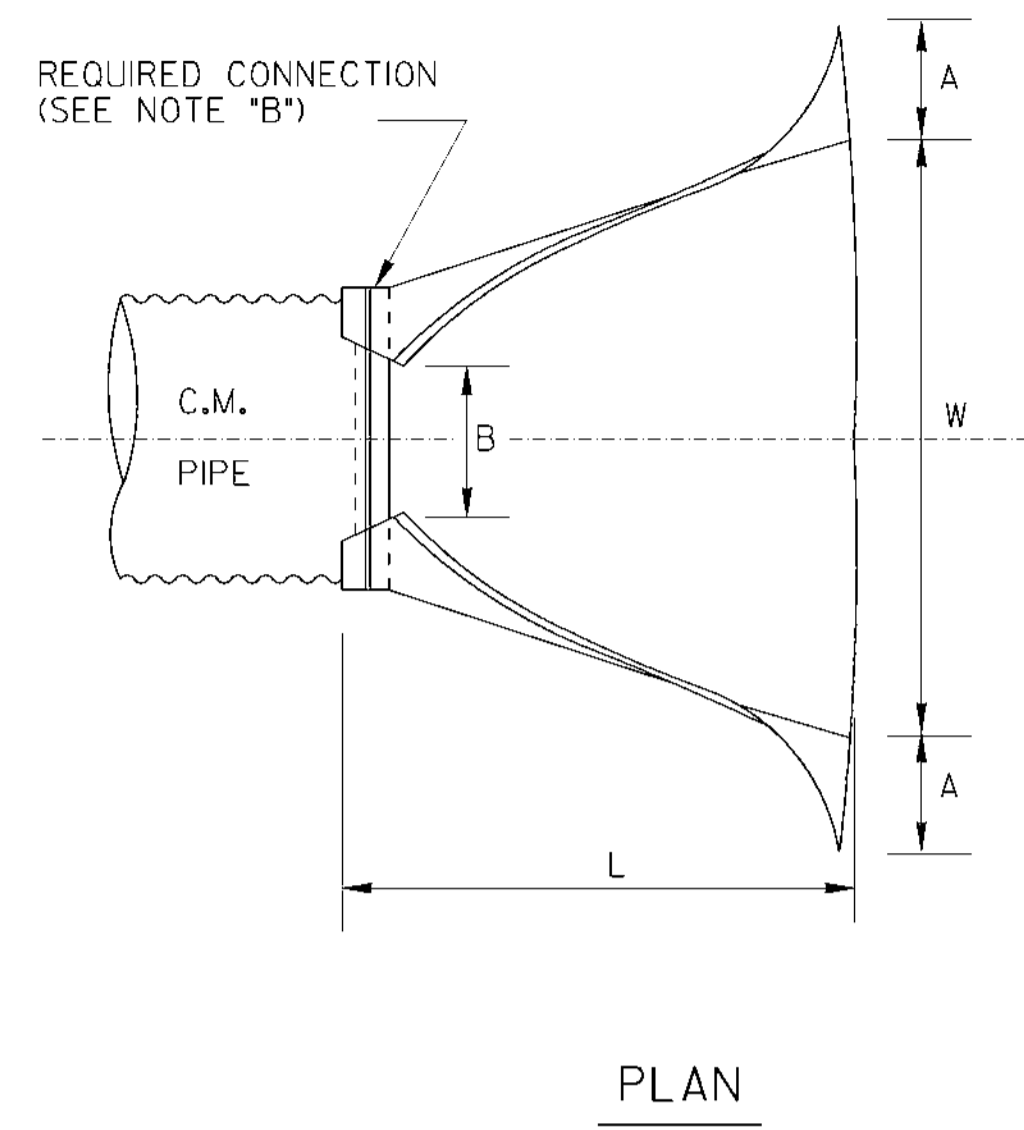
- TOEWALLS ARE REQ'D. FOR OUTLETS OF CONC. STORM DRAINS, EXCEPT WHERE DITCH PAVING OR OTHER EROSION PROTECTION IS PROVIDED OR WHERE THE OUTLET VELOCITY IS LESS THAN 8 FT/SEC. TOEWALLS ARE NOT REQUIRED FOR SIDE DRAINS, SLOPE DRAINS OR INLETS OF STORM DRAINS THIS CRITERIA MAY BE VARIED WHERE SPECIFIED BY THE DESIGNER OR THE ENGINEER.
- TOEWALLS WILL BE PAID FOR AS CU. YDS. OF CLASS "A" OR "B" CONCRETE. CONTRACTOR MAY ELECT TO CONSTRUCT TOE WALL WITH SAND CEMENT BAG RIPRAP OR STONE RIPRAP TO SAME MINIMUM DIMENSIONS WITH NO ADDITIONAL PAYMENT.
- PRECAST TOEWALLS SHALL BE CL. "A" CONCRETE; CAST-IN-PLACE TOEWALLS MAY BE CL. "A" OR "B" CONCRETE AND MAY BE TRENCH FORMED. WHERE PLANS ITEMIZE ONE CLASS OF CONCRETE AND CONTRACTOR ELECTS TO USE OTHER CLASS, NO ADDITIONAL PAYMENT IS MADE. NO PAYMENT IS MADE FOR STEEL IN TOEWALL.
- CENTERLINE OF FLARED END SECTION WILL ALIGN WITH CENTERLINE OF PIPE, IF PIPE IS SKEWED, THE EMBANKMENT SLOPE WILL BE WARPED TO CONFORM WITH END SECTION.
- FLEXIBLE DELINEATORS SHALL BE REQUIRED AT CROSS DRAIN FLARED END SECTIONS, BOTH INLET AND OUTLET. PAYMENT FOR FLARED END SECTION WILL INCLUDE DELINEATORS, SEE DETAIL AND NOTES BELOW. DELINEATORS NOT REQ'D. FOR SIDE DRAIN, SLOPE DRAIN, OR LONG PIPE.



NOTE:
DELINEATOR POST SHALL CONFORM TO SEC. 911 FOR FLEXIBLE DELINEATOR POST EXCEPT REFLECTIVE SHEETING IS NOT REQUIRED AND LENGTH IS 4'-6" FROM TOP TO BOTTOM POINT. ALTERNATES PERMITTED IF APPROVED BY D.O.T. LABORATORY.

SPECIAL NOTE:
PIPE SIZES (D) ARE "NOMINAL-MINIMUM" INSIDE DIAMETERS IN ACCORDANCE WITH GEORGIA STANDARD FOR PIPE CULVERTS. "D" DIMENSION FOR FLARED END SECTION SHALL EQUAL THE "D" DIMENSION FOR CONNECTING PIPE CULVERT.

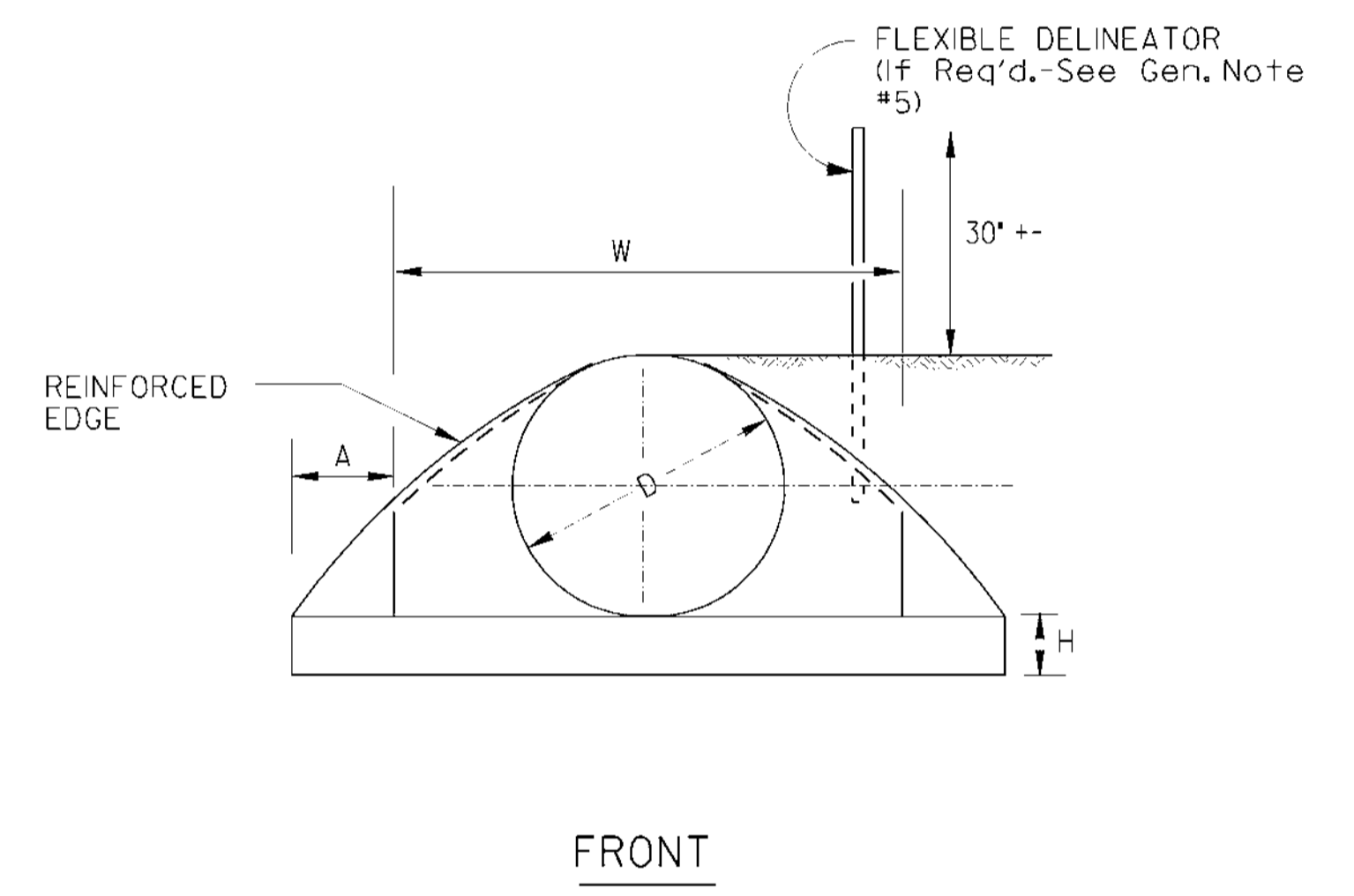
METAL FLARED END SECTION
(USE ONLY WITH COR. METAL PIPE)



NOTE: GALVANIZED STEEL FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED STEEL PIPE AND ALUMINUM FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED ALUMINUM PIPE UNLESS OTHERWISE APPROVED BY D.O.T. OFFICE OF MATERIALS AND TESTS.

PIPE SIZE "D"	THICKNESS		A	B	H	L	W
	GALV. STEEL	ALUM.	A= 0.40 +/- 1"	B=0.5 D +/- 1"	H=0.25D +/- 1" (MIN. 6")	L=L.67D +/- 1/2"	W=2.0D +/- 2"
12"	.064"	.060"	5"	6"	6"	1'8"	2'0"
15"	.064"	.060"	6"	7"	6"	2'3"	2'6"
18"	.064"	.060"	7"	9"	6"	2'6"	3'0"
24"	.064"	.060"	9"	1'0"	6"	3'4"	4'0"
30"	.079"	.05"	1'0"	1'3"	7"	4'2"	5'0"
36"	.079"	.05"	1'2"	1'6"	9"	5'0"	6'0"
42"	.09"	.064"	1'5"	1'9"	10"	5'10"	7'0"

NOTE: WHERE METAL FLARED END SECTIONS ARE USED WITH MULTIPLE PIPE LINES, THE STANDARD SPACING BETWEEN PIPES (S-D OR 3 FT.) MAY HAVE TO BE INCREASED (S=1.75 D TYPICAL), TO PREVENT OVERLAP OF END SECTION WINGTIPS. SEE ALSO STD. 10300.



- NOTE "B":
THE CONNECTION BETWEEN METAL FLARED END SECTION AND C.M. PIPE WILL BE ONE OF THE FOLLOWING:
- A STRAP BAND OR THREADED ROD PROVIDED BY THE MANUFACTURER WILL LOCK END SECTION ONTO PIPE. A CORRUGATION AT THE PIPE AND WILL BE NON-SPIRALED (PERPENDICULAR TO CL OF PIPE)
 - A DIMPLE BAND COLLAR WILL BE SHOP BOLTED TO END SECTION. PIPE WILL BE INSERTED INTO BAND COLLAR TO MEET THE END SECTION.
 - A STUB PIPE WILL BE RIVITED TO THE END SECTION AND THE MAIN PIPE CONNECTED TO THE STUB WITH A NORMAL CONNECTING BAND.
 - OTHER TYPE CONNECTION IF RECOMMENDED BY MANUFACTURER AND APPROVED BY THE D.O.T.

		6-9-06	DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
			REVISION	STANDARD FLARED END SECTIONS FOR PIPES	
			NO SCALE	REV. & REDR. SEPT., 1999	
			DES. _____	NUMBER 1120	
			REV. _____		
			RETR. _____	STATE ROAD & AIRPORT DESIGN ENGINEER	
			CHK. _____		
			(APPROVED: <i>O. L. HULL</i>)	CHIEF ENGINEER	

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

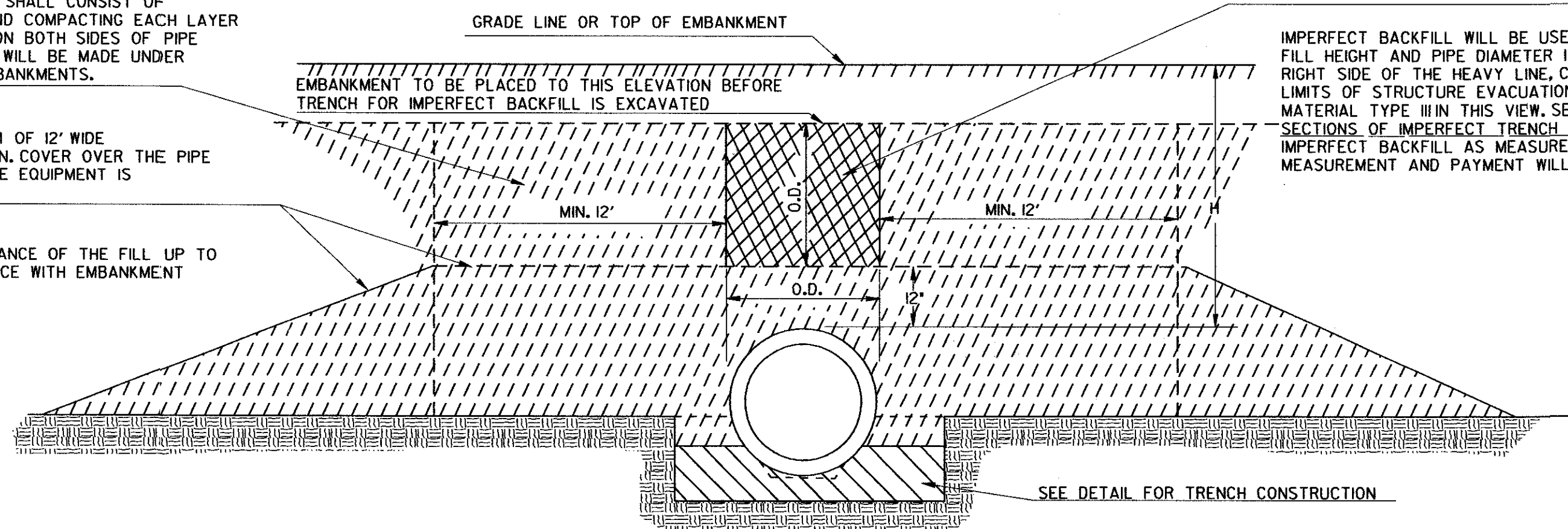
NORMAL BACKFILL

BACKFILL, AS SHOWN BY THE BROKEN LINE SECTIONS, SHALL CONSIST OF PLACING COMPACTABLE SOIL IN 6" (LOOSE) LAYERS AND COMPACTING EACH LAYER (ACCORDING TO GEORGIA STANDARD SPECIFICATIONS) ON BOTH SIDES OF PIPE FOR ITS FULL LENGTH. MEASUREMENT AND PAYMENT WILL BE MADE UNDER ROADWAY EXCAVATION ITEMS FOR FORMATION OF EMBANKMENTS.

NORMAL EMBANKMENT SHALL BE PLACED A MINIMUM OF 12' WIDE ON EACH SIDE OF THE PIPE AND AT LEAST THE MIN. COVER OVER THE PIPE AND COMPACTED TO THE REQUIRED DENSITY BEFORE EQUIPMENT IS ALLOWED TO CROSS.

AFTER BACKFILL HAS BEEN COMPACTED, THE BALANCE OF THE FILL UP TO GRADE LINE SHALL BE CONSTRUCTED IN ACCORDANCE WITH EMBANKMENT SPECIFICATIONS

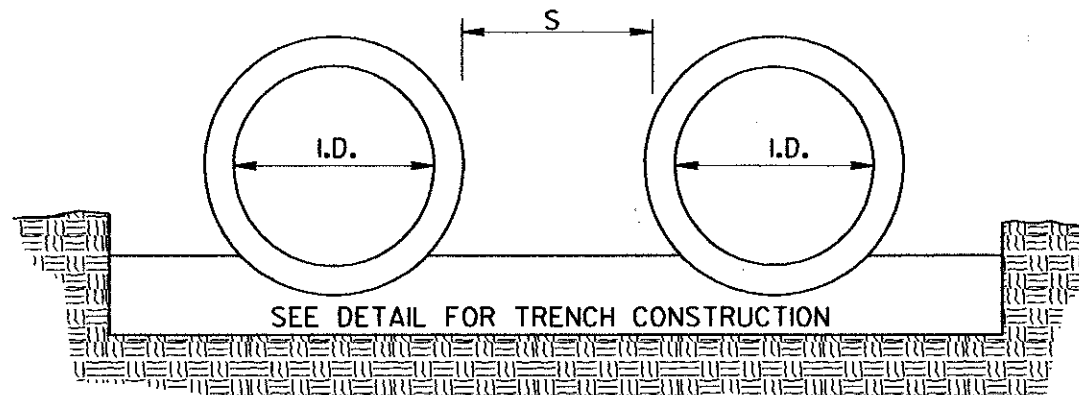
LONGITUDINAL SECTION OF IMPERFECT TRENCH BACKFILL AND BACKFILL METHODS



IMPERFECT BACKFILL

IMPERFECT BACKFILL WILL BE USED WITH CONCRETE PIPE IF FILL HEIGHT AND PIPE DIAMETER IN TABLE NO. 1 FALLS ON THE RIGHT SIDE OF THE HEAVY LINE, CROSS HATCHED AREA SHOWS LIMITS OF STRUCTURE EXCAVATION AND IMPERFECT BACKFILL MATERIAL TYPE III IN THIS VIEW. SEE DETAILS BELOW CROSS SECTIONS OF IMPERFECT TRENCH BACKFILL FOR LIMITS OF IMPERFECT BACKFILL AS MEASURED OVER THE PIPE LENGTHWISE. MEASUREMENT AND PAYMENT WILL BE CONFINED TO THESE LIMITS.

MULTIPLE PIPE CULVERT SPACING

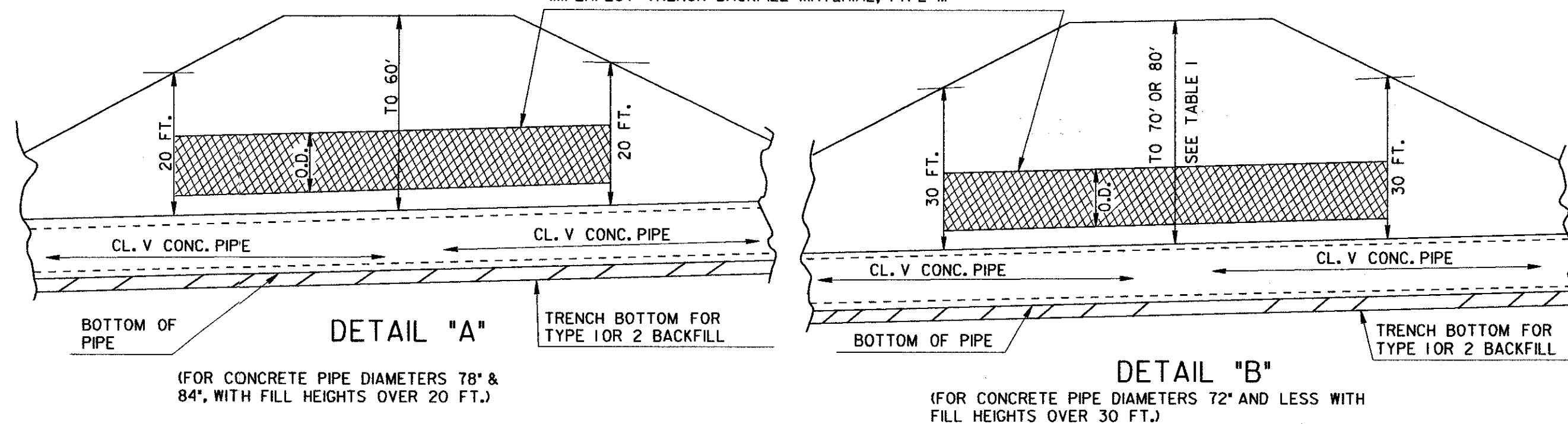


S=ONE INSIDE DIAMETER OF PIPE, OR 3 FEET, WHICHEVER IS SMALLER.
FOR PIPE ARCH CULVERTS, SUBSTITUTE SPAN FOR INSIDE DIAMETER.

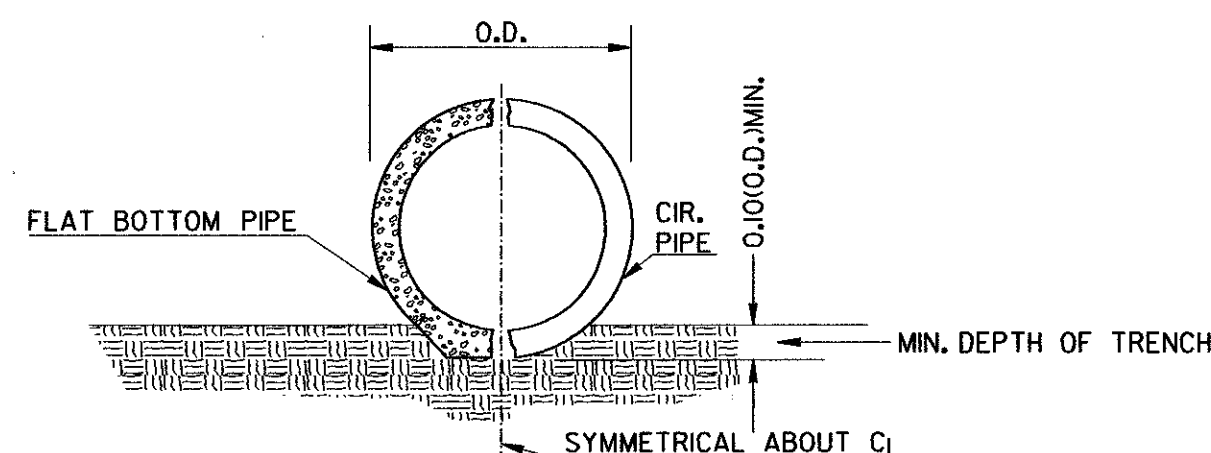
NOTE:
FOR MULTIPLE LINES OF C.M. PIPE WITH METAL FLARED END SECTIONS, S MAY BE INCREASED ENOUGH TO AVOID OVERLAP OF END SECTION WINGTIPS. LOCATION OF METAL END SECTION SHOULD BE DETERMINED BEFORE PLACEMENT OF PIPE.

CROSS SECTIONS OF IMPERFECT TRENCH BACKFILL

CROSS HATCHED AREAS SHOW LIMITS OF CONSTRUCTION & MEASUREMENT FOR STRUCTURE EXCAVATION & IMPERFECT TRENCH BACKFILL MATERIAL, TYPE III

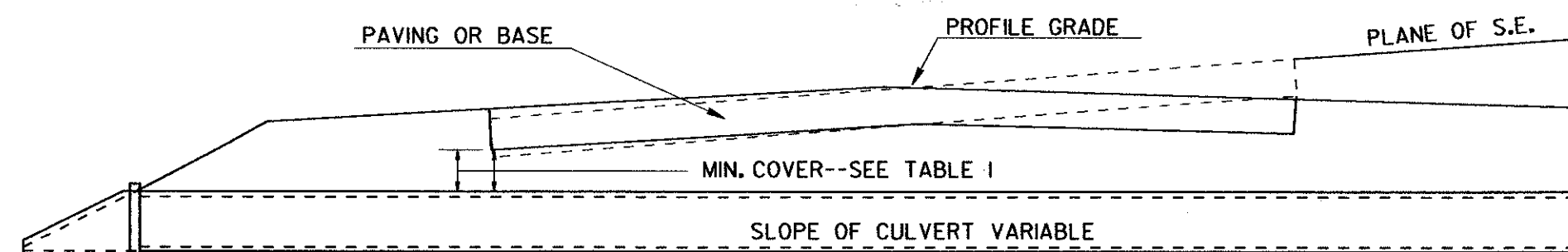


TRENCH CONSTRUCTION FOR SIDE DRAIN



NOTE: THE PIPE SHALL BE BEDDED TO LINE AND GRADE IN A FIRM FOUNDATION SHAPED TO FIT THE LOWER PART OF THE PIPE EXTERIOR. WHERE ROCK EXISTS, EXCAVATE AND BACKFILL WITH COMPRESSIBLE MATERIAL (UNCLASSIFIED EXCAVATION) A MINIMUM OF 6" BELOW THE PIPE.

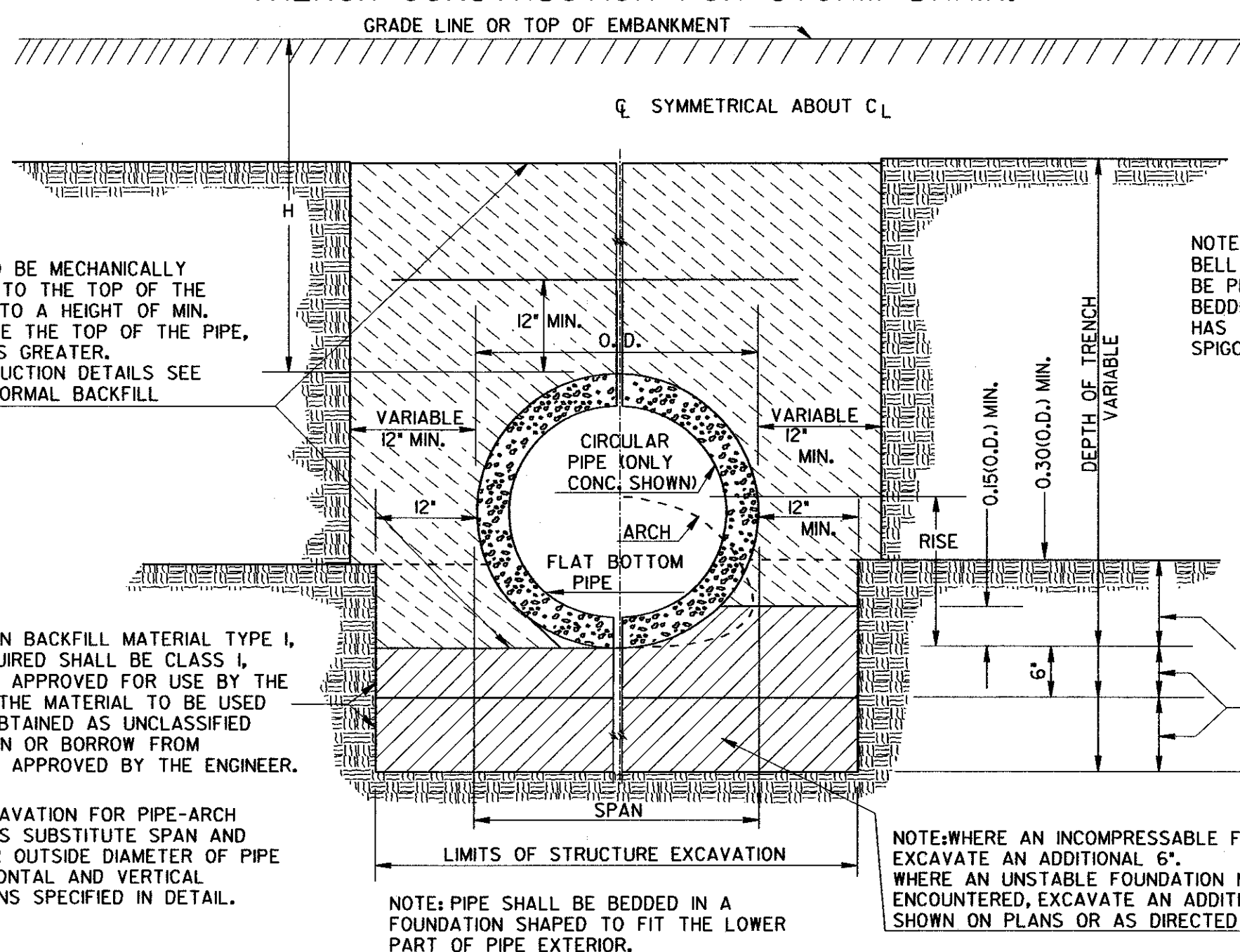
DETAIL SHOWING MINIMUM COVER FOR PIPE CULVERTS



NOTE:

1. FOR FILL HEIGHT TABLES SEE SHEET 2 OF 3 AND SHEET 3 OF 3.
2. ONLY ONE CLASS OR THICKNESS OF PIPE WILL BE SPECIFIED FOR EACH INDIVIDUAL LOCATION. THE CLASS OR THICKNESS WILL BE DETERMINED BY THE MAXIMUM HEIGHT OF FILL.

TRENCH CONSTRUCTION FOR STORM DRAIN.



BACKFILL TO BE MECHANICALLY COMPACTED TO THE TOP OF THE TRENCH OR TO A HEIGHT OF MIN. COVER ABOVE THE TOP OF THE PIPE, WHICHEVER IS GREATER. FOR CONSTRUCTION DETAILS SEE NOTE FOR NORMAL BACKFILL.

FOUNDATION BACKFILL MATERIAL TYPE I, WHEN REQUIRED SHALL BE CLASS I, OR II SOILS APPROVED FOR USE BY THE ENGINEER. THE MATERIAL TO BE USED WILL BE OBTAINED AS UNCLASSIFIED EXCAVATION OR BORROW FROM LOCATIONS APPROVED BY THE ENGINEER.

FOR EXCAVATION FOR PIPE-ARCH CULVERTS SUBSTITUTE SPAN AND RISE FOR OUTSIDE DIAMETER OF PIPE IN HORIZONTAL AND VERTICAL DIMENSIONS SPECIFIED IN DETAIL.

NOTE: PIPE SHALL BE BEDDED IN A FOUNDATION SHAPED TO FIT THE LOWER PART OF PIPE EXTERIOR.

NOTE: BELL HOLES SHALL BE PROVIDED IN BEDDING IF PIPE HAS BELL AND SPIGOT JOINTS.

NOTE: TRENCH CONSTRUCTION IS REQUIRED FOR BOTH NORMAL OR IMPERFECT BACKFILL. ALL PIPES WITH BELL & SPIGOT JOINTS SHALL HAVE BELL HOLES IN BEDDING.

NOTE: WHERE AN INCOMPRESSIBLE FOUNDATION EXISTS, EXCAVATE AN ADDITIONAL 6". WHERE AN UNSTABLE FOUNDATION MATERIAL IS ENCOUNTERED, EXCAVATE AN ADDITIONAL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

DATE		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION		STANDARD CONCRETE & METAL PIPE CULVERTS SHEET 1 OF 3 (TRENCH CONSTRUCTION, BEDDING, BACKFILLING)	
NO.	SCALE	REV. & REDR.: SEPT., 2001	NUMBER
DES.	(SUBMITTED)	<i>James A. Kean</i>	1030D
TRA.	(APPROVED)	<i>Tom L. Felt</i>	
CHK.		CHIEF ENGINEER	

TABLE NO. 1 ROUND PIPE - CONCRETE - CORRUGATED STEEL - CORRUGATED ALUMINUM		MINIMUM CLASS OF CONCRETE OR MINIMUM THICKNESS OF STEEL AND ALUMINUM										HEIGHT OF FILL IN FEET ABOVE TOP OF PIPE										PIPE DIAMETER (INCHES)
PIPE DIAMETER (INCHES)	MINIMUM COVER (INCHES)	1 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	PIPE DIAMETER (INCHES)								
12	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	12									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
15	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	15									
18	STEEL 1	.060	.060	.060	.060	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
24	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	18									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
30	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	30									
36	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
42	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	42									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
48	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
54	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	54									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
60	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
66	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	66									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
72	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
78	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	78									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
84	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
90	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	90									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
96	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
102	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	102									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
108	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									
114	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V	114									
	STEEL 1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
120	STEEL 2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064									
	ALUM 1	.060	.060	.060	.060	.075	.075	.075	.075	.075	.075	.075	.075									

TABLE NO. 3 - INFORMATION ONLY	
COR.	METAL THICKNESS EQUIVALENT GAGE
STEEL	.064
	.079
	.109
	.138
ALUMINUM	.060
	.075
	.105
	.164

IMPERFECT BACKFILL IS NOT REQUIRED FOR CONDITIONS SHOWN ON THE LEFT SIDE OF THE HEAVY LINE. USE NORMAL BACKFILL.

FOR CONDITIONS TO THE RIGHT OF THE HEAVY LINE, CLASS V CONCRETE PIPE REQUIRES IMPERFECT BACKFILL ACCORDING TO DETAIL "A" OR "B" ON SHEET 1 OF 3.

STEEL 1 OR ALUM 1 DENOTES CORRUGATION PROFILE 2 2/3" X 1/2"

STEEL 2 OR ALUM 2 DENOTES CORRUGATION PROFILE 3" X 1" (OR 5" X 1" FOR STEEL PIPE ONLY)

ALL STEEL AND ALUMINUM PIPE SHALL BE LOCK-SEAM OR WELDED-SEAM (HELICAL) CONSTRUCTION.

MINIMUM COVER VALUES APPLY TO HS-20 LIVE LOAD. MINIMUM COVER NEEDED FOR CONSTRUCTION VEHICLES MAY BE GREATER AND IS THE RESPONSIBILITY OF THE CONTRACTOR.

TRENCH CONSTRUCTION IS REQUIRED FOR CONDITIONS ON BOTH SIDES OF HEAVY LINE. SEE SHEET 1 OF 3.

FOR CONDITIONS TO RIGHT OF HEAVY LINE, CONCRETE PIPE REQUIRES IMPERFECT BACKFILL ACCORDING TO SPECIFICATIONS AND THIS STANDARD.

TABLE VALUES FOR ALUMINUM CORRUGATED PIPE (OR ALUMINUM SPIRAL RIB PIPE) ARE COMPUTED BASED UPON ALCLAD ALLOY 3004-H34 HAVING MINIMUM YIELD STRENGTH, fy=24,000 PSI. IF ALUMINUM PIPE IS OTHERWISE FURNISHED AS 3004-H32 (fy=20,000 PSI), THE TABLE NO. 1 ALLOWABLE FILL HEIGHTS SHALL BE ADJUSTED AS FOLLOWS:

- A. ALL MINIMUM COVER VALUES SHALL BE INCREASED BY 15 PERCENT. (EXAMPLE: 12 INCHES BECOMES 13.8 INCHES)
- B. ALL HEIGHT OF FILL VALUES SHALL BE DECREASED BY 15 PERCENT. (EXAMPLE: 35-40 FEET BECOMES 29.7-34.0 FEET)

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
CONCRETE & METAL PIPE CULVERTS
SHEET 2 OF 3
(FILL HEIGHTS FOR CONCRETE & CORRUGATED METAL PIPE)

NO SCALE

OCTOBER 21, 1998

DES. (SUBMITTED) _____
TRA. (APPROVED) _____
CHK. (APPROVED) _____

STATE ROAD & AIRPORT DESIGN ENGR.
CHIEF ENGINEER

NUMBER
1030D

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

TABLE NO. 1R ROUND PIPE - SPIRAL RIB STEEL - SPIRAL RIB ALUMINUM
MINIMUM THICKNESS OF STEEL AND ALUMINUM
HEIGHT OF FILL (FEET) ABOVE TOP OF PIPE

PIPE DIAMETER (INCHES)	TYPE	MINIMUM COVER (INCHES)	HEIGHT OF FILL (FEET) ABOVE TOP OF PIPE												PIPE DIAMETER (INCHES)					
			1 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90						
12																				12
15																				15
18	STEELR ALUM R	12	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	18
24	STEELR ALUM R	12	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	24
30	STEELR ALUM R	15	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	30
36	STEELR ALUM R	18	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	.064 .060	36
42	STEELR ALUM R	21	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	.064 .075	42
48	STEELR ALUM R	24	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	48
54	STEELR ALUM R	24	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	.064 .105	54
60	STEELR ALUM R	24	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	.079 .105	60
66	STEELR ALUM R	24	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	.079 .135	66
72	STEELR ALUM R	27	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	.109 .135	72
78	STEELR	21	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	78
84	STEELR	21	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	.109	84
90																				90
96																				96
102																				102
108																				108
114																				114
120																				120

R DENOTES SPIRAL RIB PROFILE 3/4" X 3/4" X 7-1/2"

TABLE VALUES FOR ALUMINUM SPIRAL RIB PIPE ARE COMPUTED BASED UPON ALCLAD ALLOY 3004-H34 HAVING MINIMUM YIELD STRENGTH, $f_y=24,000$ PSI. IF ALUMINUM PIPE IS OTHERWISE FURNISHED AS 3004-H32 ($f_y=20,000$ PSI), ALLOWABLE FILL HEIGHTS SHALL BE ADJUSTED AS FOLLOWS:
A. ALL MINIMUM COVER VALUES SHALL BE INCREASED BY 15 PERCENT. (EXAMPLE: 12 IN. BECOMES 13.8 IN.)
B. ALL HEIGHT OF FILL VALUES SHALL BE DECREASED BY 15 PERCENT. (EXAMPLE: 35-40 FT. BECOMES 29.7-34.0 FT.)

MINIMUM COVER VALUES APPLY TO HS-20 LIVE LOAD. MINIMUM COVER NEEDED FOR CONSTRUCTION VEHICLES MAY BE GREATER AND IS THE RESPONSIBILITY OF THE CONTRACTOR.
TRENCH CONSTRUCTION IS REQUIRED FOR ALL INSTALLATIONS.

STATE		PROJECT NUMBER		SHEET NO.		TOTAL SHEETS	
GA.							
DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA STANDARD CONCRETE & METAL PIPE CULVERTS SHEET 3 OF 3 (FILL HEIGHTS FOR SPIRAL RIB METAL PIPE & FOR PIPE ARCH)				NO SCALE SEPT., 2001			
DESIGNED		(SUBMITTED)	<i>J. Kenneth</i>		NUMBER		
TRACED		STATE ROAD	DESIGN ENGINEER		10300		
CHECKED		(APPROVED)	<i>David L. ...</i>		CHIEF ENGINEER		
REVISED							

TABLE NO. 2 (PIPE-ARCH)

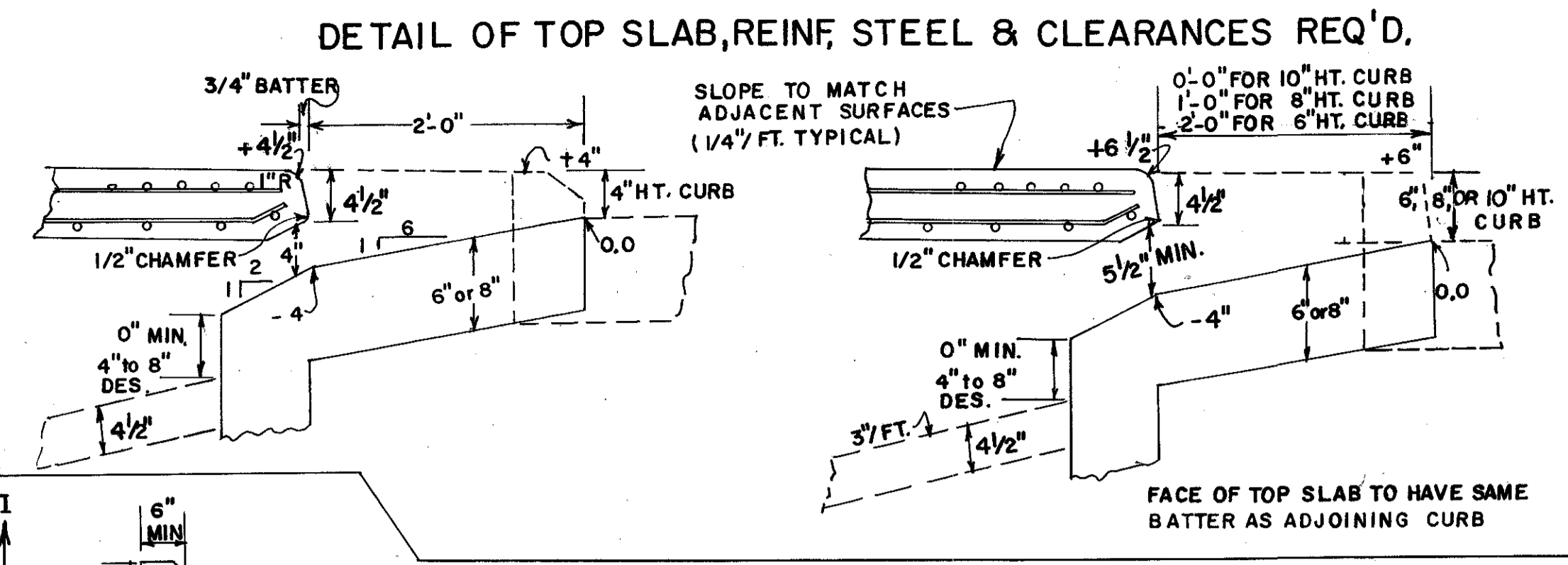
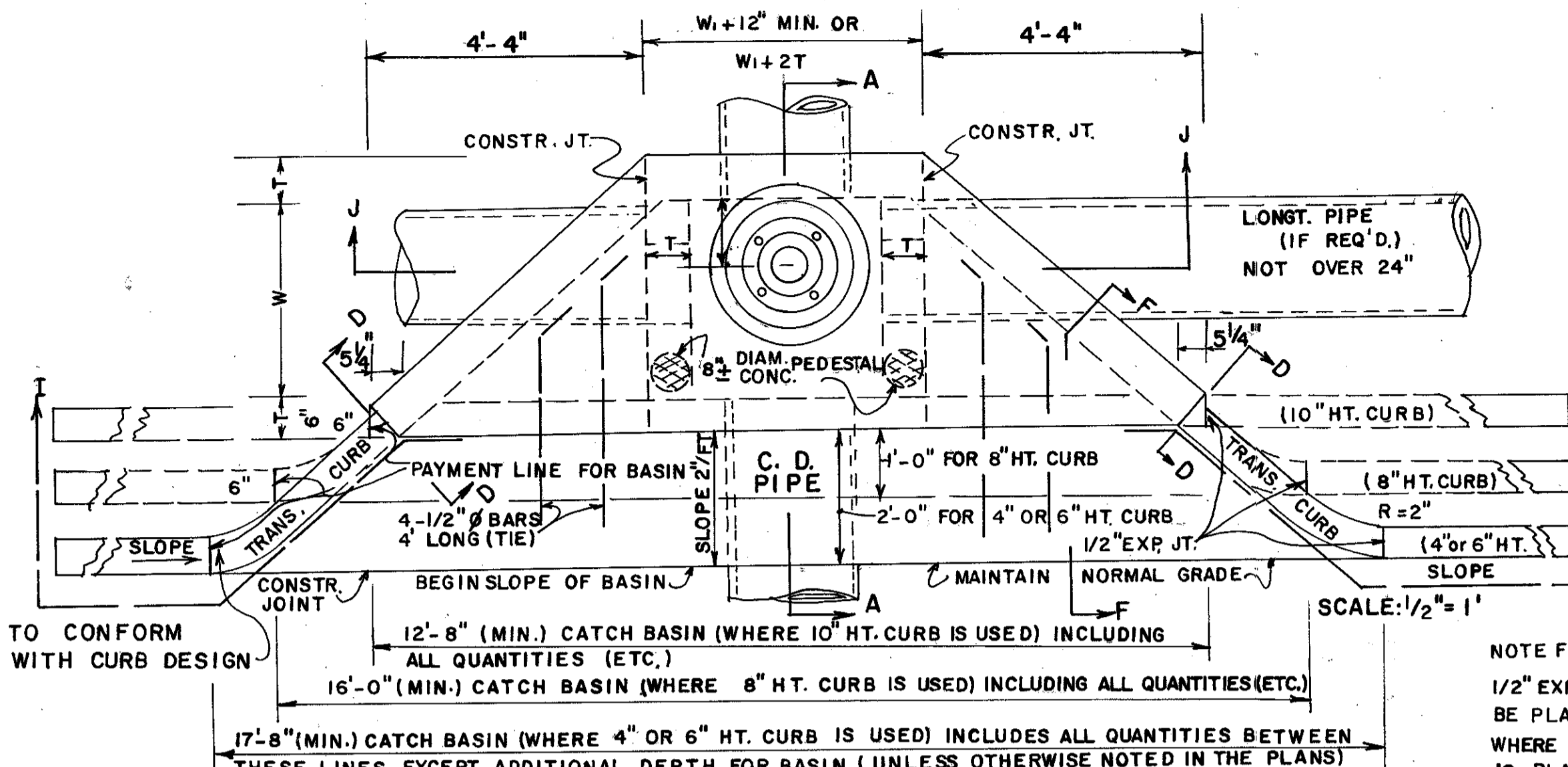
TABLE SHOWING MINIMUM THICKNESS IN INCHES OF CORRUGATED STEEL AND CORRUGATED ALUMINUM PIPE-ARCH AND MAXIMUM HEIGHTS OF FILL IN FEET ABOVE THE TOP OF THE PIPE-ARCH.

DIAMETER OF PIPE OF EQUAL PERIPHERY (INCH)	NOM.-MIN. SPAN (INCH)	NOM.-MIN. INCH	MIN. THICKNESS (INCHES)		COR. ALUMINUM	MIN. COVER (INCHES)	MAX.-HT. FILL (FEET)
			COR. STEEL	COR. ALUMINUM			
15	17	13	.064	.064	.060	.18	13
18	21	15	.064	.064	.060	.18	15
21	24	18	.064	.064	.060	.18	18
24	28	20	.064	.064	.060	.18	20
30	35	24	.064	.064	.075	.18	24
36	42	29	.064	.064	.075	.18	29
40	49	31	.079	.079	.105	.18	31
42	46	36	.079	.079	.105	.18	36
48	57	38	.109	.109	.135	.18	38
54	64	43	.109	.109	.135	.18	43
60	71	47	.138	.138	.164	.18	47
66	77	51	.168	.168	.168	.18	51
72	83	55	.168	.168	.168	.18	55
77	81	59	.168	.168	.168	.18	59
84	95	67	.109	.109	.109	.18	67
90	103	71	.109	.109	.109	.18	71

NOTE FOR TABLE NO. 2: COMBINATIONS FOR PIPE-ARCHES HAVING EQUAL PERIPHERY TO THAT SHOWN, MAY BE SUBSTITUTED IF LISTED IN AASHTO SPECIFICATION.

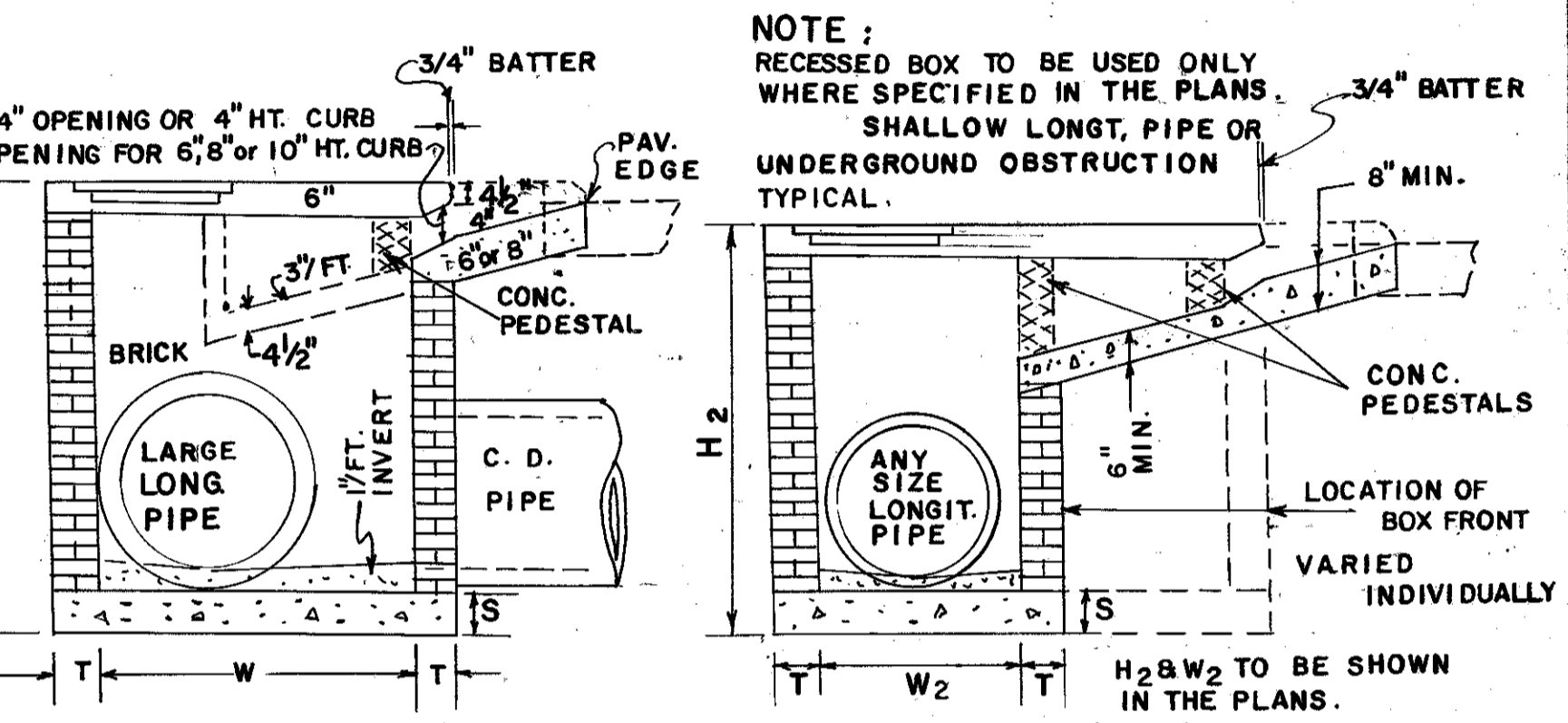
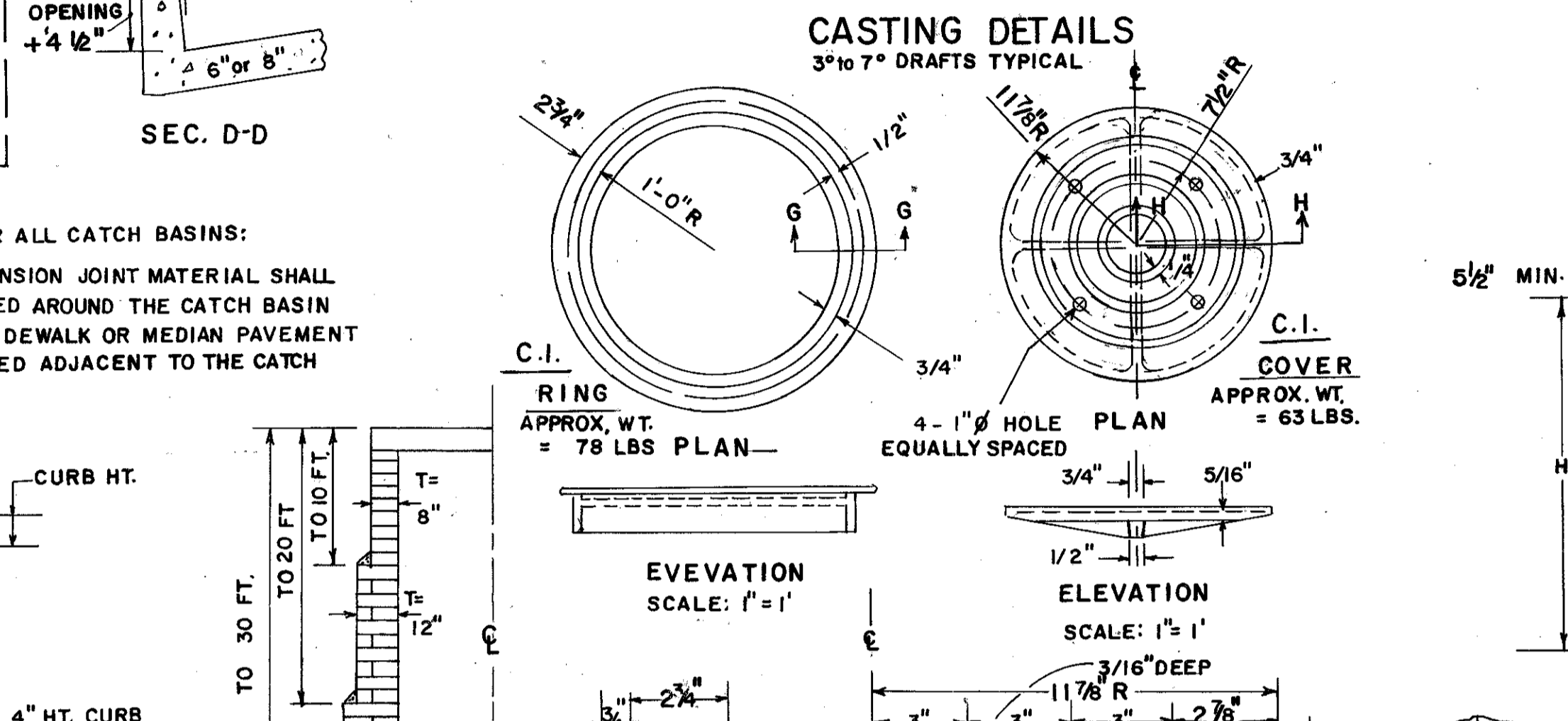
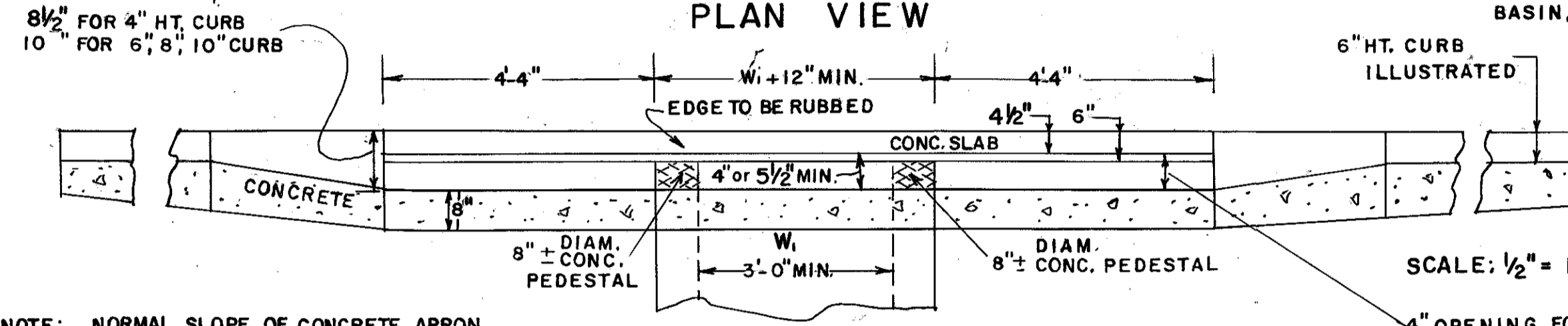
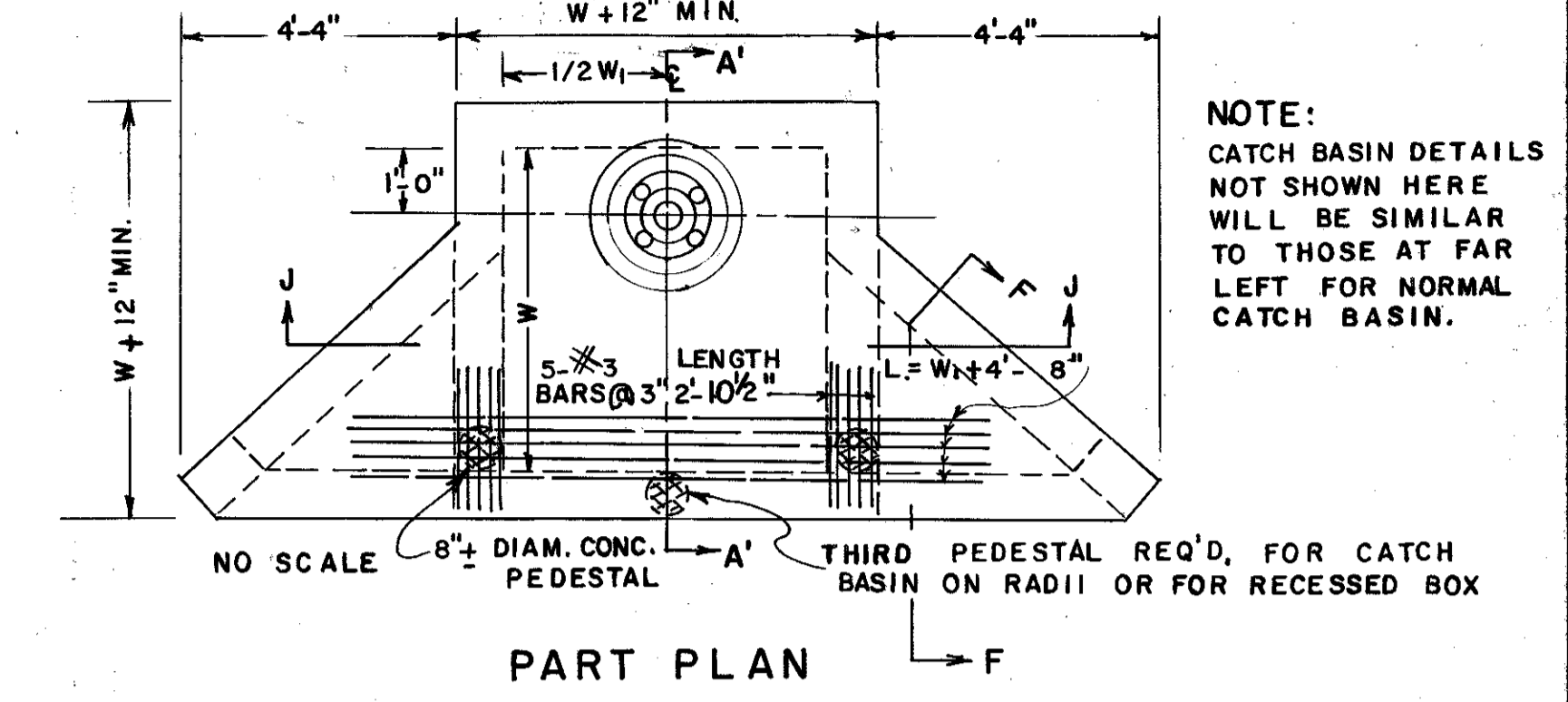
CATCH BASIN

(IF CATCH BASIN HAS LONGITUDINAL PIPE OVER 24" SEE DETAILS AT FAR RIGHT)

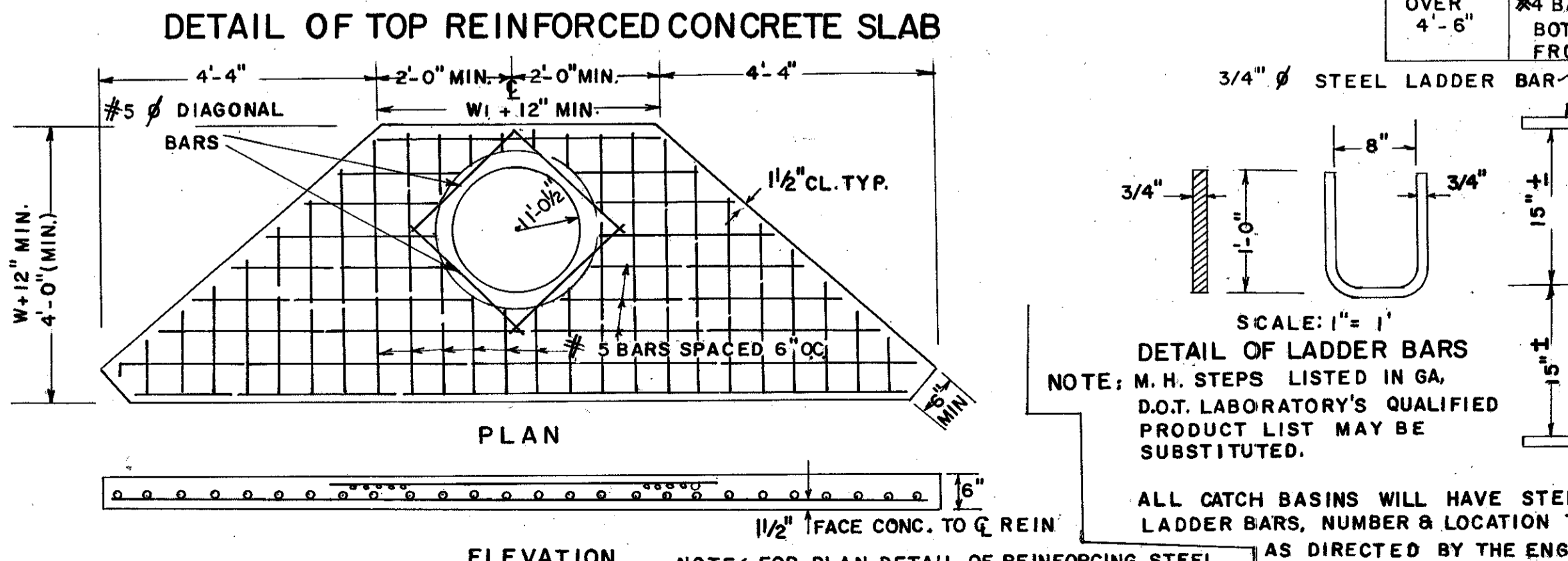
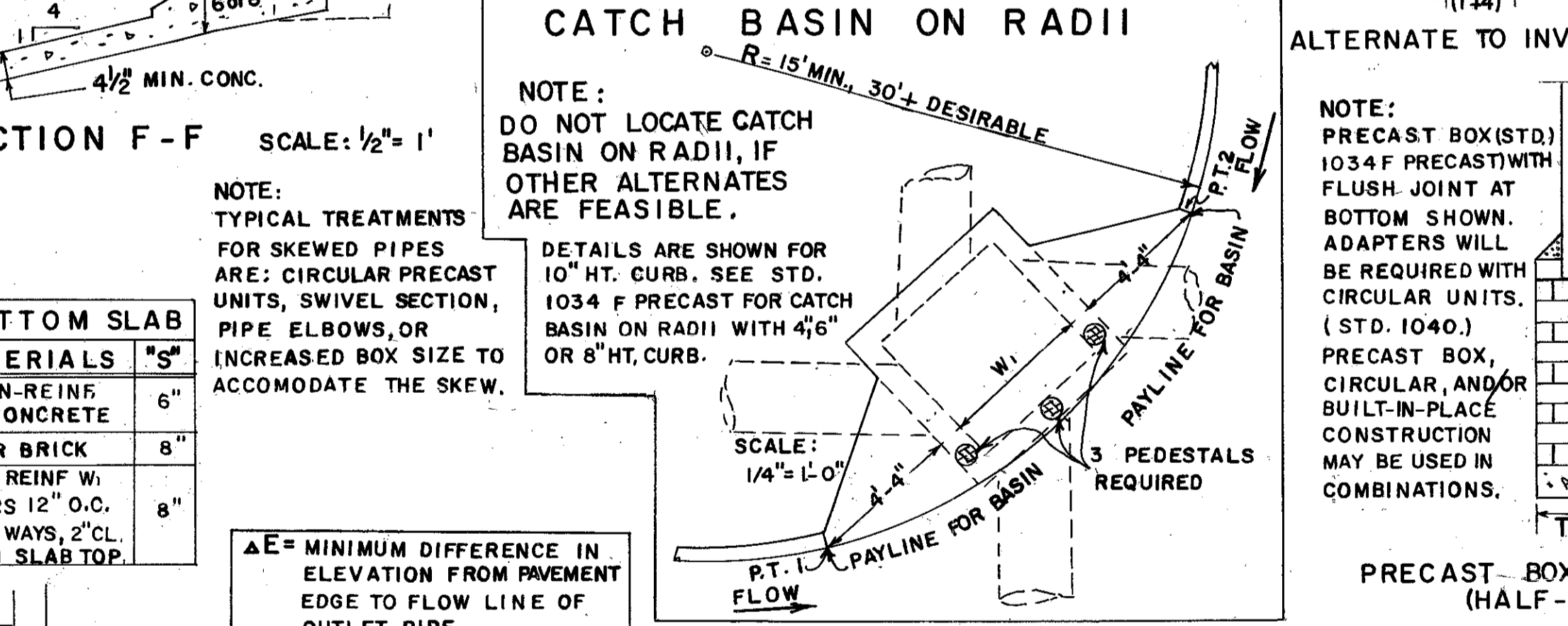
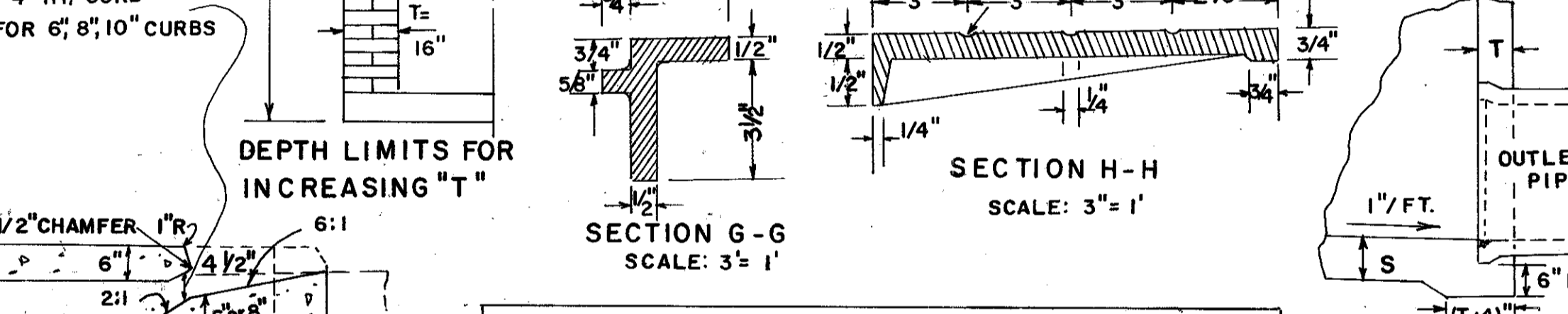
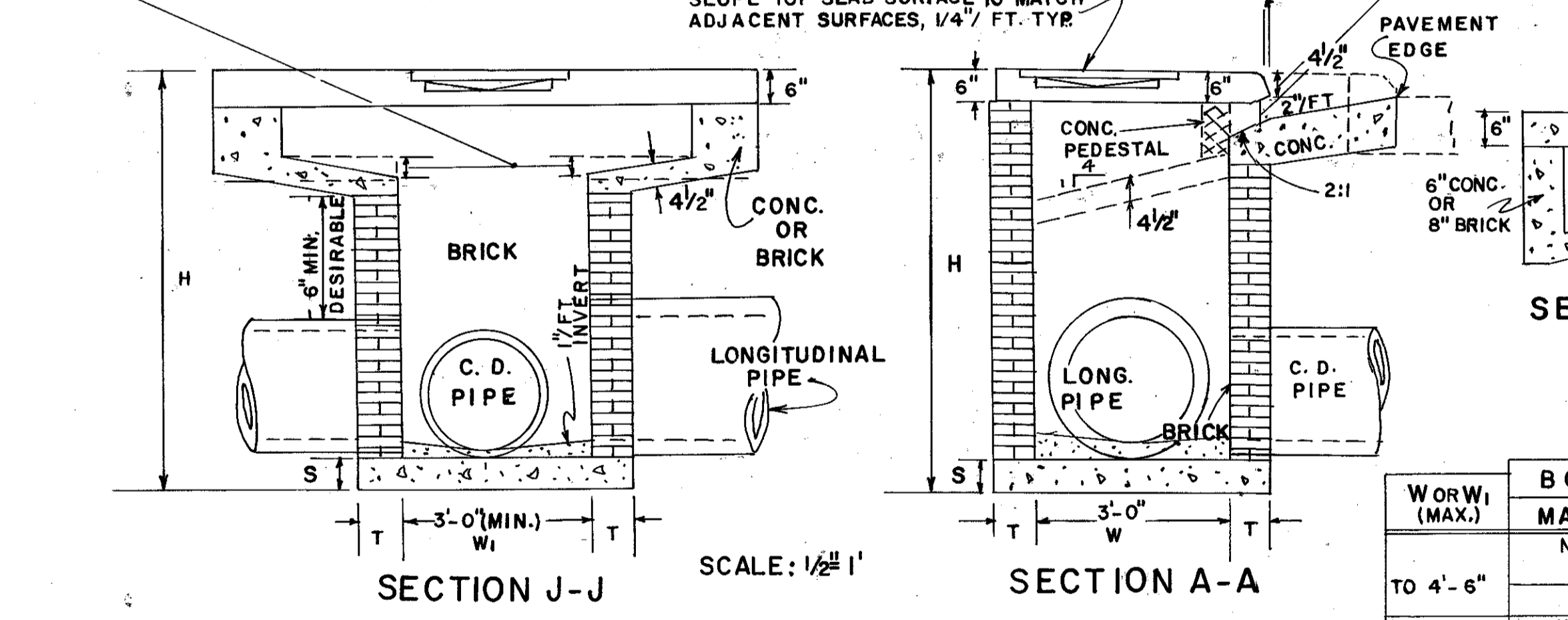


CATCH BASIN (WITH PROTRUDED BACK)

(FOR USE WITH LONGITUDINAL PIPE OVER 24" OR FOR USE WITH RECESSED BOX)

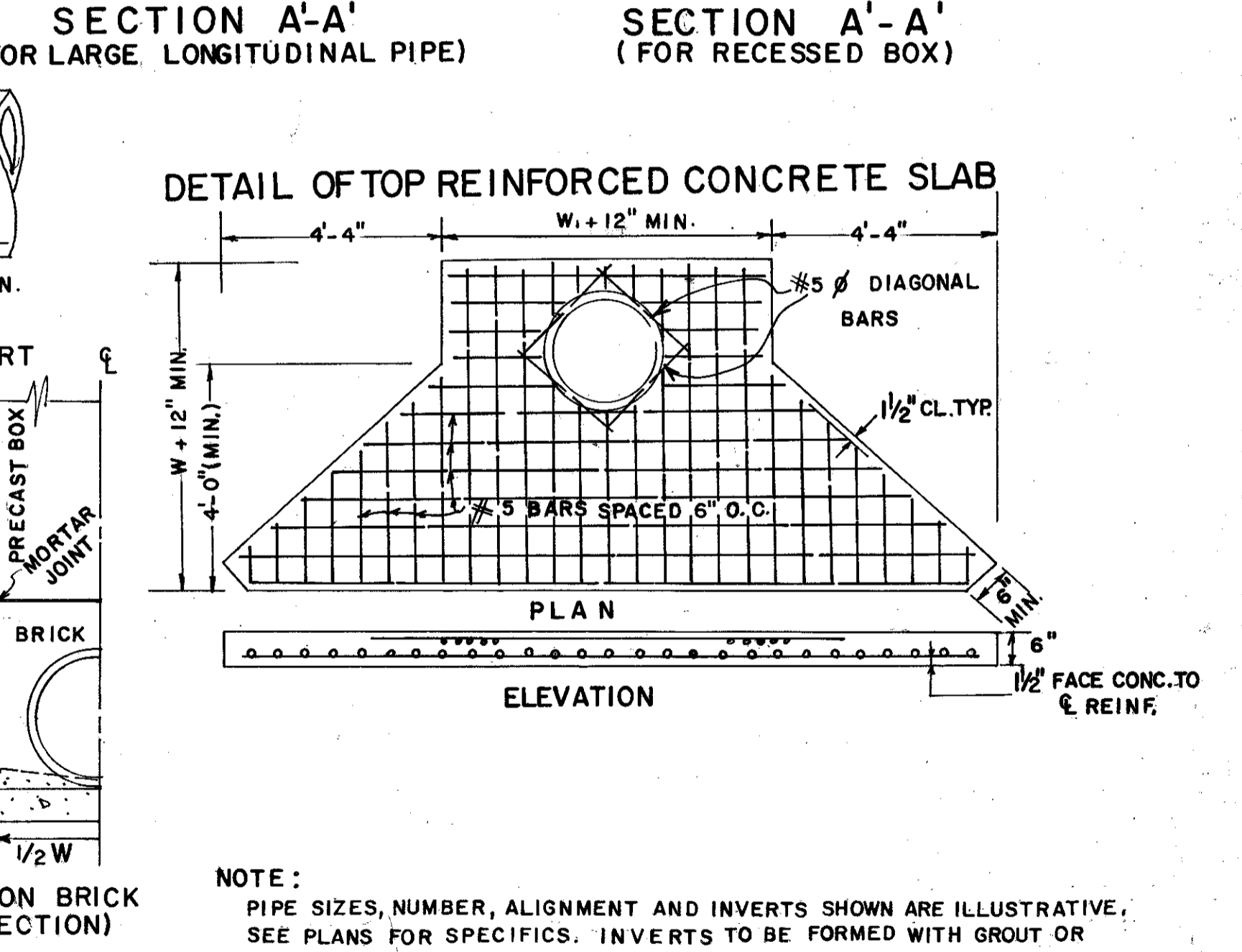


NOTE: NORMAL SLOPE OF CONCRETE APRON TO BE INCREASED UP TO 8" TOTAL, WHERE "H" PERMITS AND LONGITUDINAL PIPE IS LOWERED FOR OTHER REASONS.



PIPE DIA.	H (MIN.)	W OR W ₁ (MIN.)	(MIN.) E
12	4'-4"	3'-0"	3'-1"
15	4'-7"	3'-0"	3'-4"
18	4'-10"	3'-0"	3'-7"
24	5'-6"	3'-0"	4'-2"
30	6'-2"	3'-7"	4'-10"
36	6'-10"	4'-6"	5'-5"
42	7'-4"	5'-3"	5'-9"
48	8'-0"	6'-0"	6'-4"
54	8'-6"	6'-8"	6'-10"
60	9'-2"	7'-4"	7'-5"

NOTE: THE MIN. H & ΔE GIVEN IN ABOVE TABLE ARE BASED UPON TYPICAL OUTSIDE DIAMETERS OF CONC. PIPE AND MAY BE VARIED IF CONDITIONS PERMIT WITH THE VARIED DIMENSIONS SPECIFIED IN THE PLANS OR DIRECTED BY THE ENGINEER, W & W₁ DIMENSIONS DO NOT HAVE TO BE EQUAL.



NOTE: ALL BARS IN PLAN VIEW ARE SPACED AT 6" O.C. NOTE: TOP SLAB MAY BE CAST IN PLACE OR PRECAST. IF SLAB IS CAST IN PLACE, BUILDERS PAPER IS TO BE PLACED BETWEEN THE CATCH BASIN & TOP SLAB.

CONSTRUCTION ALTERNATES NOTE: DETAILS NOT SHOWN ABOVE FOR CONSTRUCTION ALTERNATES WILL BE SIMILAR TO BRICK CATCH BASIN DETAILS. SEE SEPARATE STANDARDS FOR PRECAST ALTERNATES.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

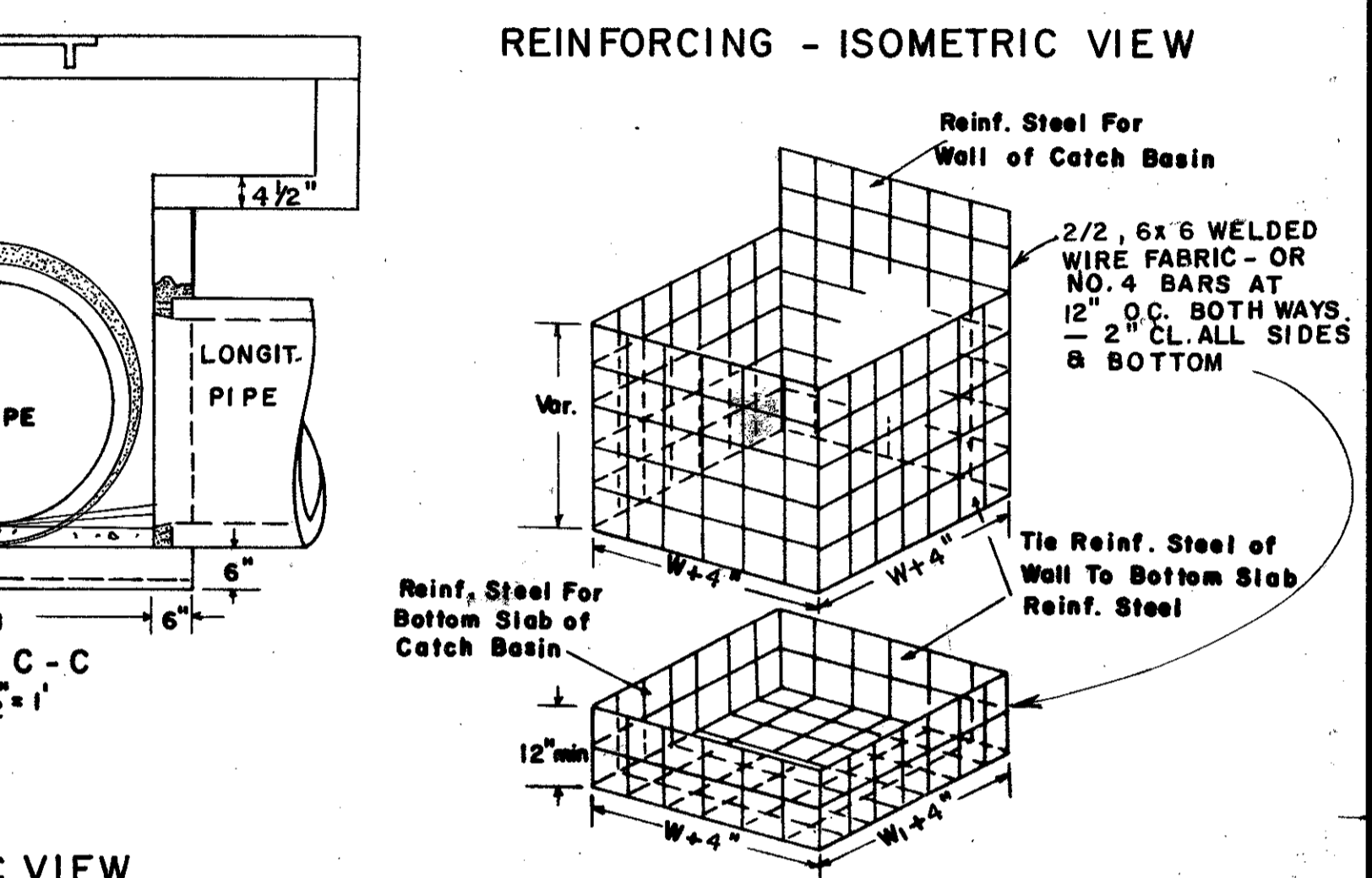
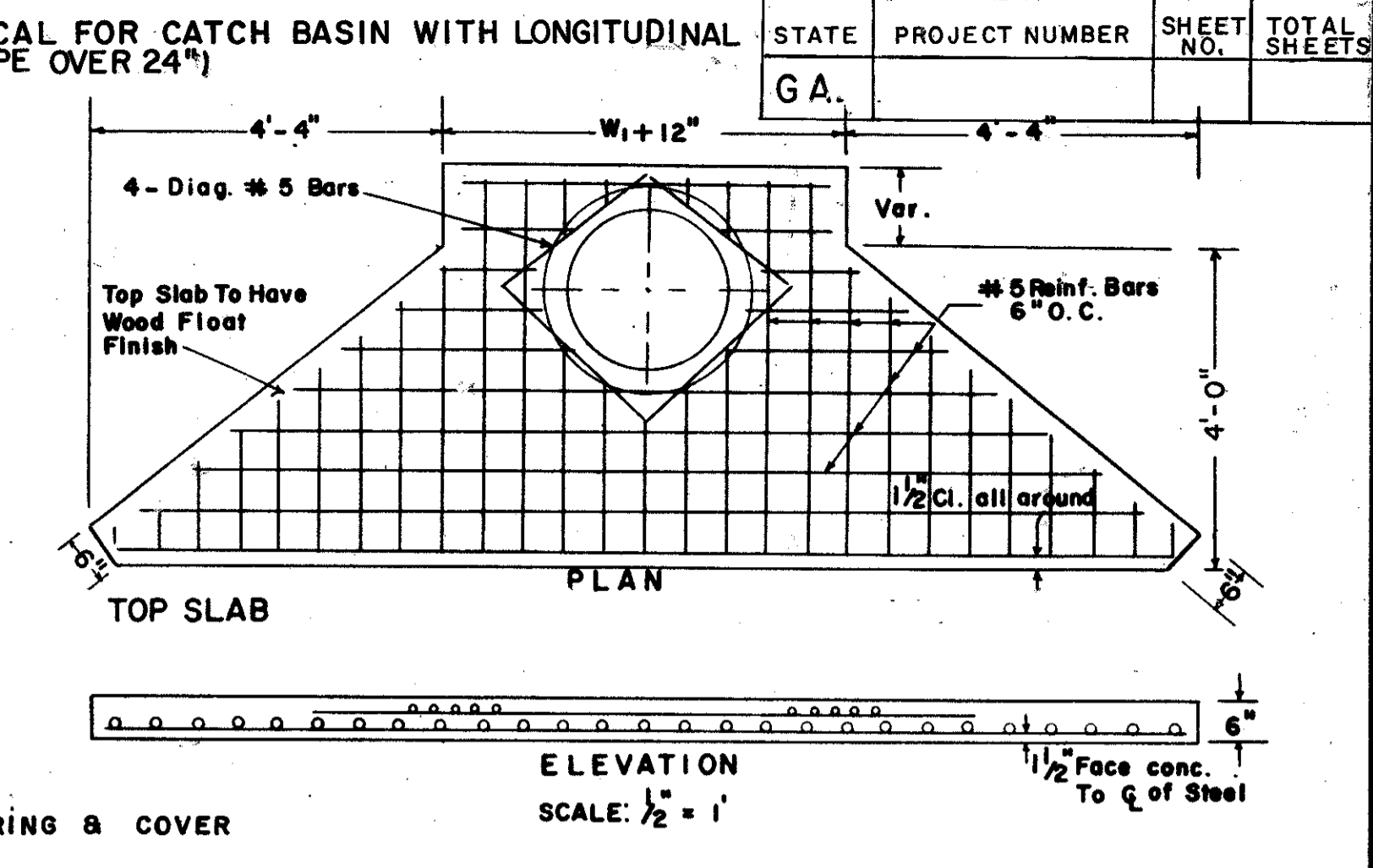
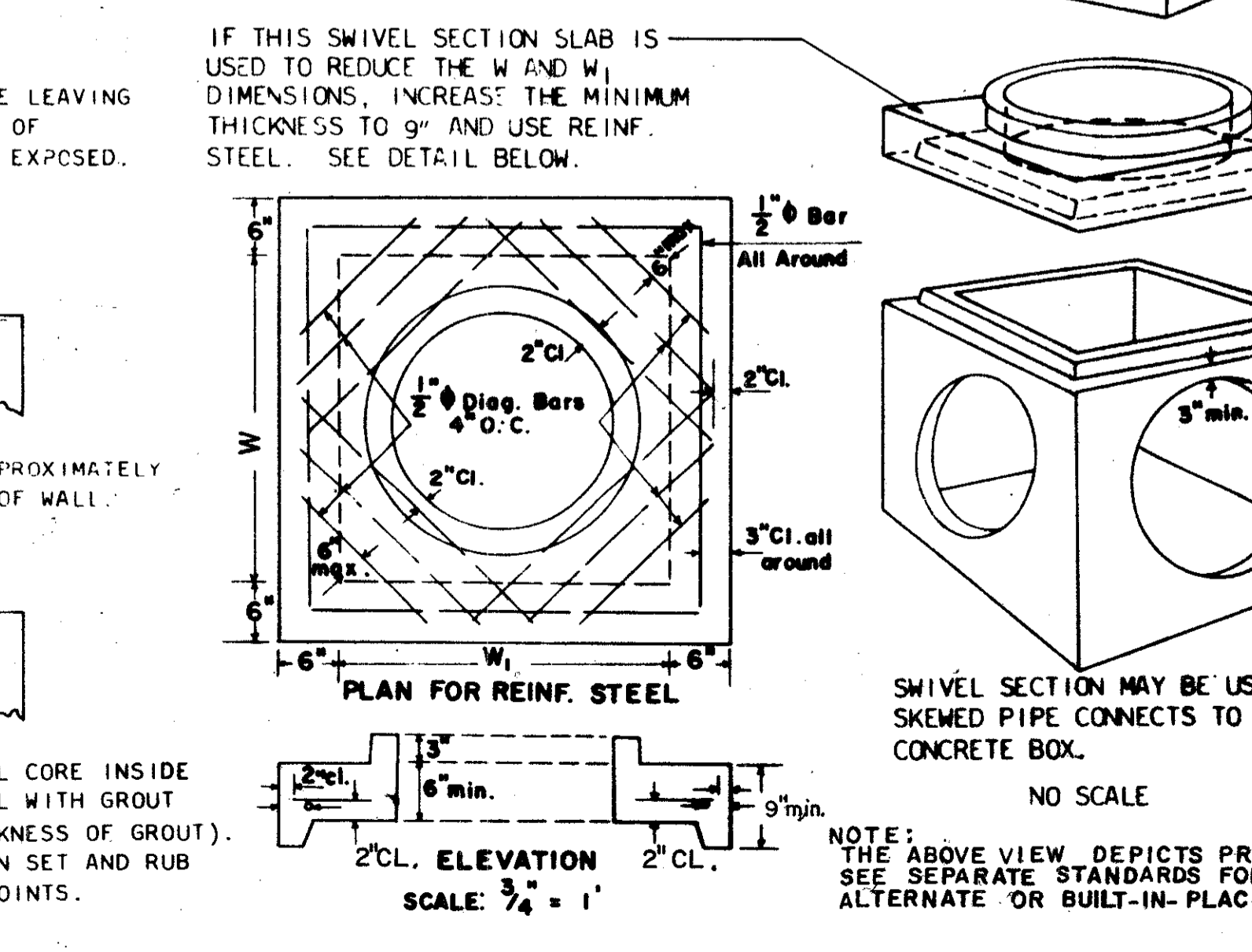
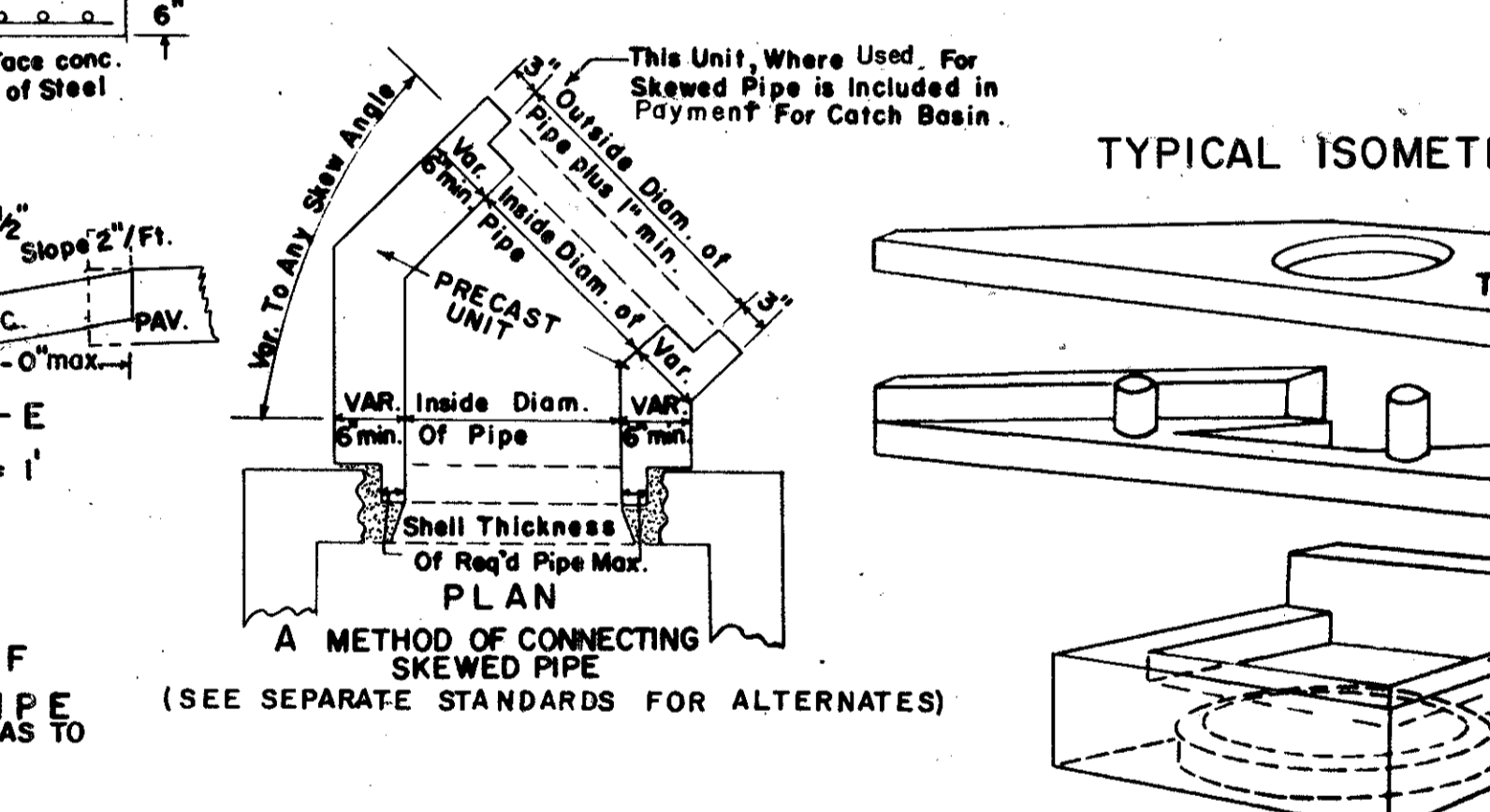
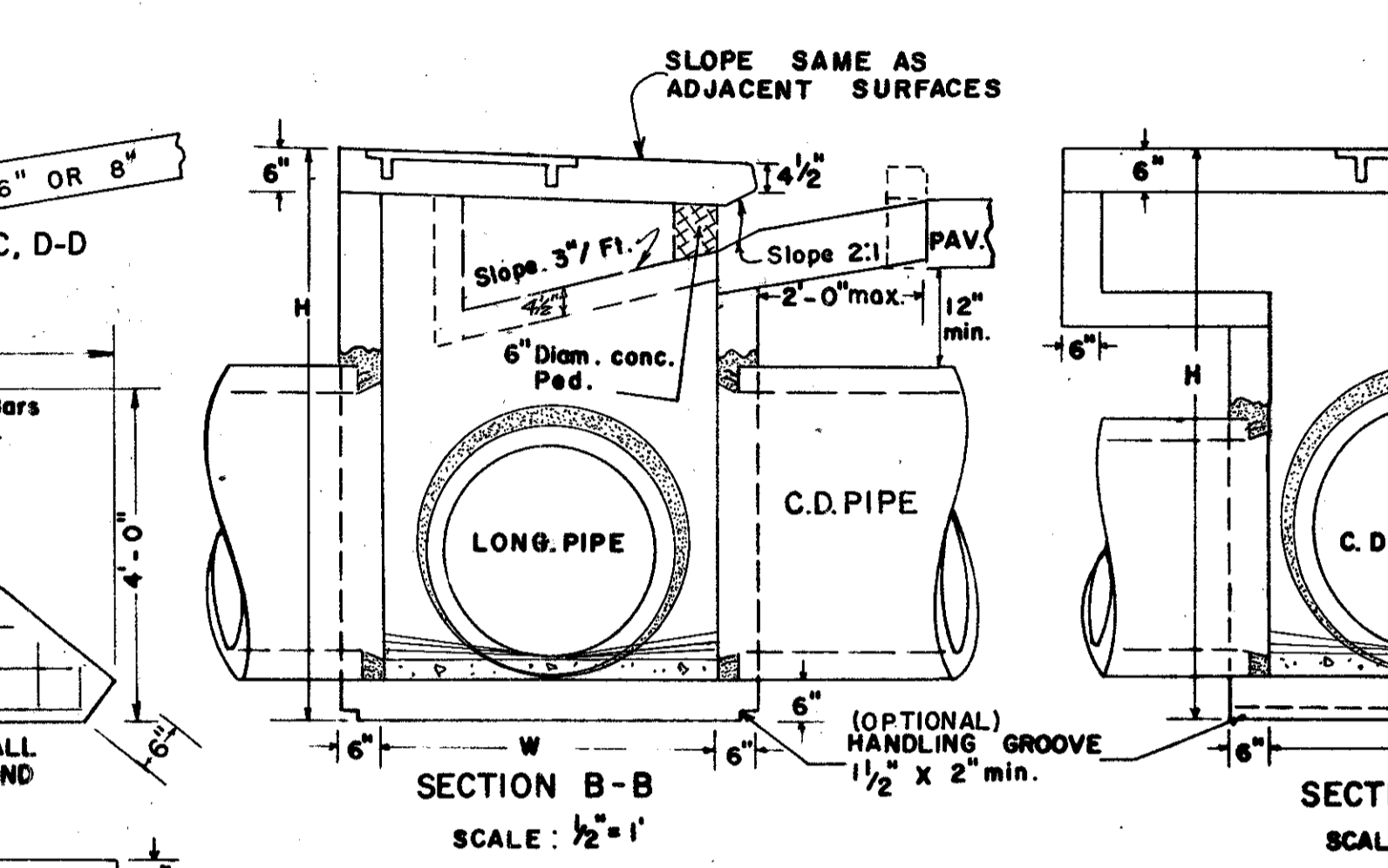
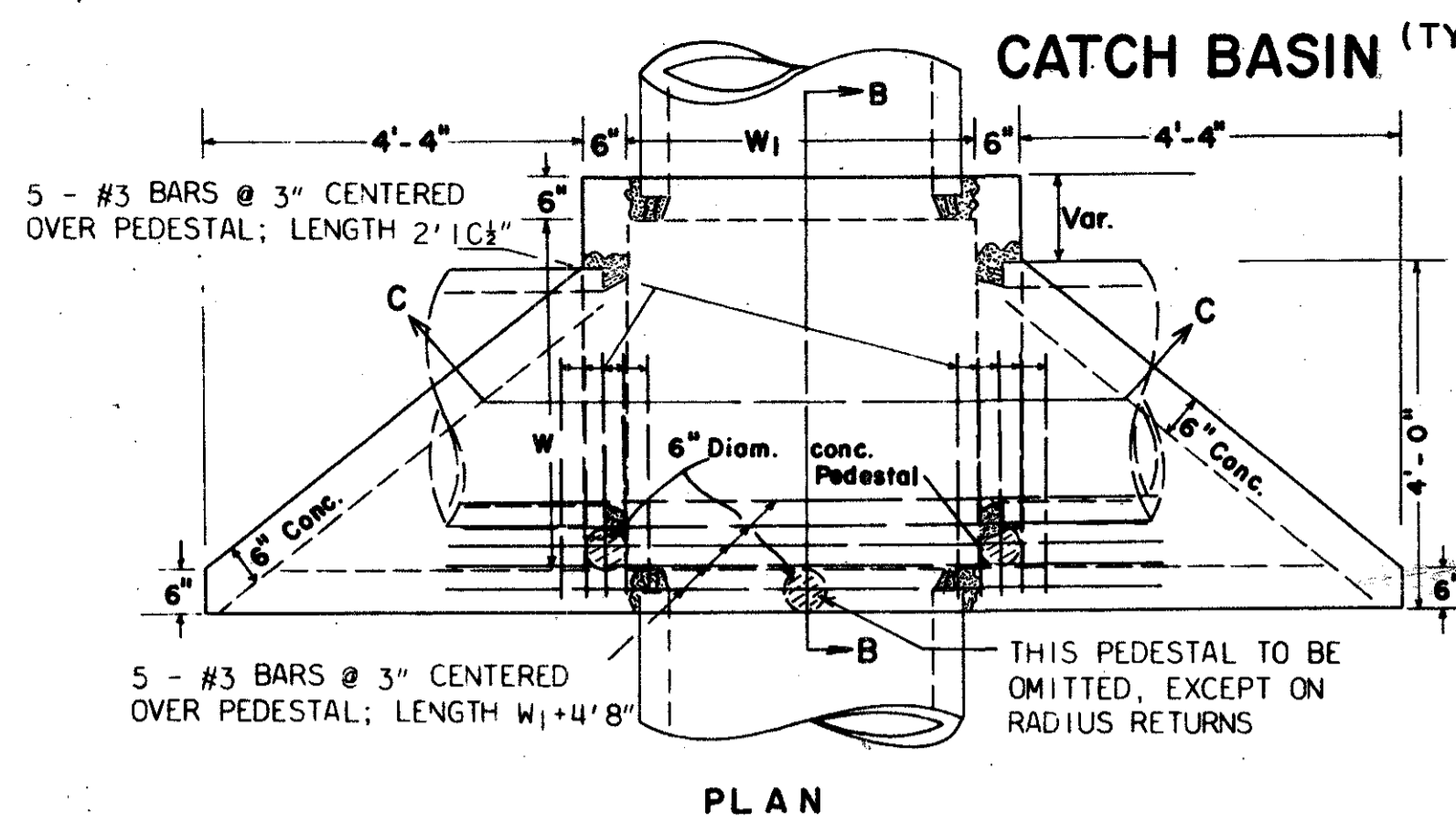
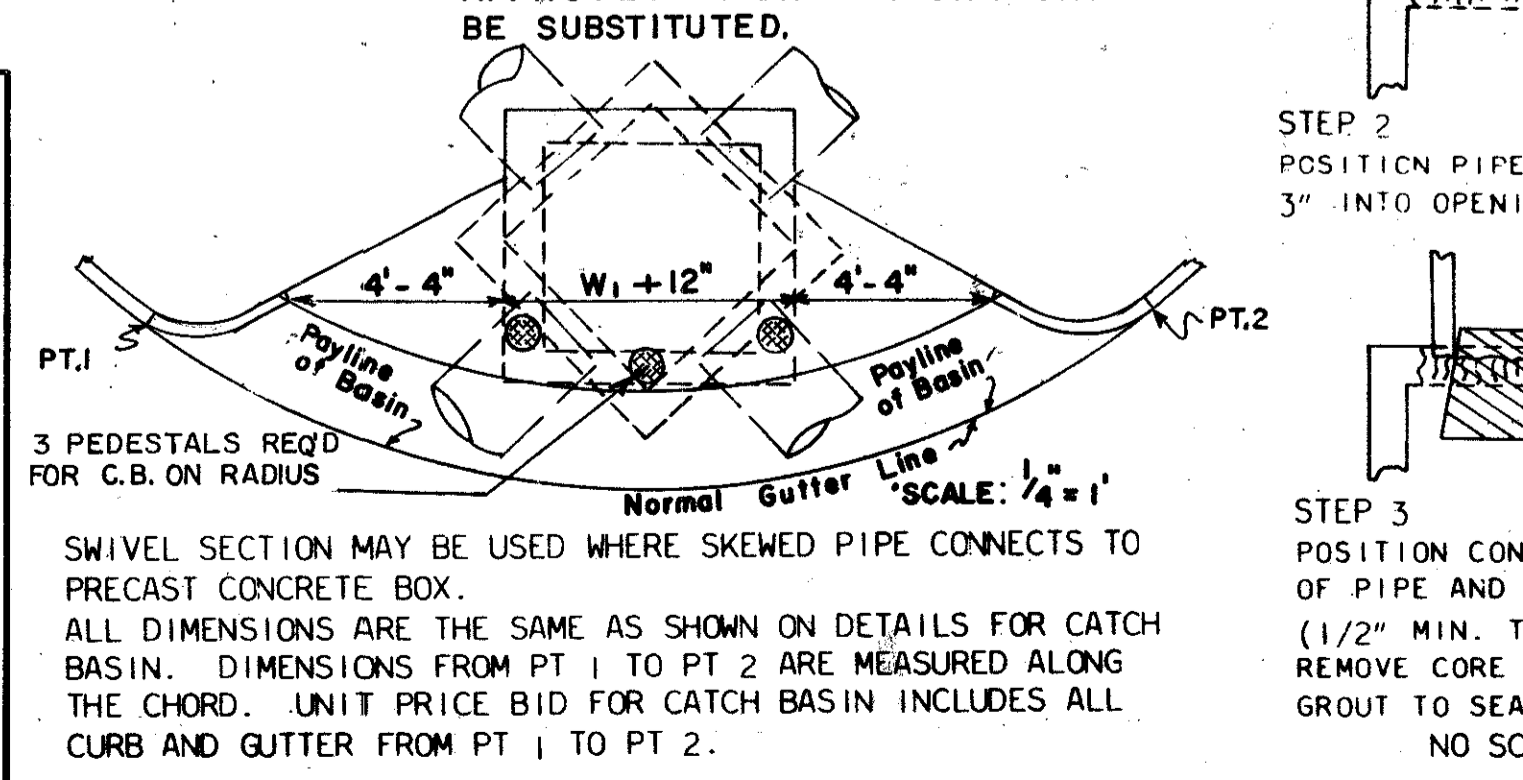
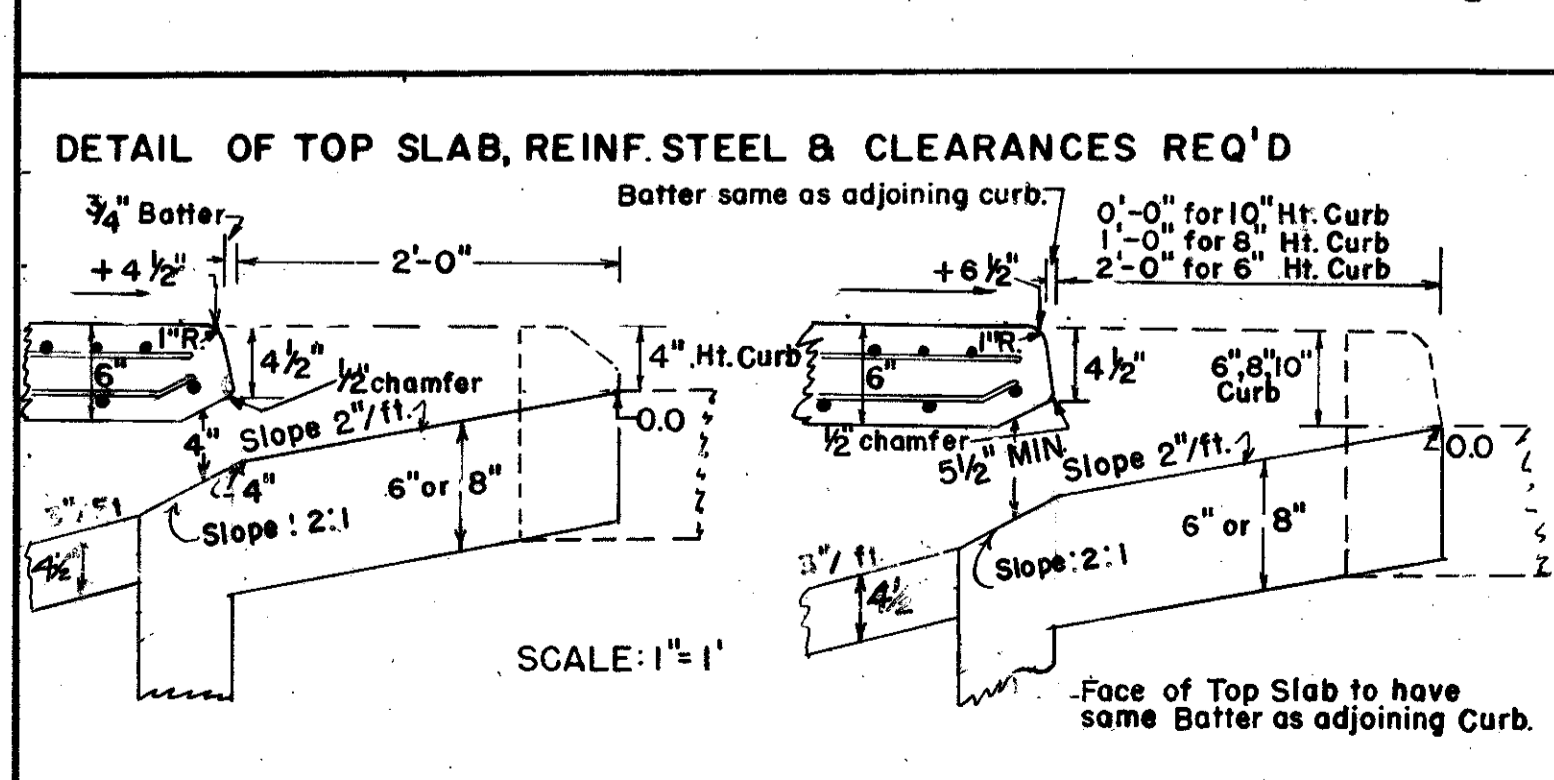
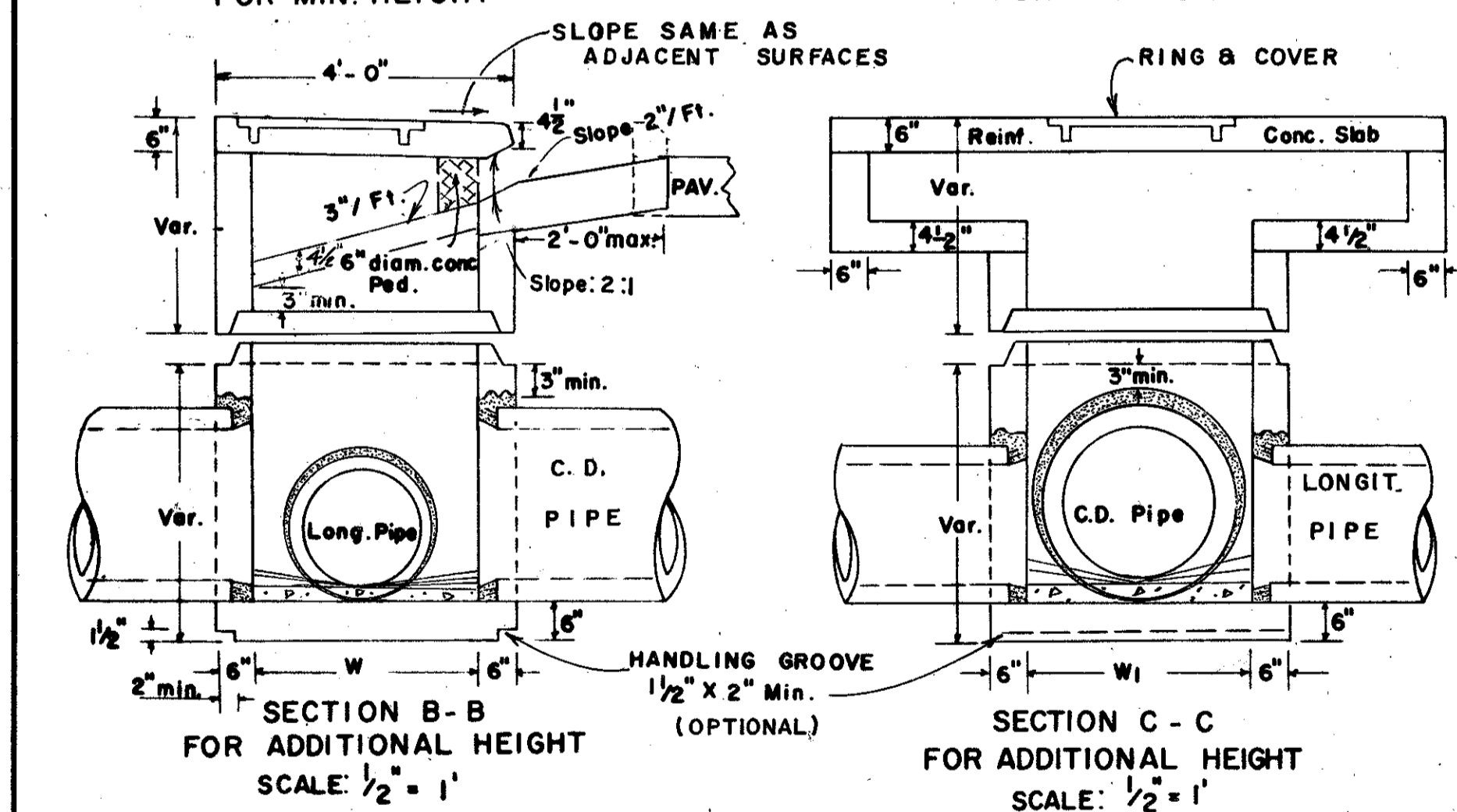
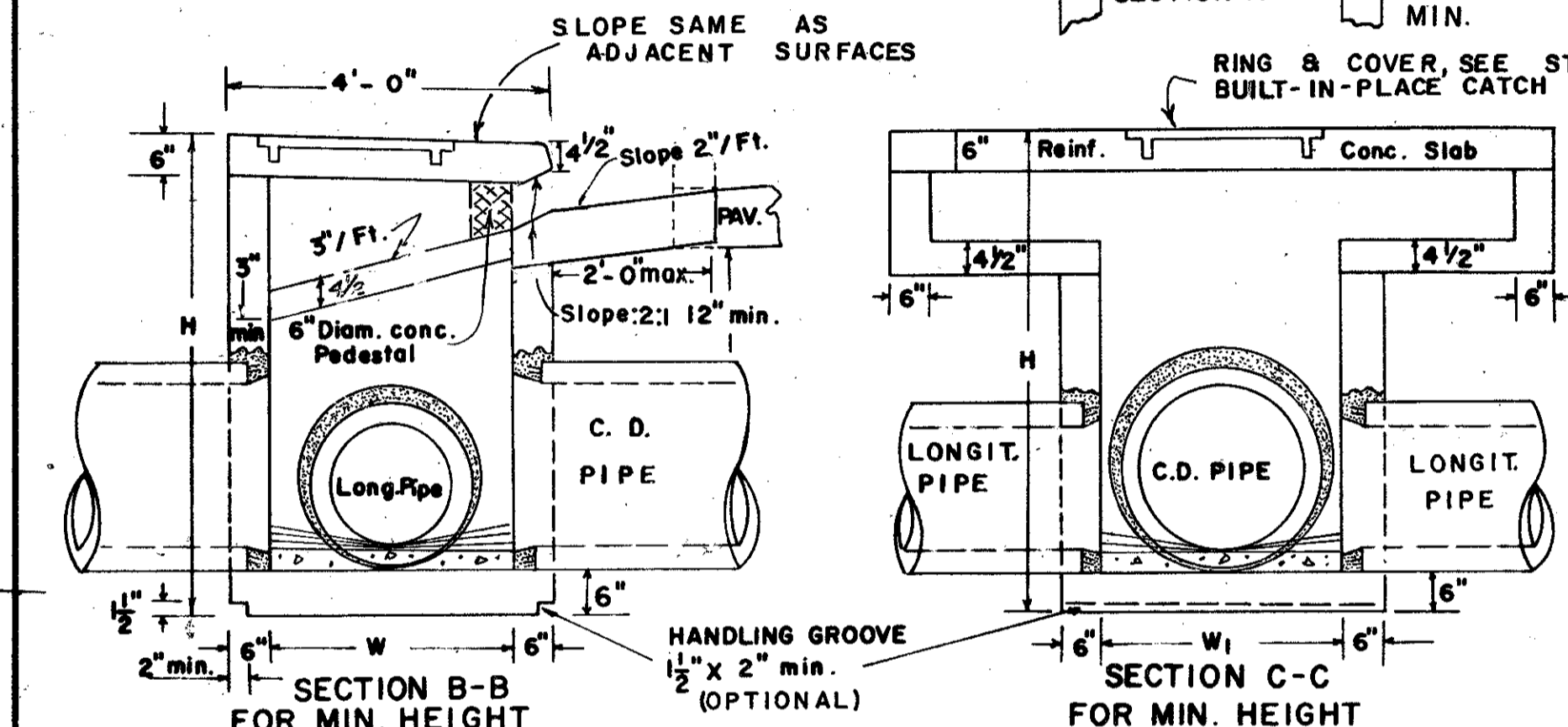
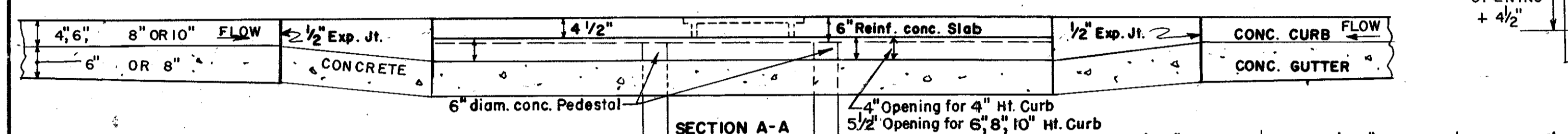
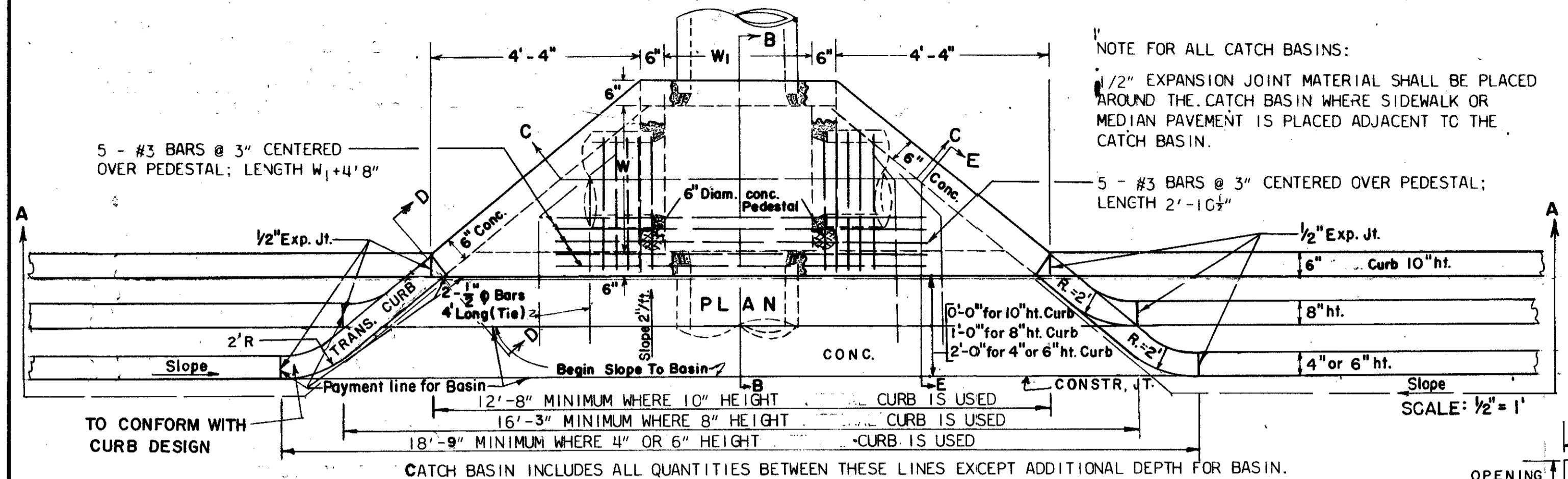
STANDARD CATCH BASINS

FOR USE WITH 4", 6", 8", OR 10" HT. HEADER OR INTEGRAL CURBS — IN SAGS OR LOW POINTS

SCALE AS SHOWN REV. & REDR. AUGUST, 1982

REV. & R.M.U. (SUBMITTED)	STATE ROAD & AIRPORT DESIGN ENGR.	NUMBER
TR. G.M.E.	(APPROVED)	1034 F
CHK. R.K.C.	STATE HIGHWAY ENGINEER	

CATCH BASIN (IF CATCH BASIN HAS LONGITUDINAL PIPE OVER 24", SEE DETAILS AT RIGHT)



NOTE: REINFORCING SHOWN ABOVE IS REQUIRED FOR BOX SHAPED BASIN. REINFORCING FOR CIRCULAR PRECAST ALTERNATE SHALL BE ACCORDING TO STD. 1040.

ALL JOINTS BETWEEN PRECAST RISERS OR BETWEEN PRECAST BASE AND RISER WILL BE KEYS. KEYS SHOWN ARE TYPICAL AND MAY BE VARIED.

DIMENSIONS FOR CATCH BASINS		
PIPE SIZE	NORMAL W OR W1	MIN. H
12"	3'-0"	4'-4"
15"	3'-0"	4'-7"
18"	3'-0"	4'-10"
24"	3'-0"	5'-6"
30"	3'-6"	6'-2"
36"	4'-0"	6'-10"
42"	5'-0"	7'-4"
48"	5'-0"	8'-0"
54"	6'-0"	8'-6"
60"	6'-0"	9'-2"

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD PRECAST CATCH BASINS

FOR USE WITH 4", 6", 8" OR 10" HT. HEADER OR INTEGRAL CURBS-IN SAGS OR LOW POINTS.

SCALE AS SHOWN

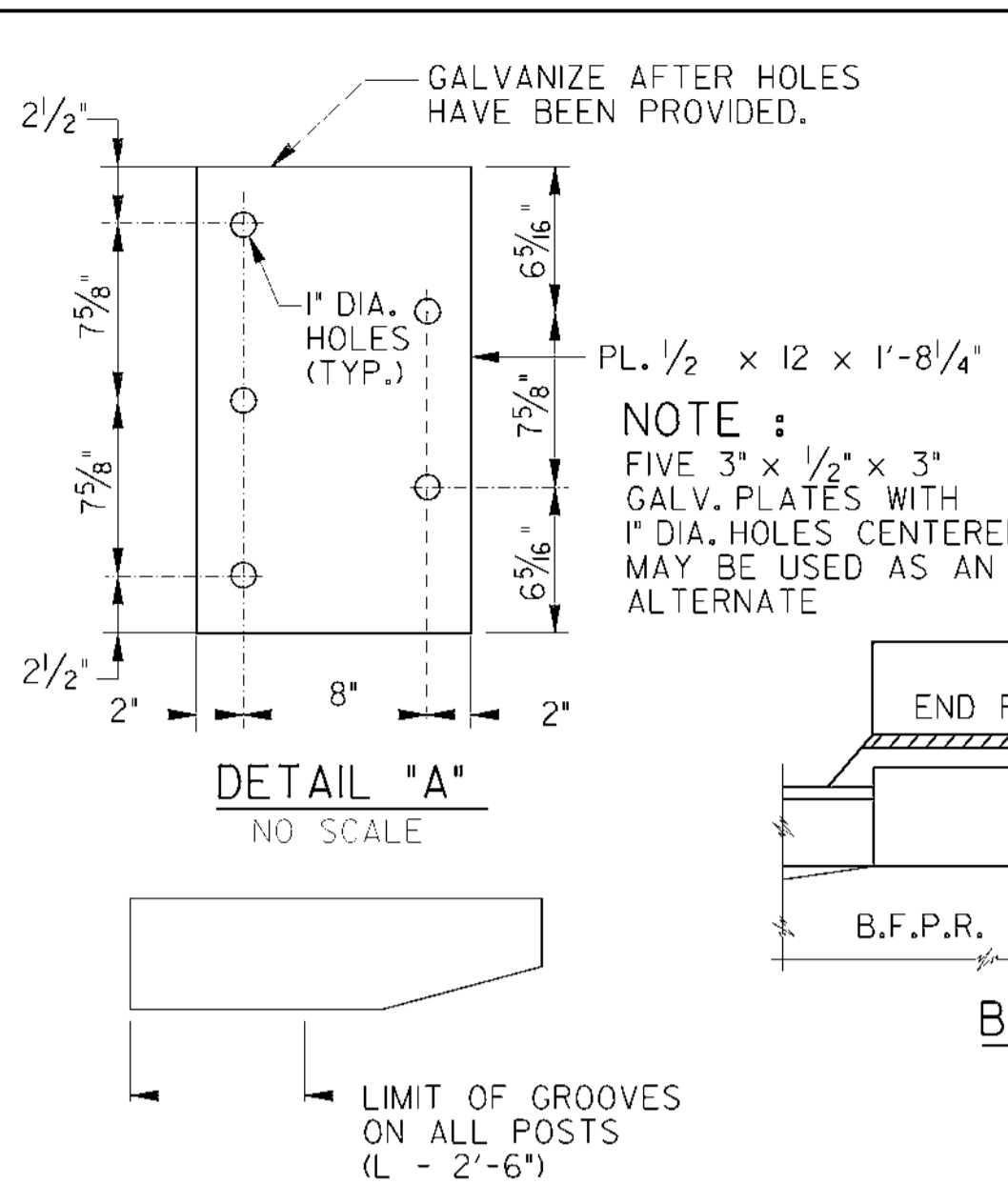
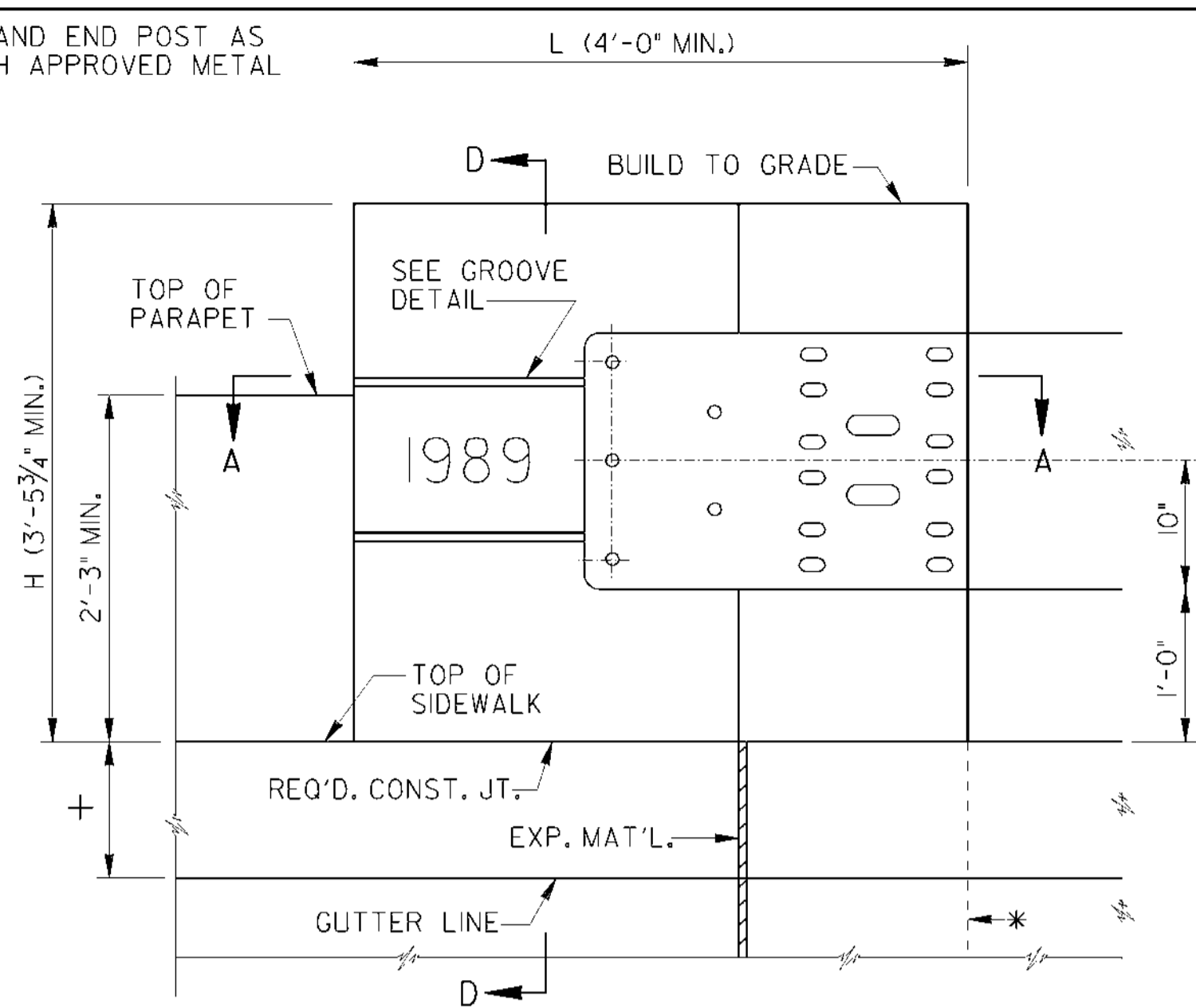
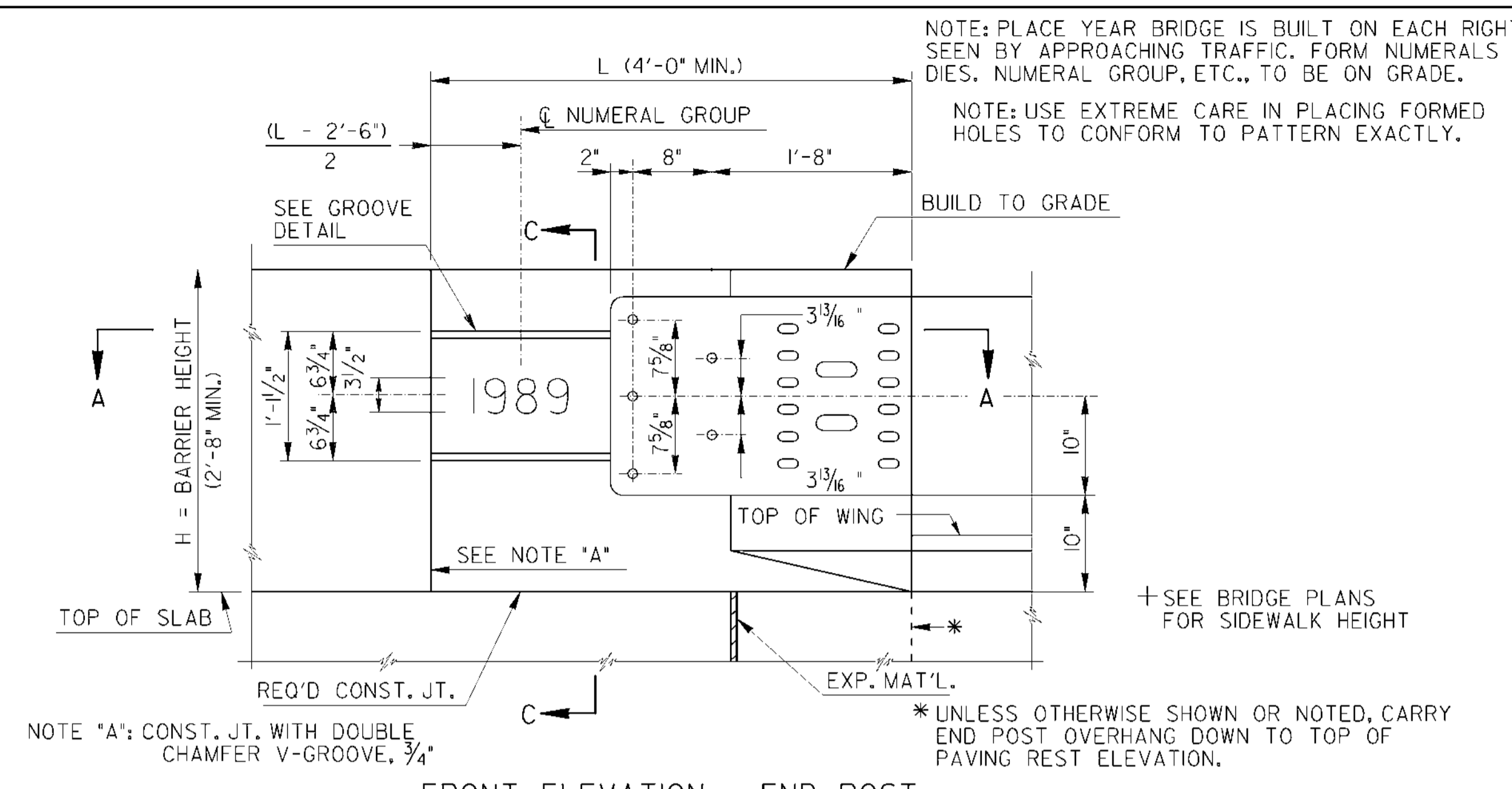
DESIGNED: R.W.H.
DRAWN: A.V.S.
CHECKED: R.B.S.

SUBMITTED: [Signature]
APPROVED: [Signature] STATE HIGHWAY ENGINEER

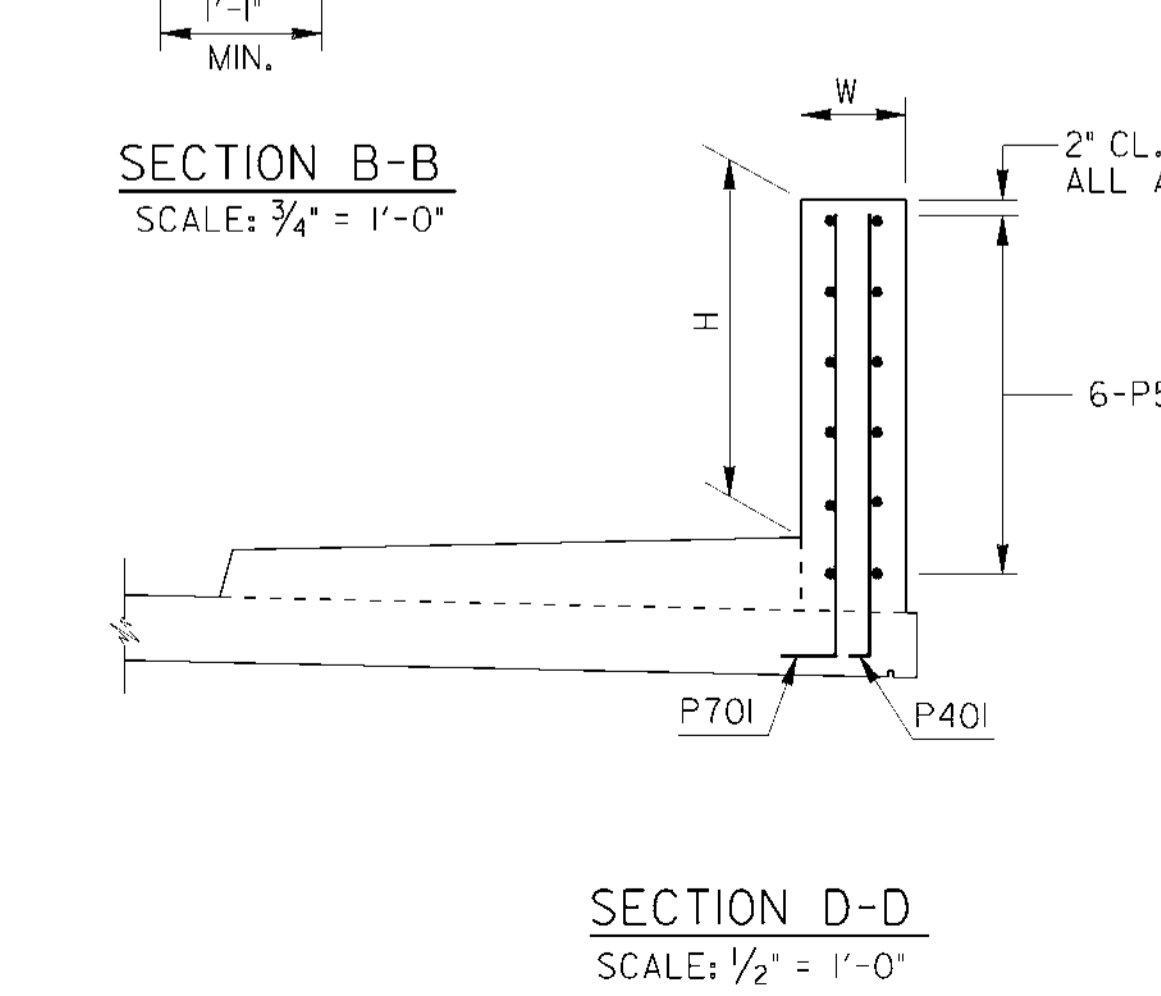
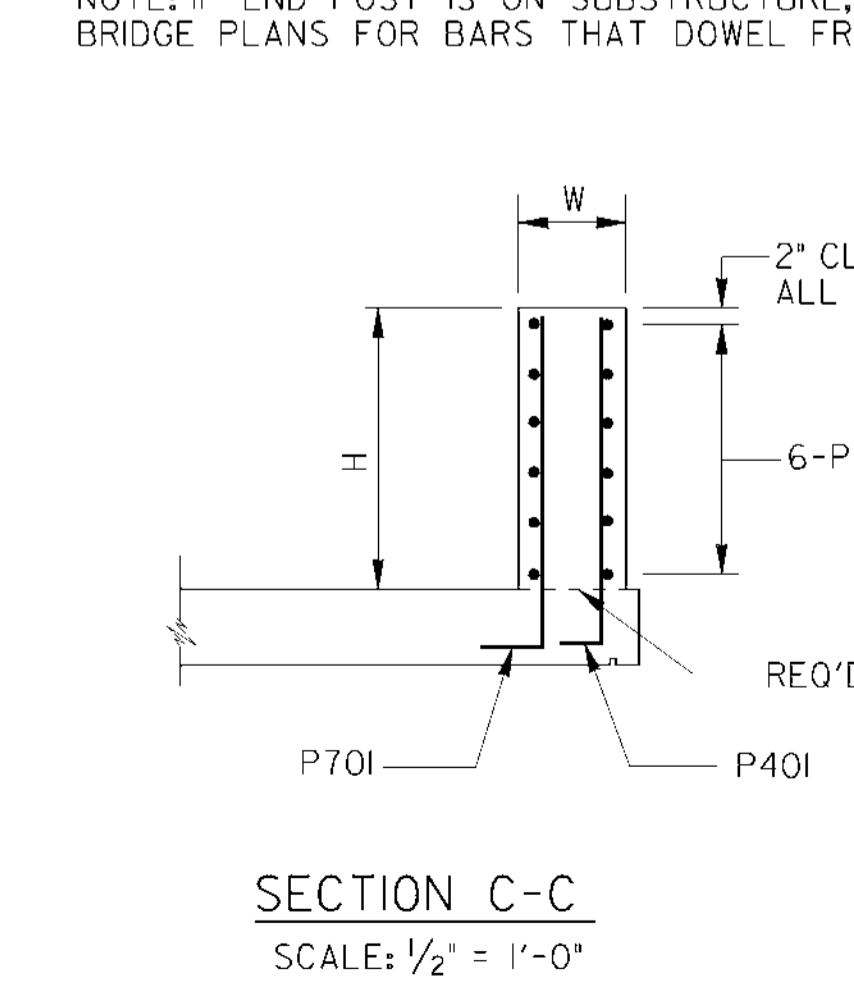
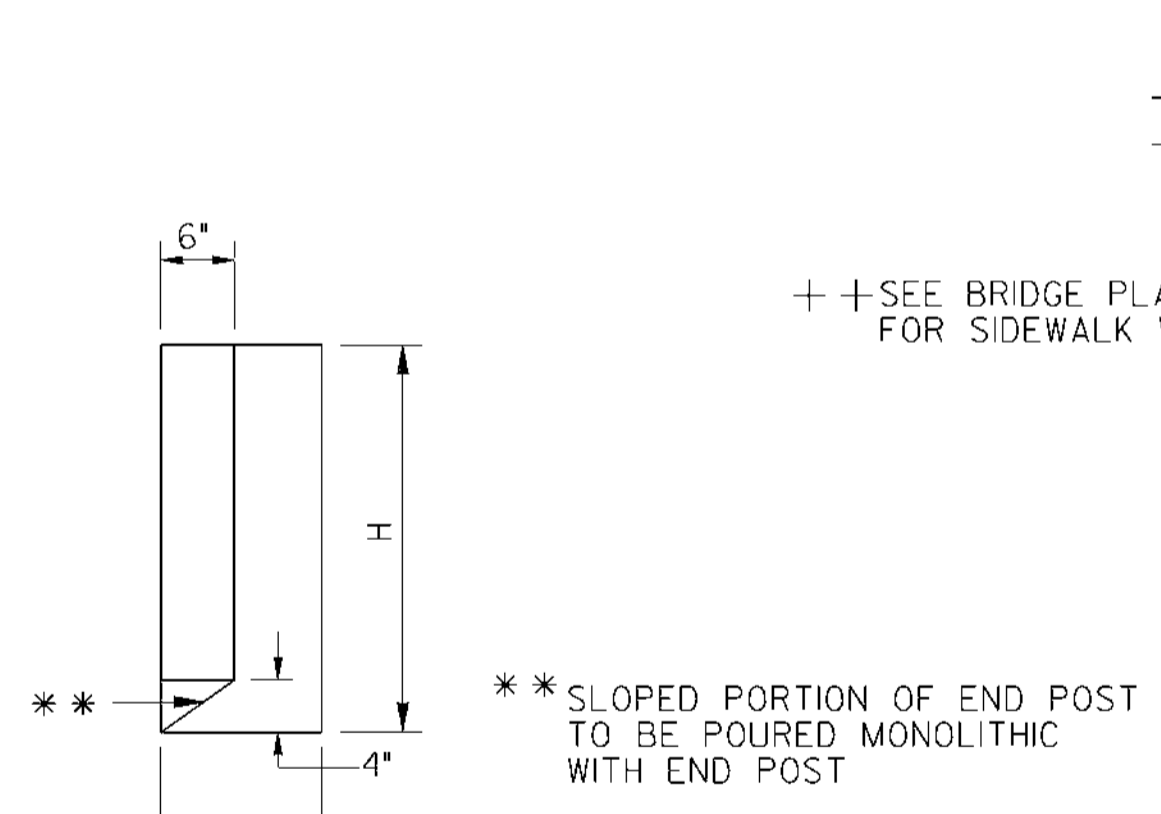
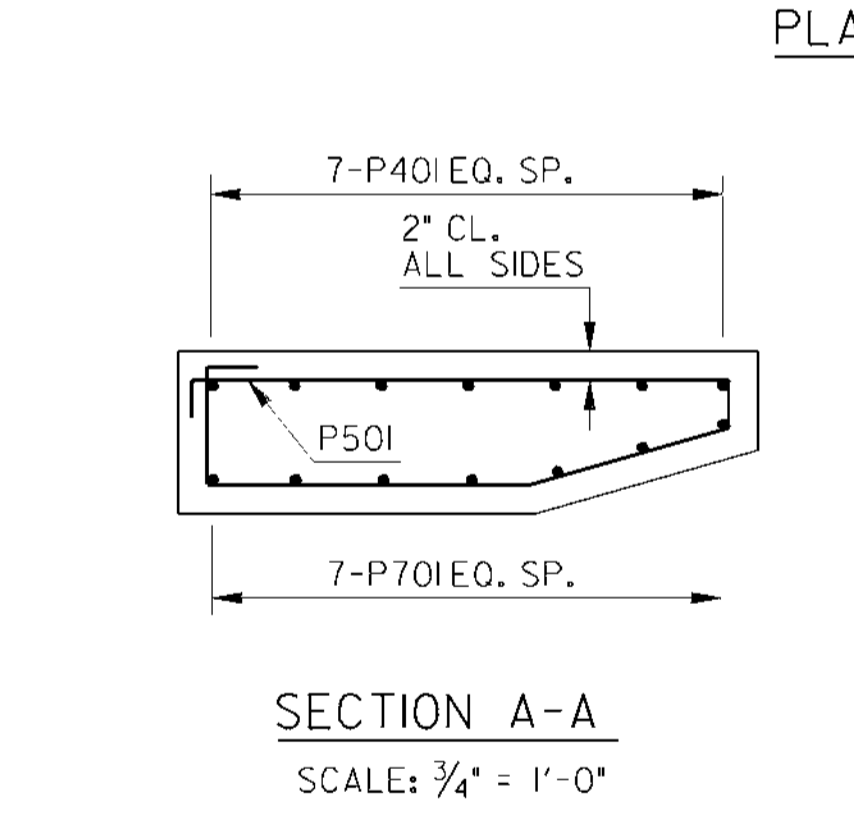
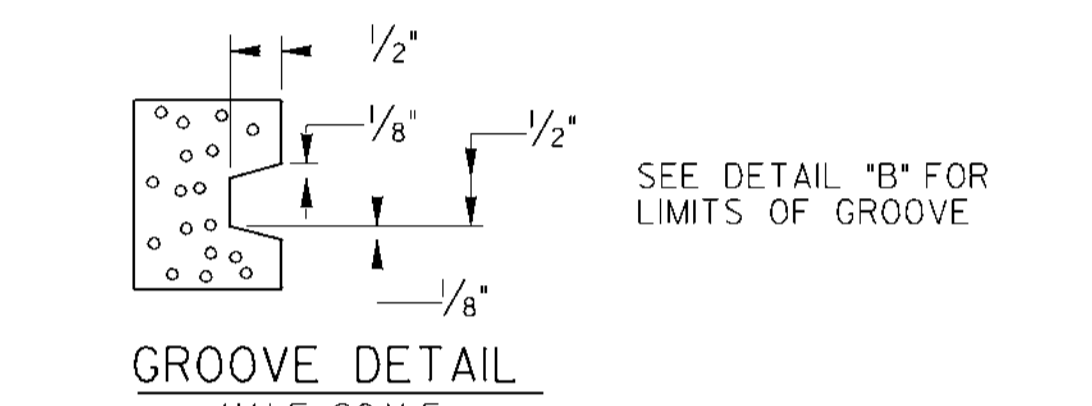
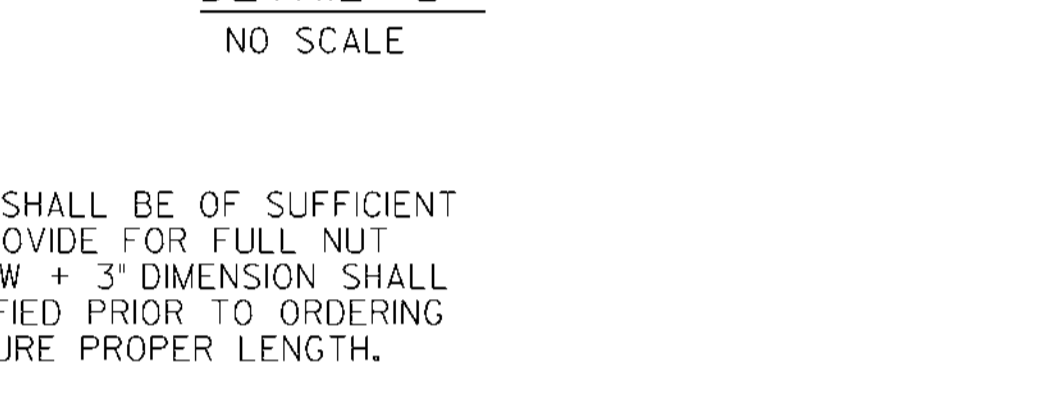
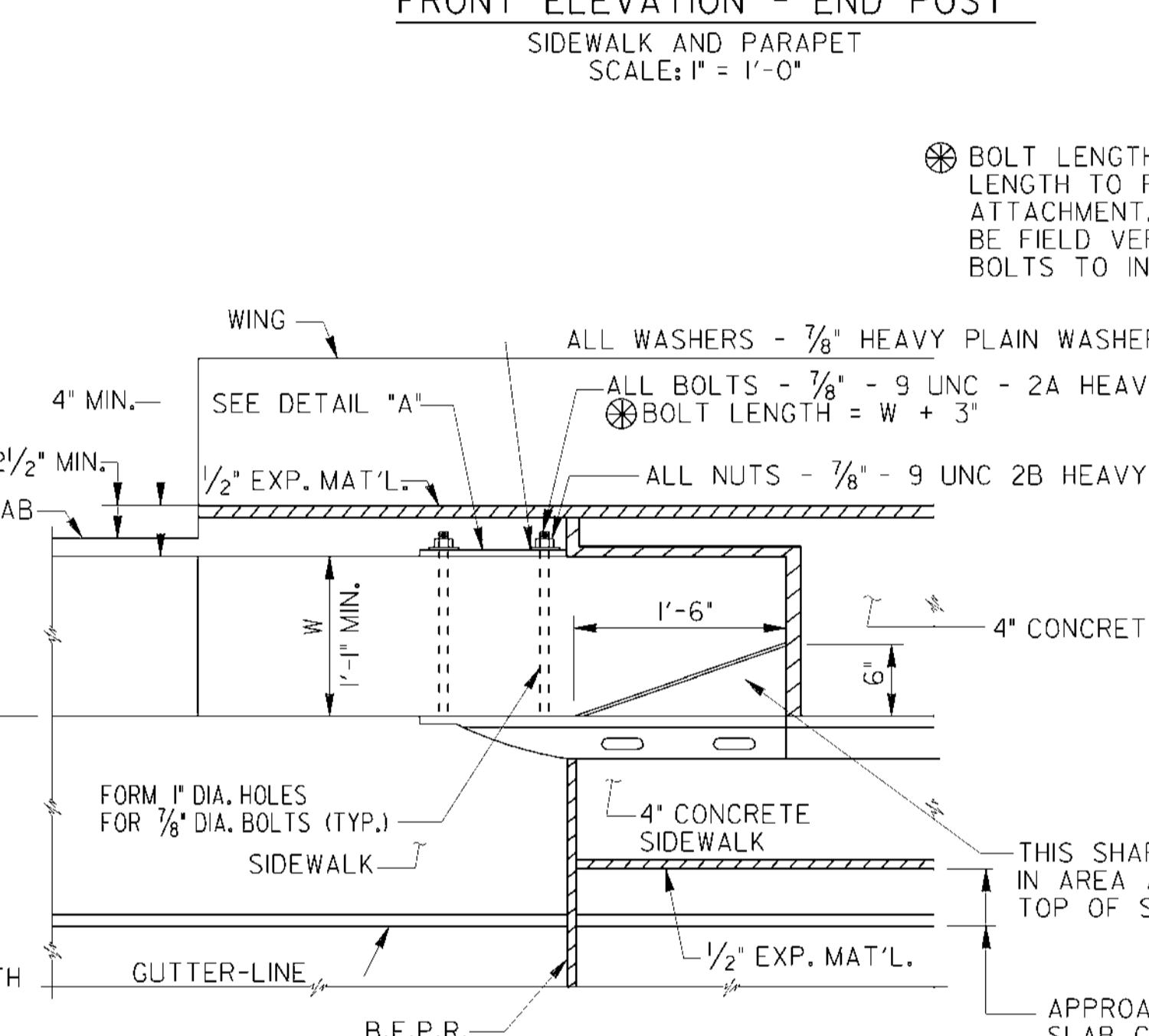
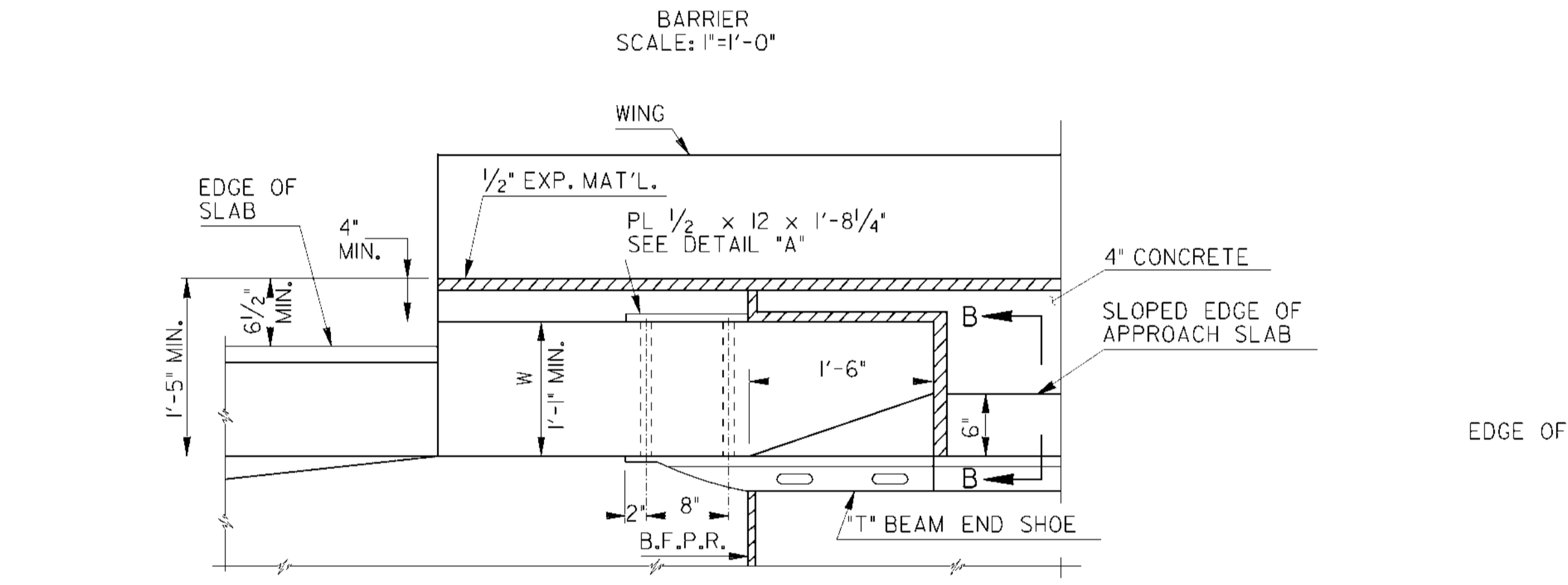
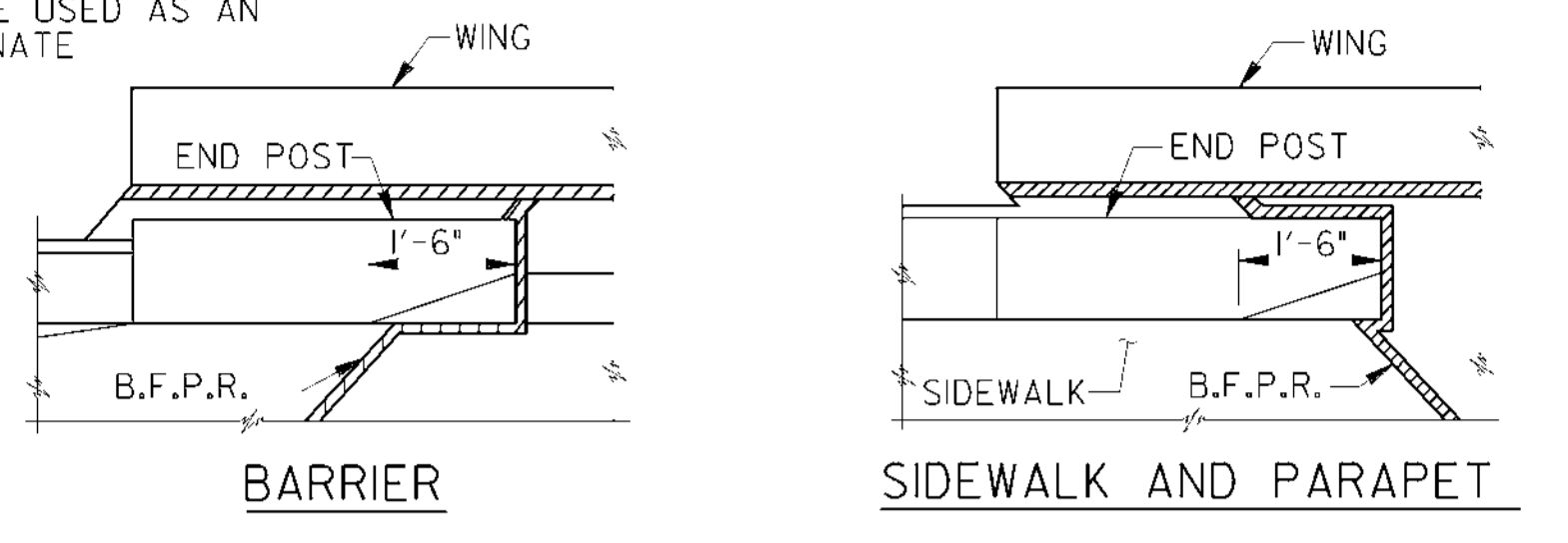
FEB. 1967

NUMBER: 1034F
PRECAST

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



MATERIALS	
ITEM	SPECIFICATIONS
GUARDRAIL	A.A.S.T.H.O. SPECIFICATION M 180
1/2" PLATE	A.S.T.M. DESIGNATIONS A-36
NUTS & BOLTS	A.S.T.M. DESIGNATION A-307
WASHERS	MEDIUM STEEL
GALVANIZING	A.S.T.M. A-153



⊗ BOLT LENGTH SHALL BE OF SUFFICIENT LENGTH TO PROVIDE FOR FULL NUT ATTACHMENT. W + 3" DIMENSION SHALL BE FIELD VERIFIED PRIOR TO ORDERING BOLTS TO INSURE PROPER LENGTH.

- GENERAL NOTES
- SPECIFICATIONS - GEORGIA STANDARD.
 - LOCATION - ALL END POSTS UNLESS NOTED ON BRIDGE PLANS.
 - CHAMFER - CHAMFER ALL EXPOSED EDGES 3/4".
 - GALVANIZING - ALL METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.
 - PAYMENT FOR MISCELLANEOUS HARDWARE - COST OF 1/2" PLATE AND MISCELLANEOUS HARDWARE SHALL BE INCLUDED IN THE PRICES BID FOR CONTRACT ITEMS.
 - PAYMENT FOR THE END POST - IF END POST IS A PORTION OF THE SUBSTRUCTURE, CONCRETE AND REINFORCEMENT ARE COMPUTED AND INCLUDED IN THE END BENT QUANTITIES. IF END POST IS A PORTION OF THE SUPERSTRUCTURE, CONCRETE AND REINFORCEMENT ARE COMPUTED AND INCLUDED IN THE END SPAN QUANTITIES.
 - RESPONSIBILITY - WHEN THE BRIDGE CONTRACT IS SEPARATE FROM THE CONTRACT CONTAINING THE APPROACHING GUARDRAIL, THE BRIDGE CONTRACTOR SHALL ONLY BE RESPONSIBLE FOR THE CONSTRUCTION OF THE END POSTS AND FORMING OF THE 1" DIAMETER BOLT HOLES. THE CONTRACT CONTAINING THE APPROACHING GUARDRAIL SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING THE SPECIAL END SHOE, PLATE, NUTS, WASHERS, AND BOLTS.
 - DIMENSIONS - FOR DIMENSIONS "L", "H", AND "W" AND OTHER DIMENSIONS, SEE BRIDGE PLANS.
 - END POST - END POST TO BE CONSTRUCTED AFTER HANDRAIL IS IN PLACE. END POST TO BE CONSTRUCTED AFTER BARRIER IS CONSTRUCTED WHEN NO HANDRAIL IS USED.

NO. BARS REQ'D		
MARK	BARRIER	SIDEWALK
P40I	7	7
P50I	6	6
P70I	7	7

FOR END POST ON SUPERSTRUCTURE:
 A = H - 4" + SLAB DEPTH (FOR BARRIER)
 A = H - 4" + SIDEWALK DEPTH + SLAB DEPTH (FOR SIDEWALK AND PARAPET)
 B = 1'-0"

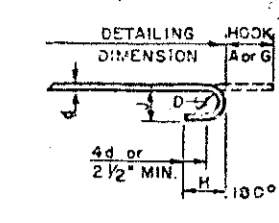
FOR END POST ON SUBSTRUCTURE:
 A = H - 2"
 B = 0"

NOTE: ROTATE P70I AND P40I AS NECESSARY TO MAINTAIN 2" MIN. CL. IN CONCRETE.

9-30-02		6-30-98		DATE	
REV. TRANSITION	REDRAWN	REVISION			
DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA					
STANDARD END POST AND END POST GUARDRAIL ATTACHMENT DETAILS					
SCALE: AS SHOWN				MAY 1989	
DESIGNED H.W.C. (SUBMITTED)		DRAWN E.R.M. (APPROVED)		NUMBER 3054	
CHECKED H.W.C.		BY		James A. Bannell STATE ROAD DESIGN ENGINEER Chief Engineer	

HOOK DETAILS

RECOMMENDED 180° HOOKS
 GRADE 40 ksi
 D = 5d for #3 through #11
 D = 10d for #14 and #18
 GRADES 50-60-75 ksi
 D = 6d for #3 through #8
 D = 8d for #9, #10, and #11
 D = 10d for #14 and #18

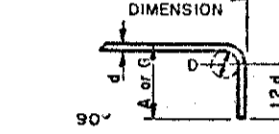


RECOMMENDED 180° END HOOK DIMENSIONS

BAR SIZE	GRADES 50-60-75 ksi			GRADE 40 ksi	
	A or G	J	A or G	J	
#3	5	3	5	5	2 3/4
#4	6	4	6	7	3 1/2
#5	7	5	7	8	4 1/2
#6	8	6	8	9	5 1/4
#7	10	7	9	10	6 1/4
#8	11	8	10	11	7
#9	1-3	1 1/4	1-0	1-0	8
#10	1-5	1-0 3/4	1-1	1-1	9
#11	1-7	1-2 1/4	1-2	1-2	10
#14	2-2	1-8 1/2	2-2	1-8 1/2	
#18	2-11	2-3	2-11	2-3	
STYLE				2	

RECOMMENDED 90° END HOOK DIMENSIONS

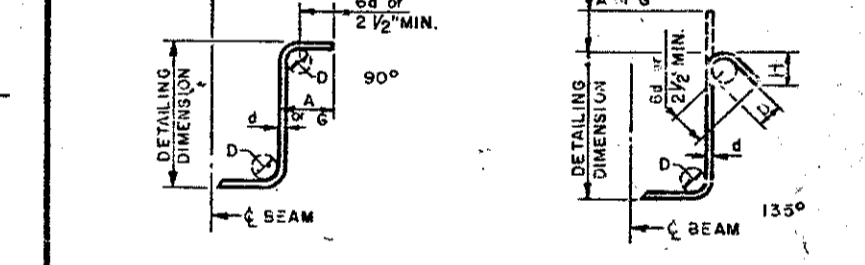
ALL GRADES
 D = 6d for #3 through #8
 D = 8d for #9, #10, and #11
 D = 10d for #14 and #18



BAR SIZE	HOOK A or G
#3	6
#4	8
#5	10
#6	12
#7	14
#8	1-4
#9	1-7
#10	1-10
#11	2-0
#14	2-7
#18	3-5

HOOK STYLE 3

STIRRUP AND TIE HOOK

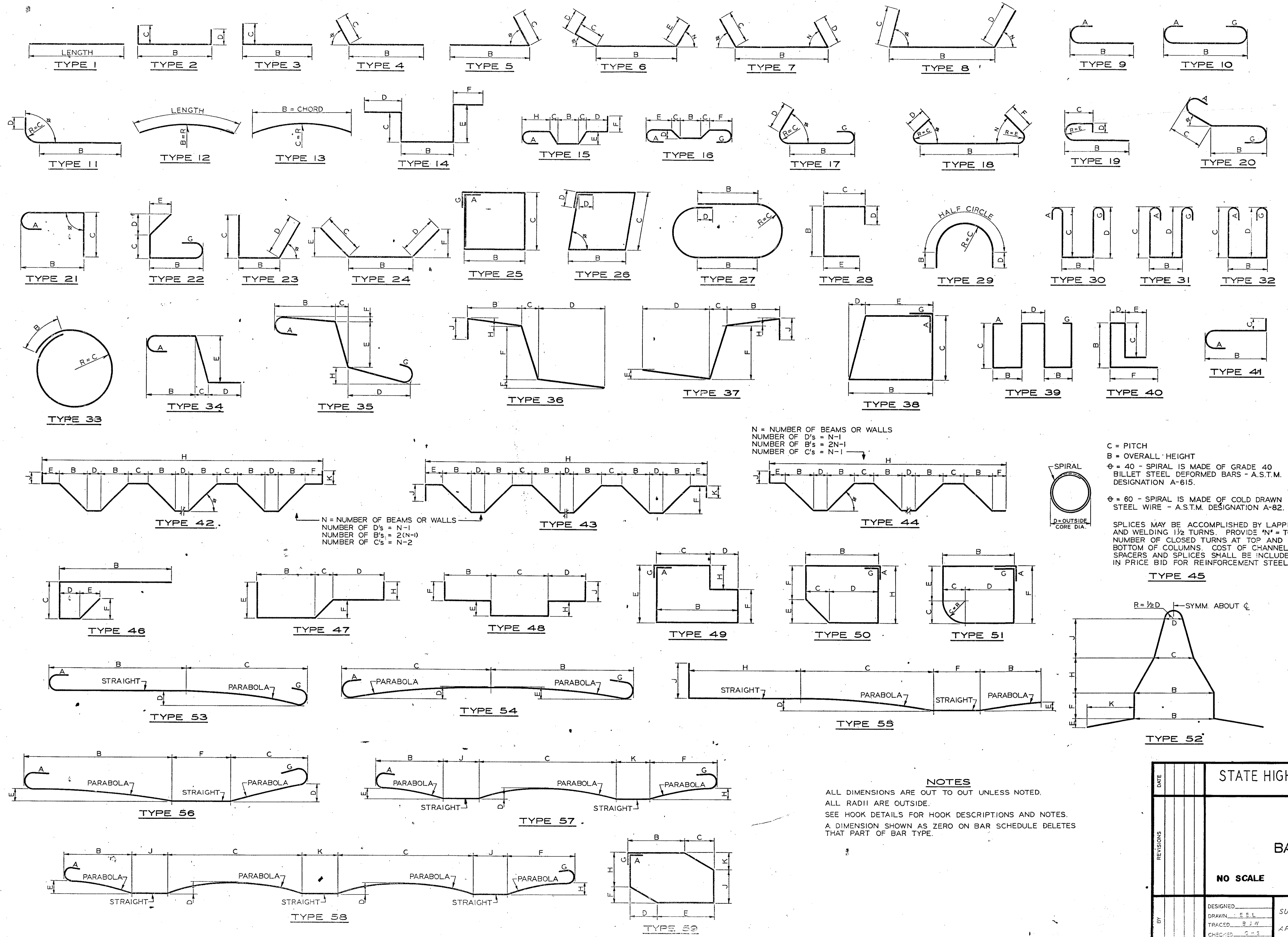


STIRRUPS (TIES SIMILAR)

STIRRUP AND TIE HOOK DIMENSIONS
 GRADES 40-50-60 ksi

BAR SIZE	D (in.)	90° HOOK		135° HOOK	
		HOOK A or G	H	HOOK A or G	H
#3	1 1/2	4	4	4	2 1/2
#4	2	4 1/2	4 1/2	4 1/2	3
#5	2 1/2	5 1/2	5 1/2	5 1/2	3 3/4
#6	3	6 1/2	6 1/2	6 1/2	4 1/2
STYLE		4		5	

STYLE 6 = NO HOOK
 HOOK STYLES DETAILED ON THIS SHEET ARE FOR ILLUSTRATION ONLY. ACTUAL HOOK STYLE FOR ANY PARTICULAR BAR WILL BE SHOWN UNDER A OR G HEADING ON BAR SCHEDULE.



N = NUMBER OF BEAMS OR WALLS
 NUMBER OF D's = N-1
 NUMBER OF B's = 2N-1
 NUMBER OF C's = N-1

C = PITCH
 B = OVERALL HEIGHT
 φ = 40 - SPIRAL IS MADE OF GRADE 40 BILLET STEEL DEFORMED BARS - A.S.T.M. DESIGNATION A-615.
 φ = 60 - SPIRAL IS MADE OF COLD DRAWN STEEL WIRE - A.S.T.M. DESIGNATION A-82.

SPLICES MAY BE ACCOMPLISHED BY LAPPING AND WELDING 1 1/2 TURNS. PROVIDE 'N' = TOTAL NUMBER OF CLOSED TURNS AT TOP AND BOTTOM OF COLUMNS. COST OF CHANNEL SPACERS AND SPLICES SHALL BE INCLUDED IN PRICE BID FOR REINFORCEMENT STEEL.

NOTES
 ALL DIMENSIONS ARE OUT TO OUT UNLESS NOTED.
 ALL RADII ARE OUTSIDE.
 SEE HOOK DETAILS FOR HOOK DESCRIPTIONS AND NOTES.
 A DIMENSION SHOWN AS ZERO ON BAR SCHEDULE DELETES THAT PART OF BAR TYPE.

STATE HIGHWAY DEPARTMENT OF GEORGIA
 BRIDGE DIVISION

STANDARD BAR BENDING DETAILS

NO SCALE AUGUST 1969

DESIGNED: E.E.L.
 DRAWN: E.E.L.
 TRACED: B.J.W.
 CHECKED: G.S.

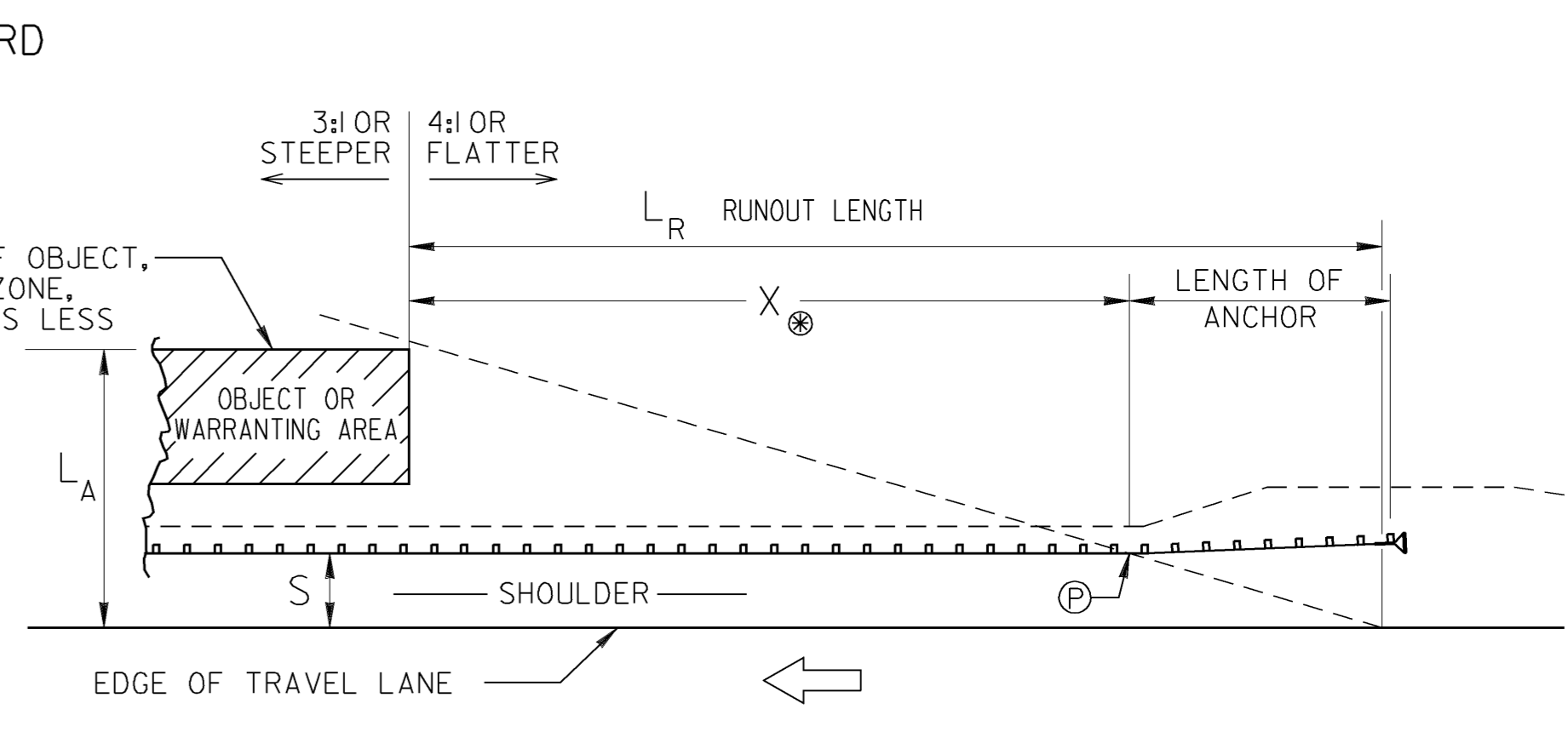
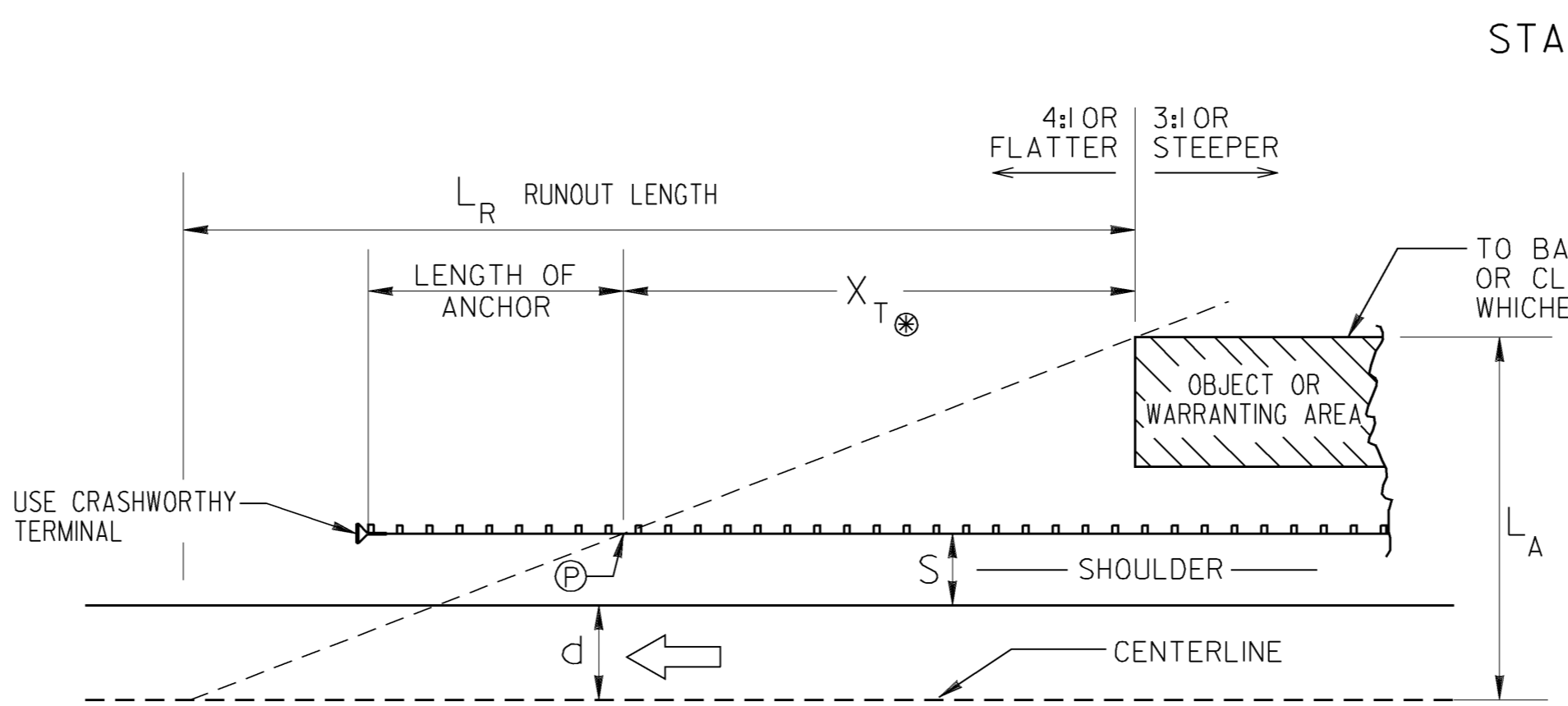
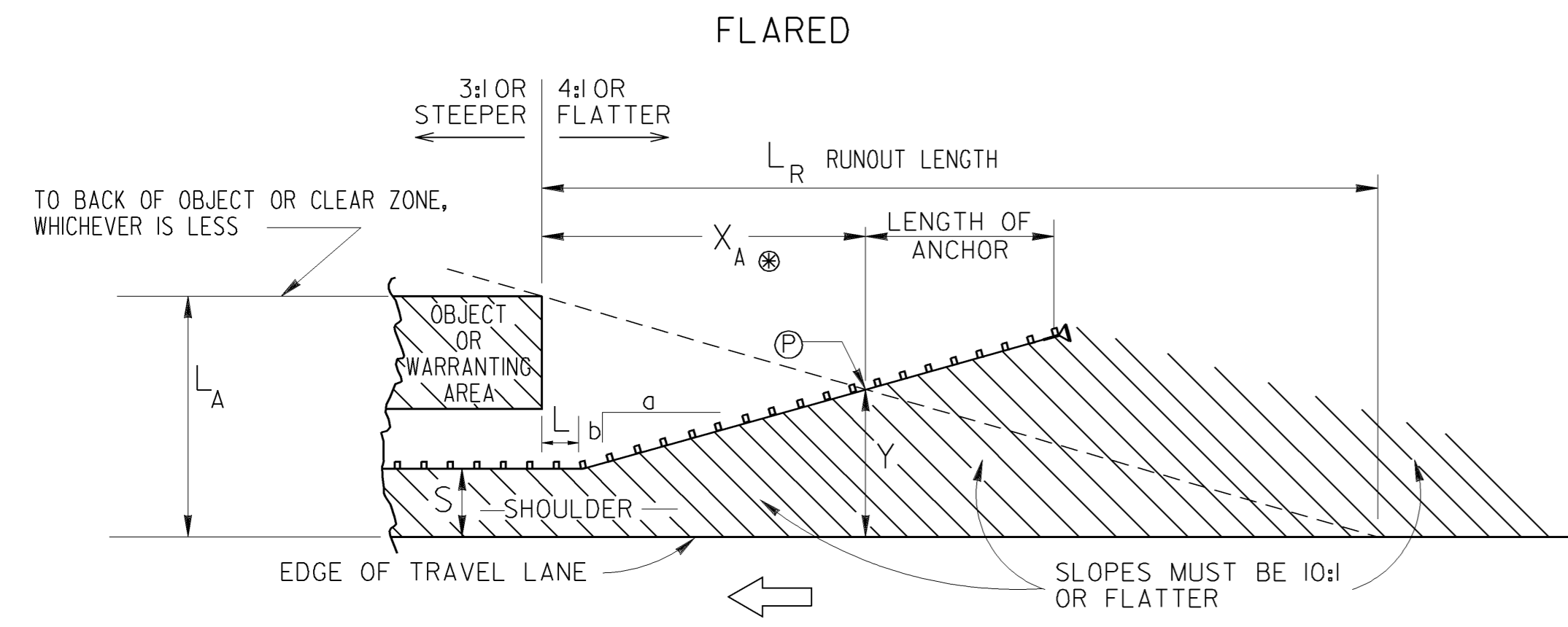
SUBMITTED: R.L. Chapman
 BRIDGE ENGINEER

APPROVED: STATE HIGHWAY ENGINEER

NUMBER 3901

LENGTH OF GUARDRAIL ADVANCEMENT AT FIXED OBJECTS OR AT WARRANTING FILL SLOPES (TYPICAL)

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



DESIGN SPEED (mph)	SHY-LINE OFFSET (ft)	(a/b)	
		BARRIER INSIDE SHY-LINE	BARRIER AT OR BEYOND SHY-LINE
70	9	30	15
60	8	26	14
55	7	24	12
50	6.5	21	11
45	6	18	10
40	5	16	8
30	4	13	7

$$Y = L_A - \frac{L_A}{L_R} (X_A)$$

$$X_A = \frac{L_A + (b/a)L - S}{b/a + (L_A/L_R)}$$

WHERE 'S' IS LESS THAN THE SHY-LINE OFFSET, USE FLATTER RATES GIVEN IN TABLE.

DESIGN SPEED (MPH)	L _R Runout Length in feet			
	OVER 10000 (A.D.T.)	5000-10000 (A.D.T.)	1000-5000 (A.D.T.)	UNDER 1000 (A.D.T.)
80	470	430	380	330
70	360	330	290	250
60	300	250	210	200
50	230	190	160	150
40	160	130	110	100
30	110	90	80	70

S = NORMAL WIDTH OF USUABLE SHOULDER PLUS 2 FT (TYP.)

Ⓟ = BEGINNING OF TERMINAL (TYP.)

⊗ X_A, X_T, AND X MEASURED TO THE END OF W-BEAM, WHERE TERMINAL BEGINS

$$X_T = L_R \times \frac{L_A - (S+d)}{L_A}$$

(TRAILING END)

$$X = L_R \times \frac{L_A - S}{L_A}$$

(APPROACH END)

CLEAR ZONE DISTANCES

CLEAR ZONE DISTANCES (FT) CHART

DESIGN SPEED	DESIGN ADT	FORESLOPES			BACKSLOPES		
		IV:6H OR FLATTER	IV:5H TO IV:4H	IV:3H	IV:3H	IV:5H TO IV:4H	IV:6H OR FLATTER
40 M.P.H. OR LESS	UNDER 750	7-10	7-10	**	7-10	7-10	7-10
	750-1500	10-12	12-14	**	12-14	12-14	12-14
	1500-6000	12-14	14-16	**	14-16	14-16	14-16
	OVER 6000	14-16	16-18	**	16-18	16-18	16-18
45-50 M.P.H.	UNDER 750	10-12	12-14	**	8-10	10-12	10-12
	750-1500	14-16	16-20	**	10-12	12-14	14-16
	1500-6000	16-18	20-26	**	12-14	14-16	16-18
	OVER 6000	20-22	24-28	**	14-16	18-20	20-22
55 M.P.H.	UNDER 750	12-14	14-18	**	8-10	10-12	10-12
	750-1500	16-18	20-24	**	10-12	14-16	16-18
	1500-6000	20-22	24-30	**	14-16	16-18	20-22
	OVER 6000	22-24	26-32*	**	16-18	20-22	22-24
60 M.P.H.	UNDER 750	16-18	20-24	**	10-12	12-14	14-16
	750-1500	20-24	26-32*	**	12-14	16-18	20-22
	1500-6000	26-30	32-40*	**	14-18	18-22	24-26
	OVER 6000	30-32*	36-44*	**	20-22	24-26	26-28
65-70 M.P.H.	UNDER 750	18-20	20-26	**	10-12	14-16	14-16
	750-1500	24-26	28-36*	**	12-16	18-20	20-22
	1500-6000	28-32*	34-42*	**	16-20	22-24	26-28
	OVER 6000	30-34*	38-46*	**	22-24	26-30	28-30

HORIZONTAL CURVE ADJUSTMENTS

RADIUS (FEET)	K _{CZ} (CURVE CORRECTION FACTOR)					
	DESIGN SPEED (MPH)					
	40	45	50	55	65	70
2950	1.1	1.1	1.1	1.2	1.2	1.2
2300	1.1	1.1	1.2	1.2	1.2	1.3
1970	1.1	1.2	1.2	1.2	1.3	1.4
1640	1.1	1.2	1.2	1.3	1.3	1.4
1475	1.2	1.2	1.3	1.3	1.4	1.5
1315	1.2	1.2	1.3	1.3	1.4	1.5
1150	1.2	1.2	1.3	1.4	1.5	1.5
985	1.2	1.3	1.4	1.5	1.5	1.5
820	1.3	1.3	1.4	1.5	1.5	1.5
660	1.3	1.4	1.5	1.5	1.5	1.5
495	1.4	1.5	1.5	1.5	1.5	1.5
330	1.5	1.5	1.5	1.5	1.5	1.5

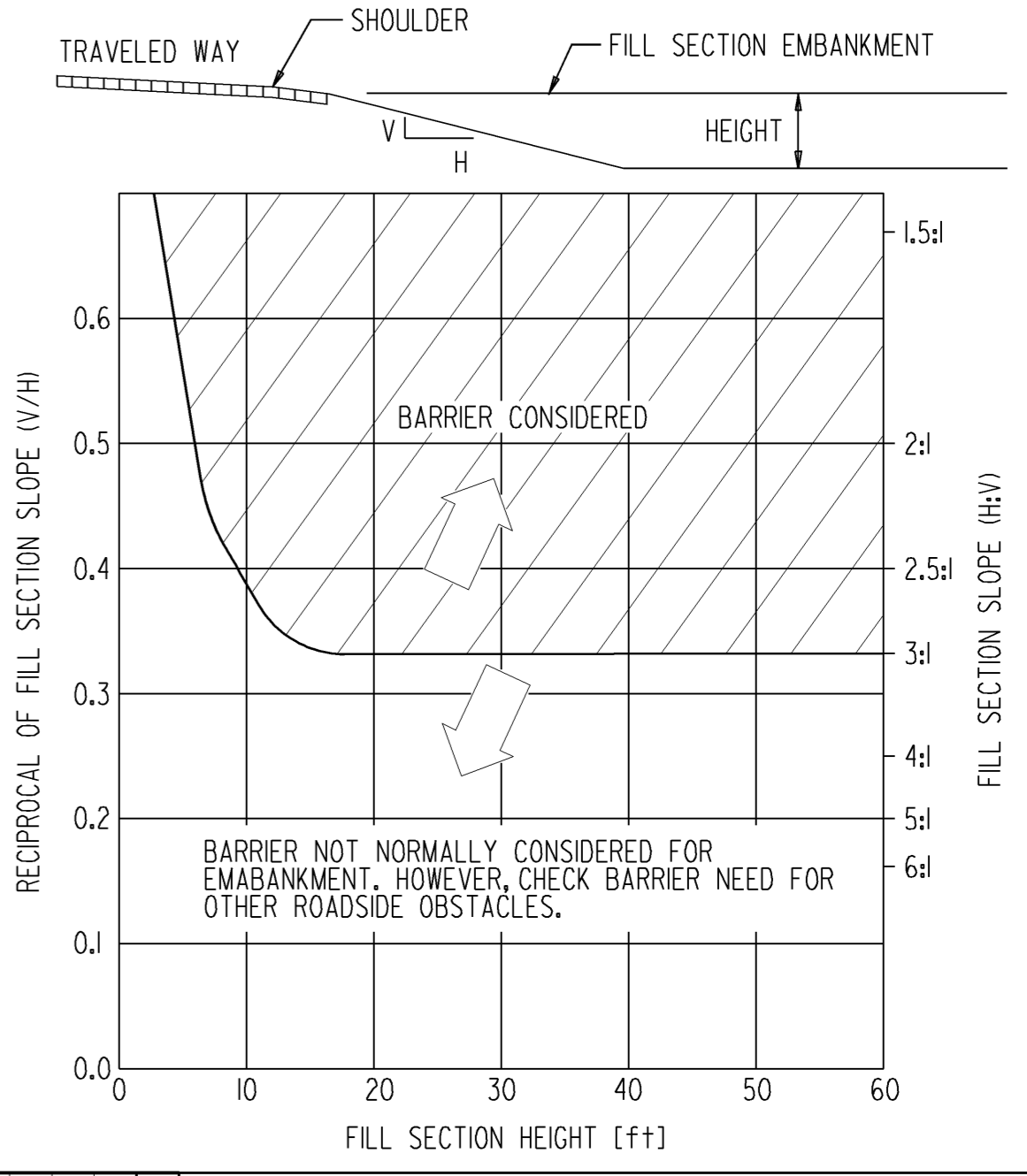
C_Z = (L_C) (K_{CZ})
 Where:
 C_Z = CLEAR ZONE ON OUTSIDE OF CURVATURE, FEET
 L_C = CLEAR ZONES DISTANCE, FEET (SEE CHART AT LEFT)
 K_{CZ} = CURVE CORRECTION FACTOR

NOTE:
 THE CURVE CORRECTION FACTOR IS APPLIED TO THE OUTSIDE OF CURVES ONLY. CORRECTIONS ARE TYPICALLY MADE ONLY TO CURVES LESS THAN 2,950-FT RADIUS.

* WHEN A SITE-SPECIFIC INVESTIGATION INDICATES A HIGH PROBABILITY OF CONTINUING CRASHES OR WHEN SUCH OCCURRENCES ARE INDICATED BY CRASH HISTORY, THE DESIGNER MAY PROVIDE CLEAR-ZONE DISTANCES GREATER THAN THE CLEAR ZONE SHOWN ABOVE. CLEAR ZONES MAY BE LIMITED TO 30 FT. FOR PRACTICALITY AND TO PROVIDE A CONSISTENT ROADWAY TEMPLATE IF PREVIOUS EXPERIENCE WITH SIMILAR PROJECTS OR DESIGNS INDICATES SATISFACTORY PERFORMANCE.

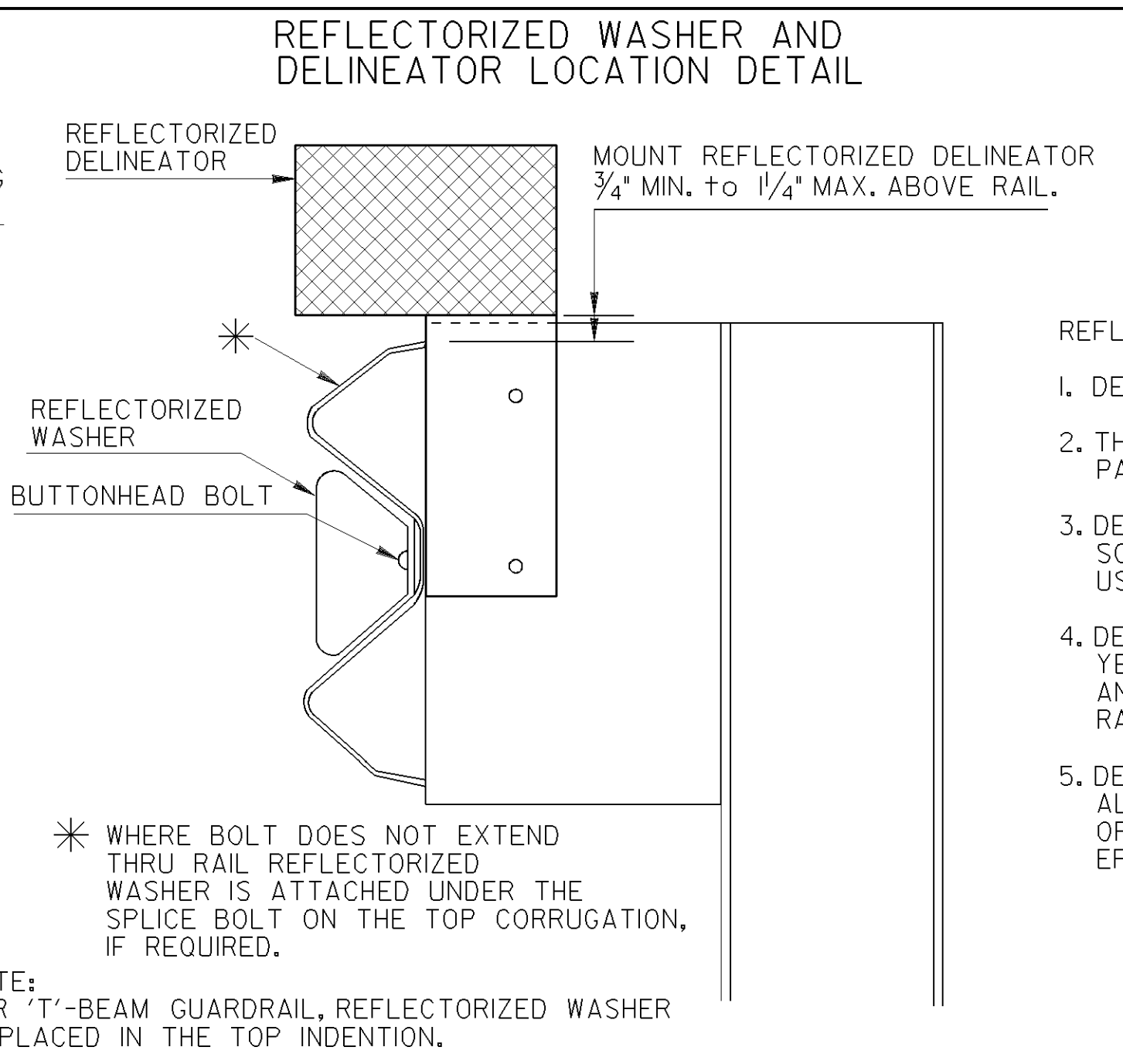
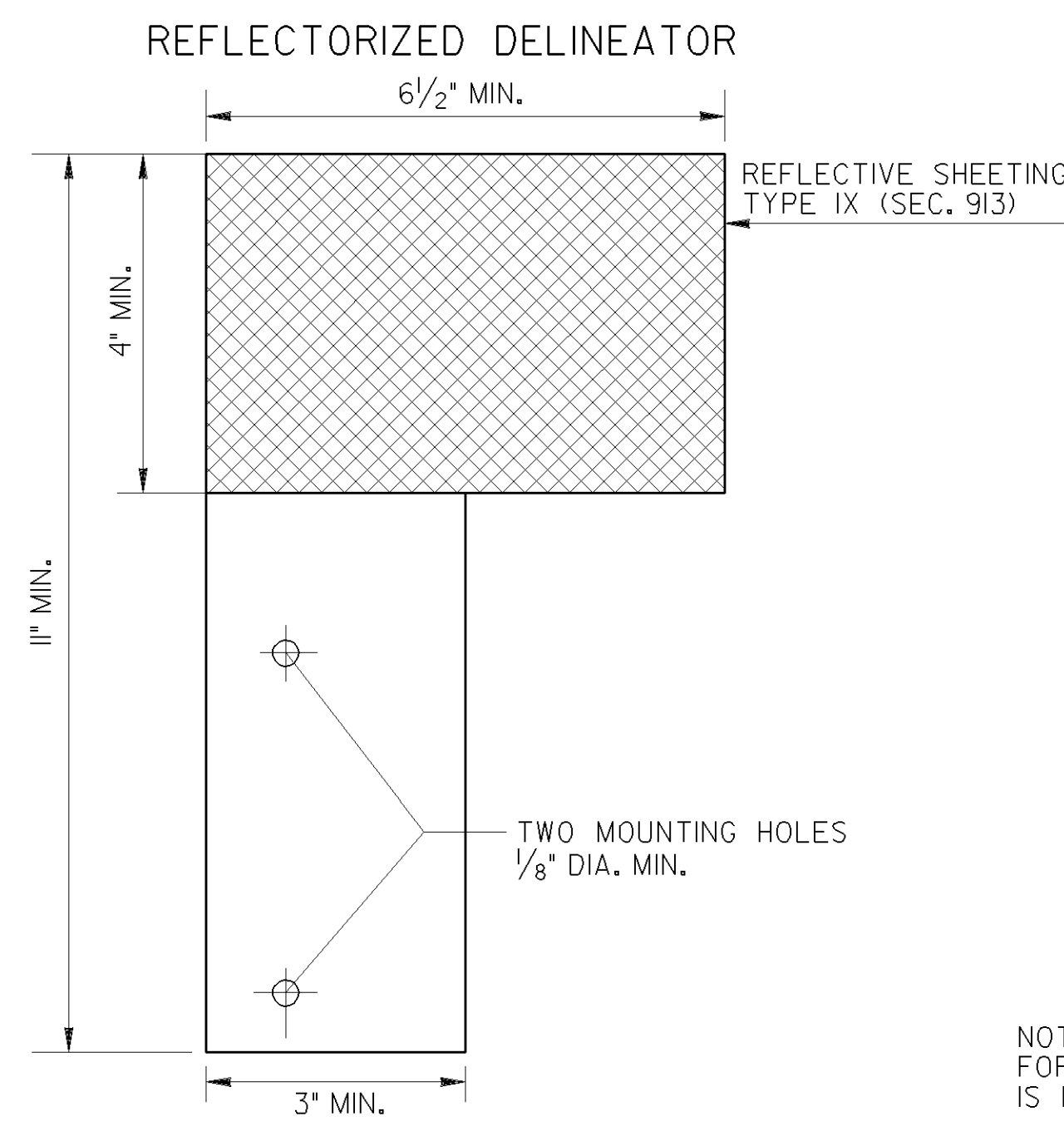
** BECAUSE RECOVERY IS LESS LIKELY ON THE UNSHIELDED, TRAVERSABLE IV:3H FILL SLOPES, FIXED OBJECTS SHOULD NOT BE PRESENT IN THE VICINITY OF THE TOE OF THESE SLOPES. RECOVERY OF HIGH-SPEED VEHICLES THAT ENCRoACH BEYOND THE EDGE OF THE SHOULDER MAY BE EXPECTED TO OCCUR BEYOND THE TOE OF SLOPE. DETERMINATION OF THE WIDTH OF THE RECOVERY AREA AT THE TOE OF SLOPE SHOULD CONSIDER RIGHT-OF-WAY AVAILABILITY, ENVIRONMENTAL CONCERNS, ECONOMIC FACTORS, SAFETY NEEDS, AND CRASH HISTORIES. ALSO, THE DISTANCE BETWEEN THE EDGE OF THE THROUGH TRAVELED LAND AND THE BEGINNING OF THE IV:3H SLOPE SHOULD INFLUENCE THE RECOVERY AREA PROVIDED AT THE TOE OF SLOPE. A 10-FT RECOVERY AREA AT THE TOE OF SLOPE SHOULD BE PROVIDED FOR ALL TRAVERSABLE, NON RECOVERABLE FILL SLOPES.

COMPARATIVE BARRIER CONSIDERATION FOR EMBANKMENTS

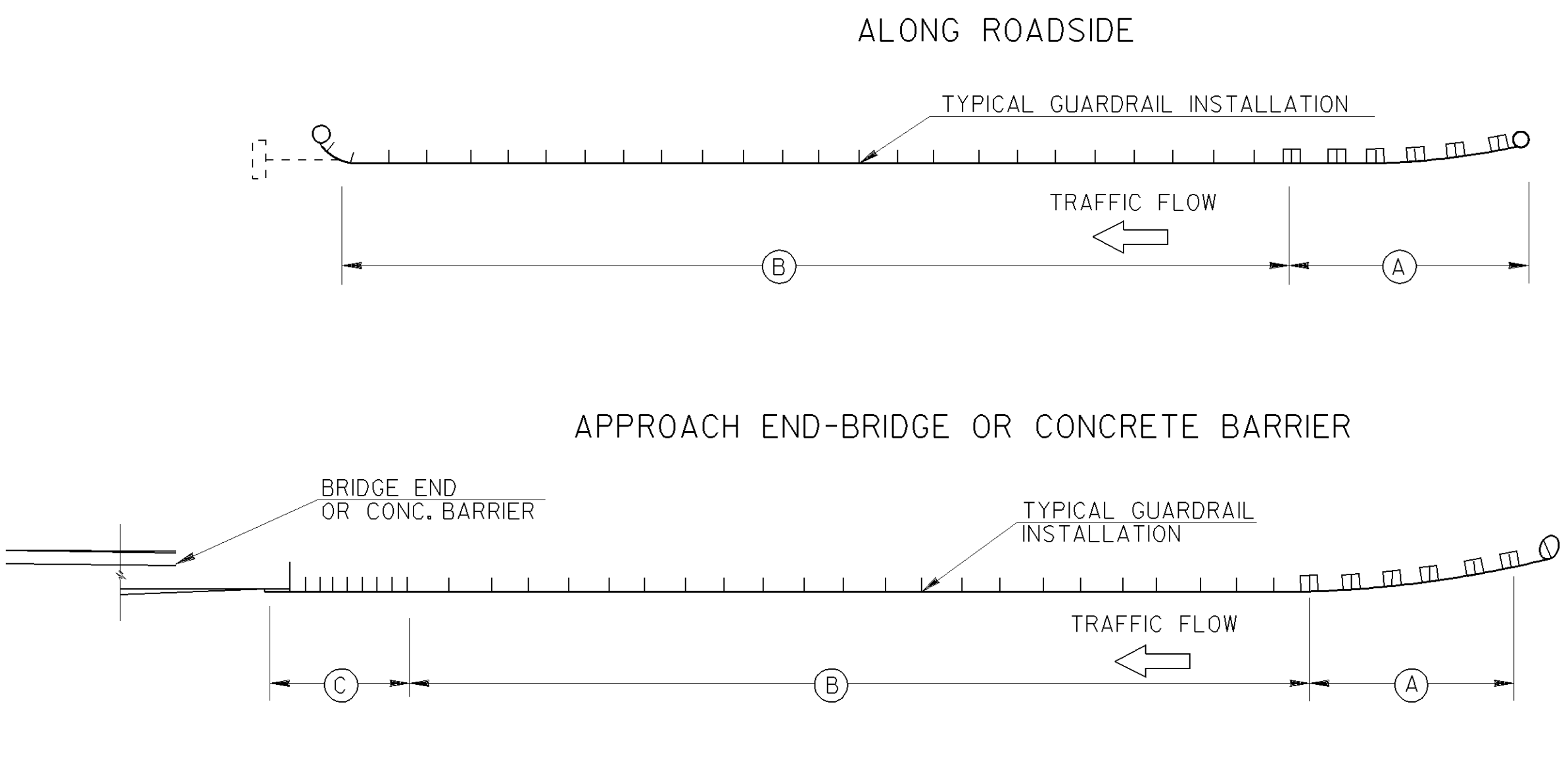
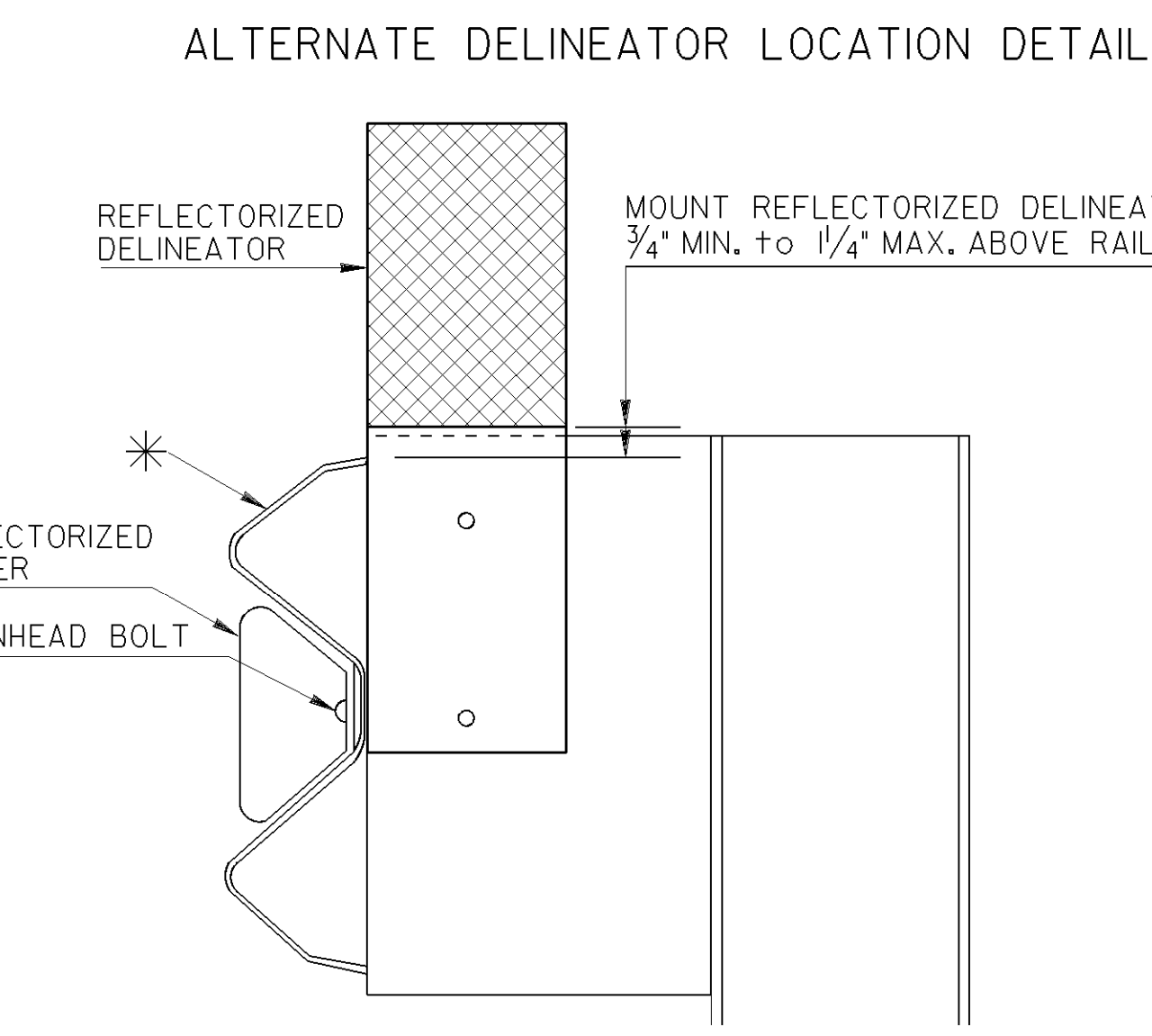
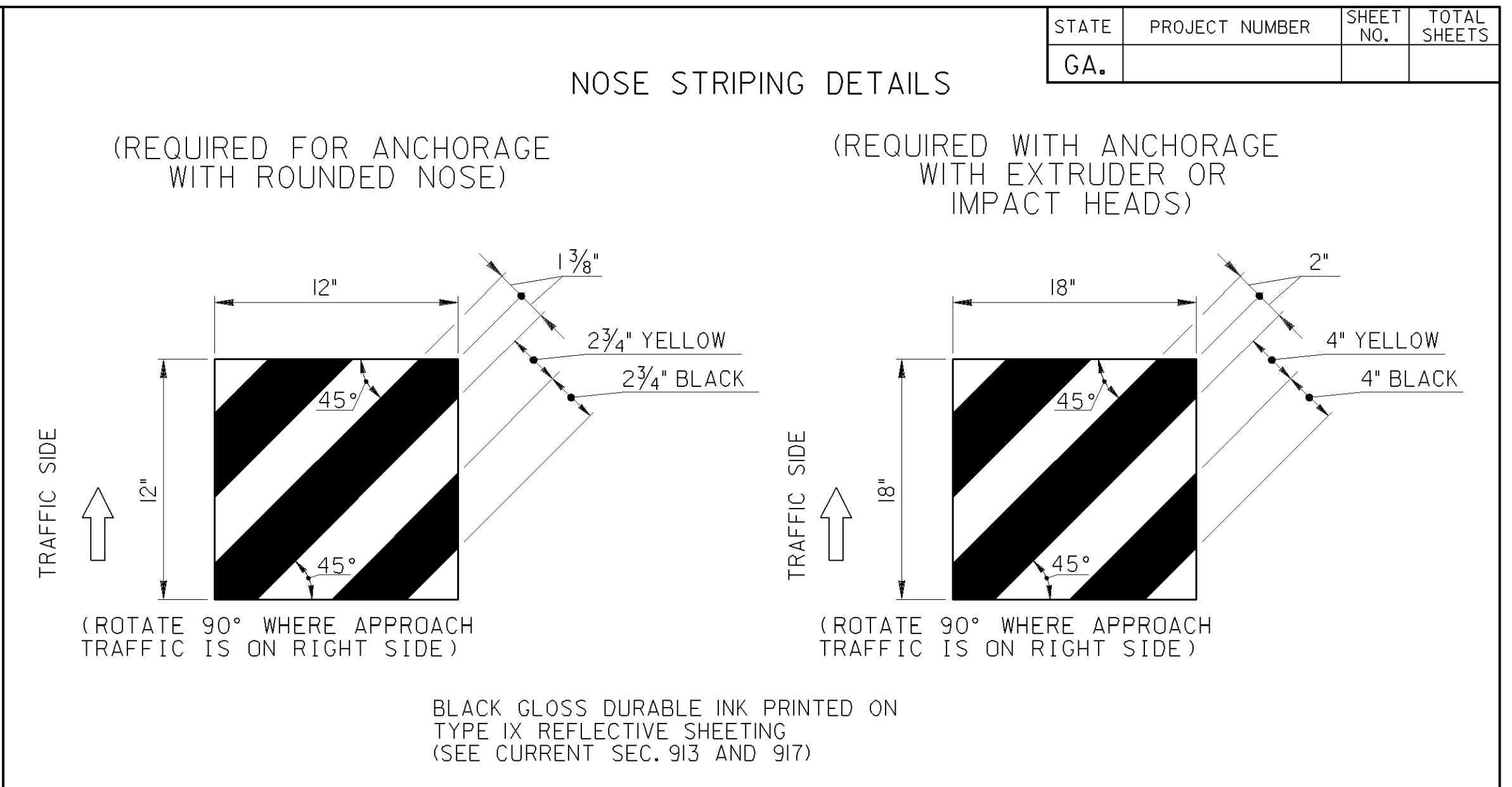


DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA			
STANDARD GUARDRAIL WARRANT GUIDES LENGTHS OF ADVANCEMENT CLEAR ZONE DISTANCES FILL HEIGHT EMBANKMENTS			
REV. ANCH. LOC. UPDATED 1-29-16	FLARE TBL; ADDED CHART 4-16-15	REMOVED SLOPE WARRANTS 9-4-07	REMOVED GUARDRAIL AND CLEAR ZONE 9-4-07
NOT TO SCALE		DEC., 1999	
F.B.F.	B.J.O.	G.L.O.	BY: _____
(SUBMITTED)		STATE DESIGN POLICY ENGINEER	
(APPROVED)		CHIEF ENGINEER	
NUMBER			4000W

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

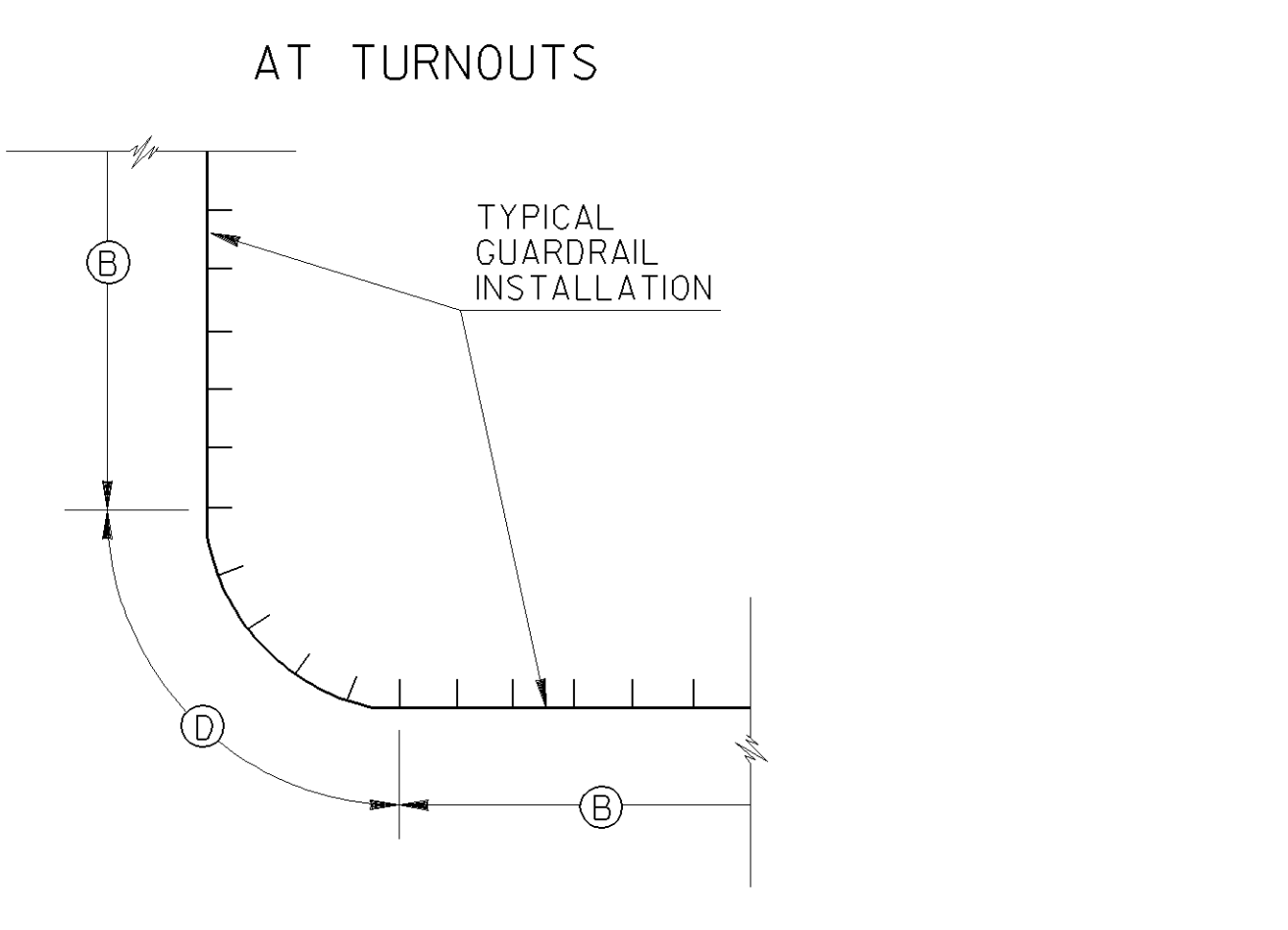
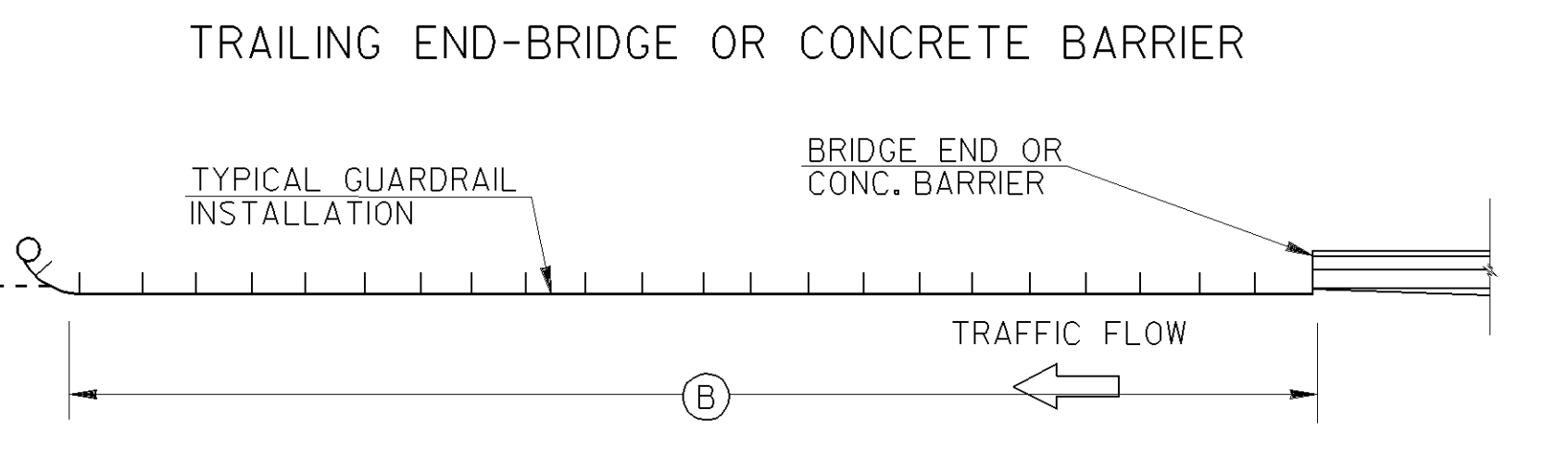
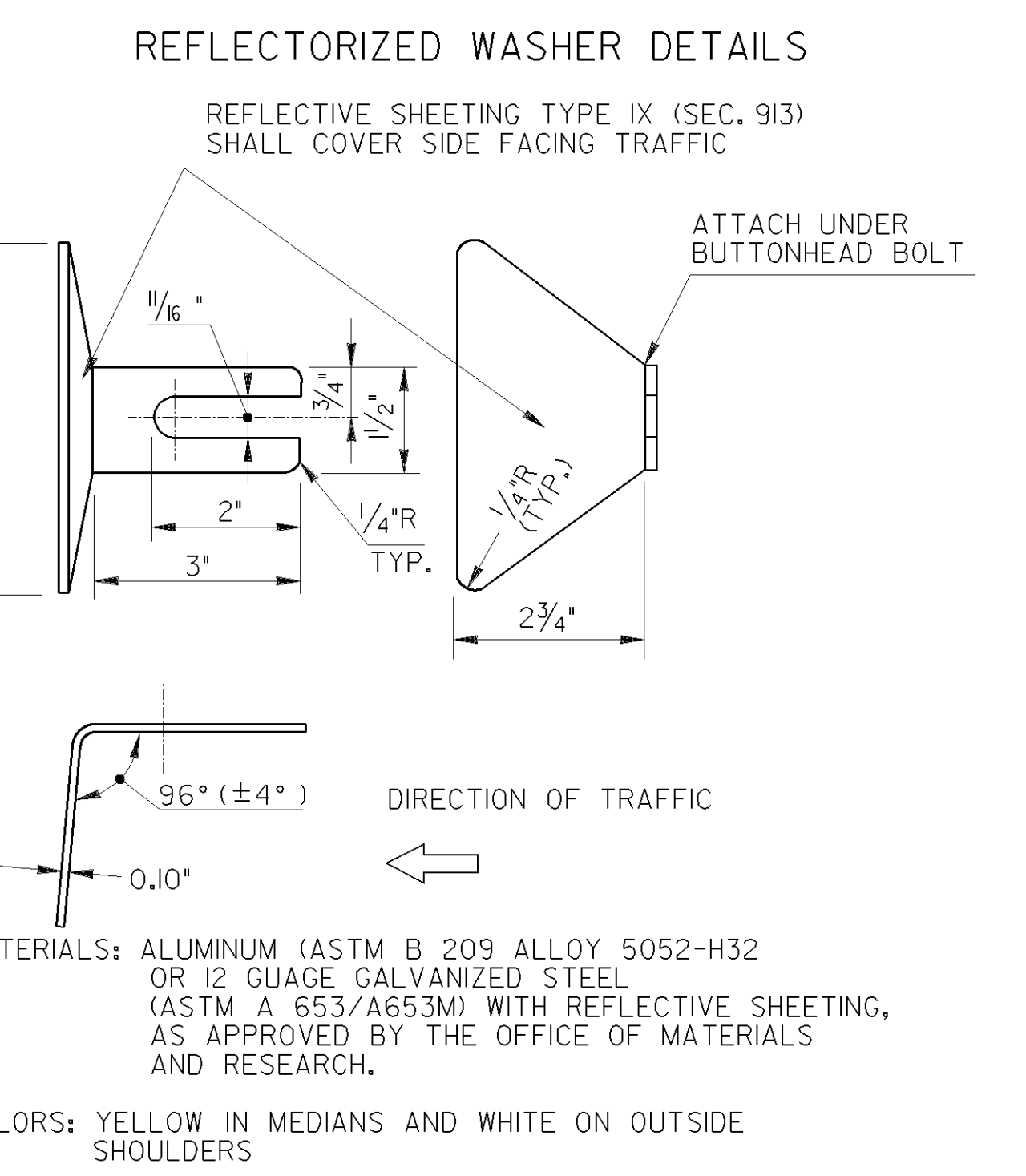


- REFLECTIVE GUARDRAIL DELINEATORS:
1. DELINEATOR SHALL HAVE A MINIMUM THICKNESS OF 0.125 INCHES.
 2. THE DELINEATOR SHALL BE BLACK, HIGH-DENSITY POLYETHYLENE PANEL THAT IS STABILIZED AGAINST ULTRAVIOLET DEGRADATION.
 3. DELINEATOR SHALL HAVE A MINIMUM REFLECTIVE AREA OF 26 SQUARE INCHES FOR RIGHT AND LEFT DELINEATOR AND WILL USE TYPE IX REFLECTIVE SHEETING.
 4. DELINEATOR SHALL MEET THE FOLLOWING COLOR REQUIREMENTS: YELLOW IN THE MEDIAN, WHITE OF THE OUTSIDE SHOULDER AND RED ON THE REVERSE SIDE OF THE DELINEATOR AT RAMP LOCATIONS.
 5. DELINEATOR SHALL HAVE PREDRILLED HOLES IN THE PANEL TO ALLOW THE DELINEATOR TO BE ATTACHED TO WOOD, PLASTIC OR STEEL GUARDRAIL OFFSET BLOCKS WITH SCREWS, NAILS, EPOXY ADHESIVE OR AS PER MANUFACTURER'S RECOMMENDATIONS.



- SPACING OF REFLECTORIZED WASHERS AND DELINEATORS
- (A) -AT ANCHORAGES:
 - TWO (2) REFLECTORIZED WASHERS ARE REQUIRED ON THE RAIL UNDER SPLICE BOLTS AS DIRECT BY THE ENGINEER FOR ELLIPTICALLY FLARED ANCHORAGES WITH ROUNDED END PIECES.
 - NO REFLECTORIZED WASHERS OR DELINEATOR WILL BE USED FOR TANGENTIALLY ALIGNED OR STRAIGHT TAPERED ANCHORAGE WITH EXTRUDER OR IMPACT HEADS;
 - (B) -AT 75 FT. SPACINGS FOR INTERMEDIATE SECTIONS;
 - (C) -THREE WASHERS AT 6'-3" SPACING AT CONNECTIONS TO CONCRETE FACE ON THE APPROACH END;
 - (D) -AT 12'-6" SPACINGS AROUND RADIUS TURNS.

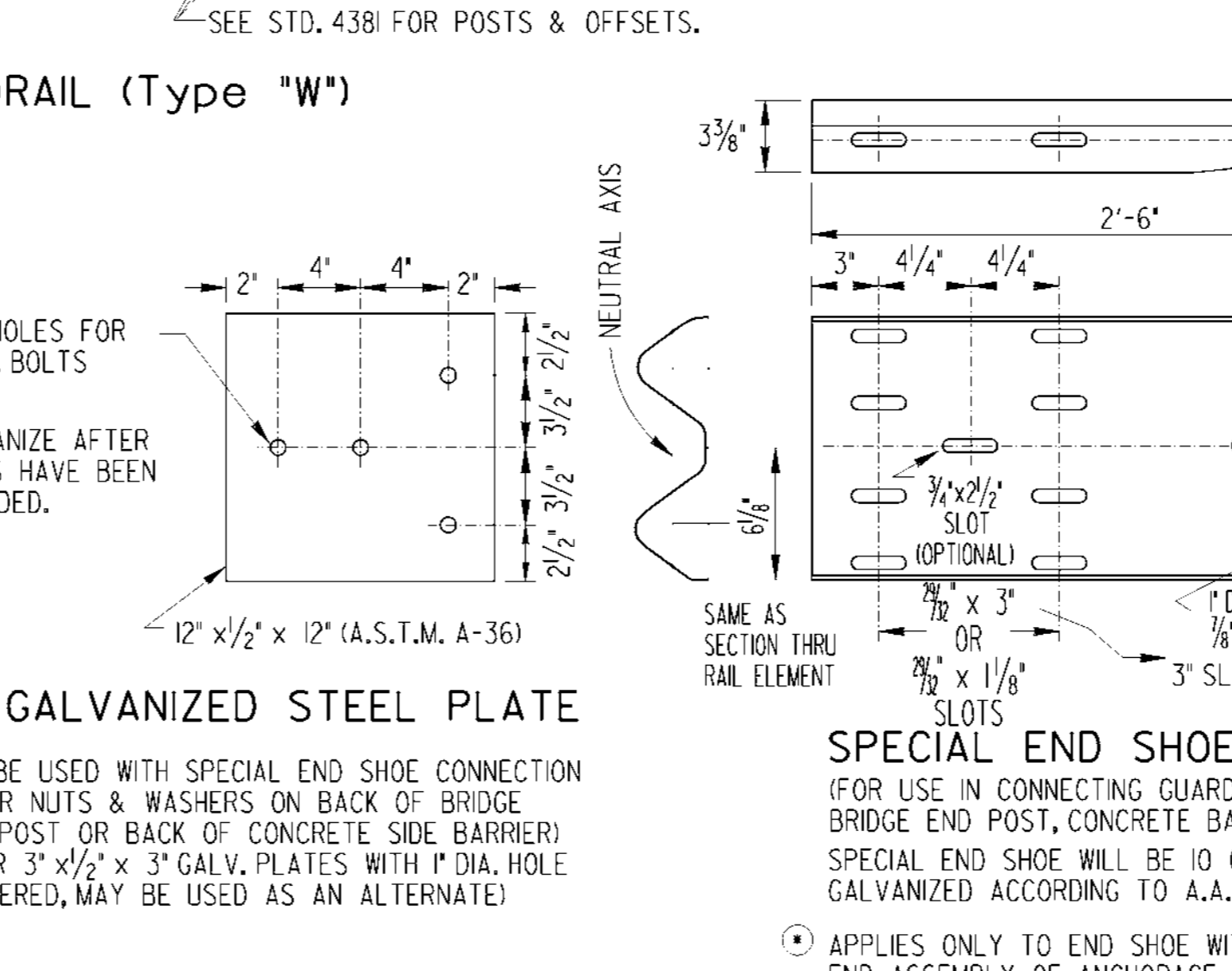
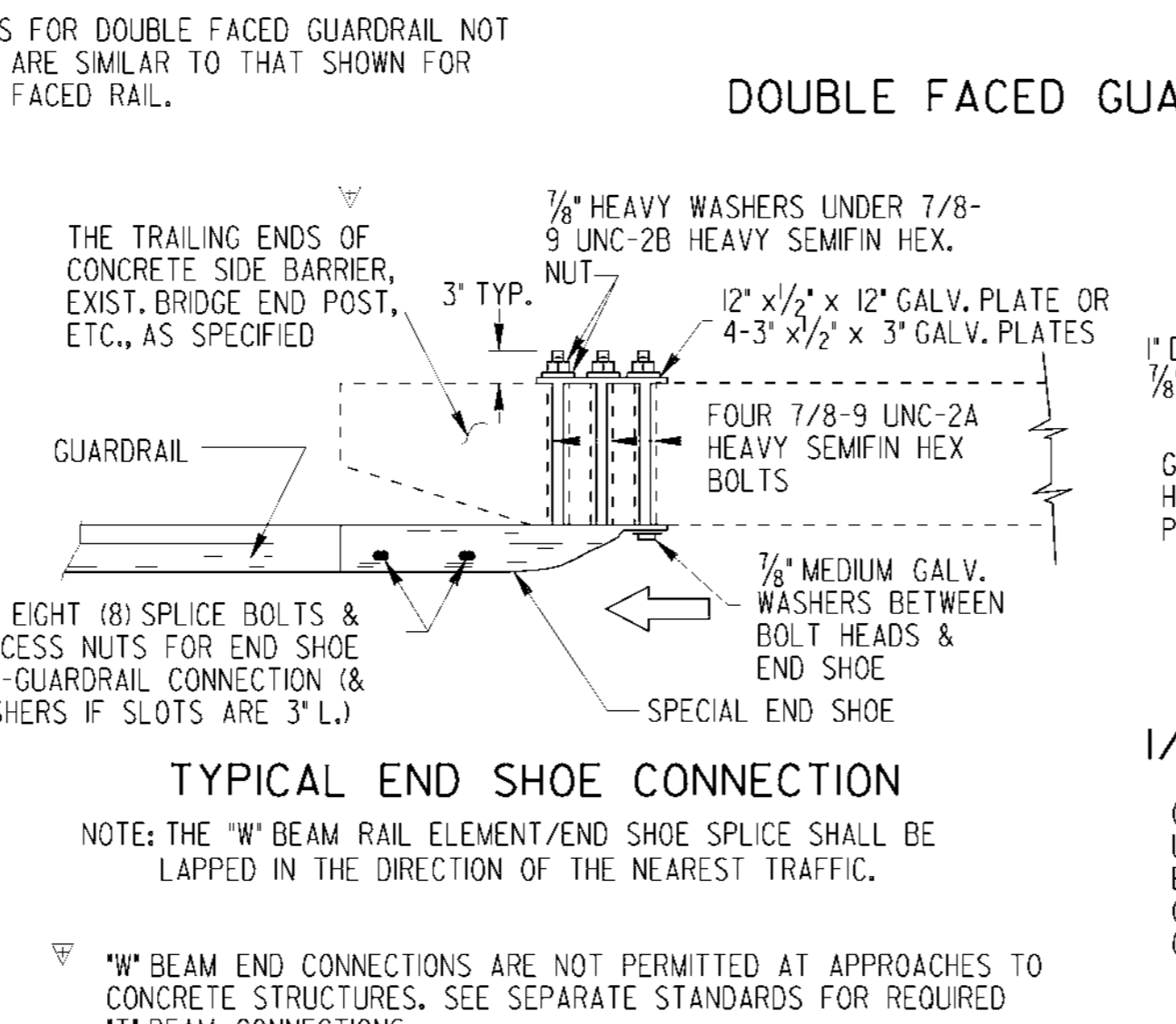
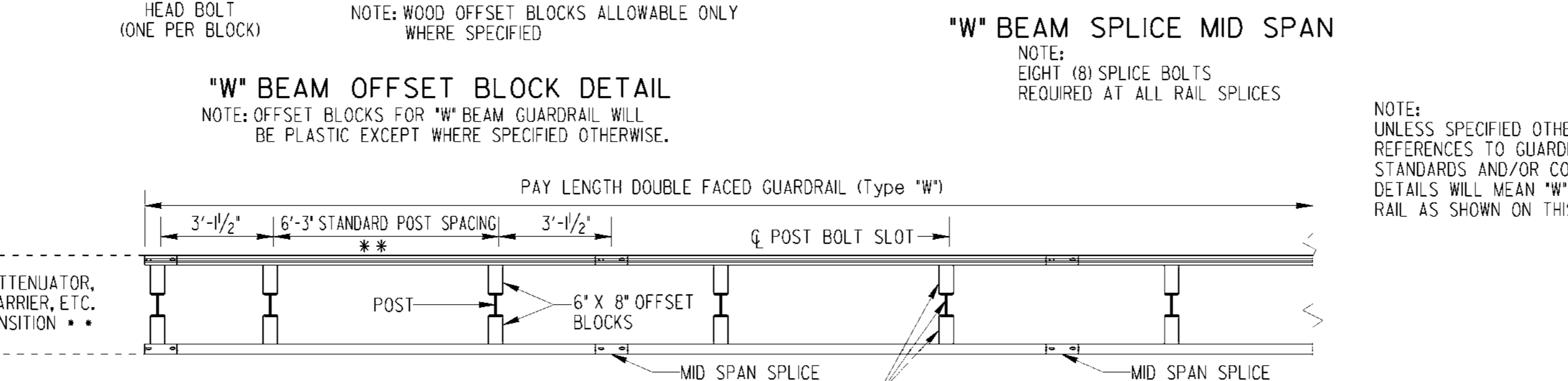
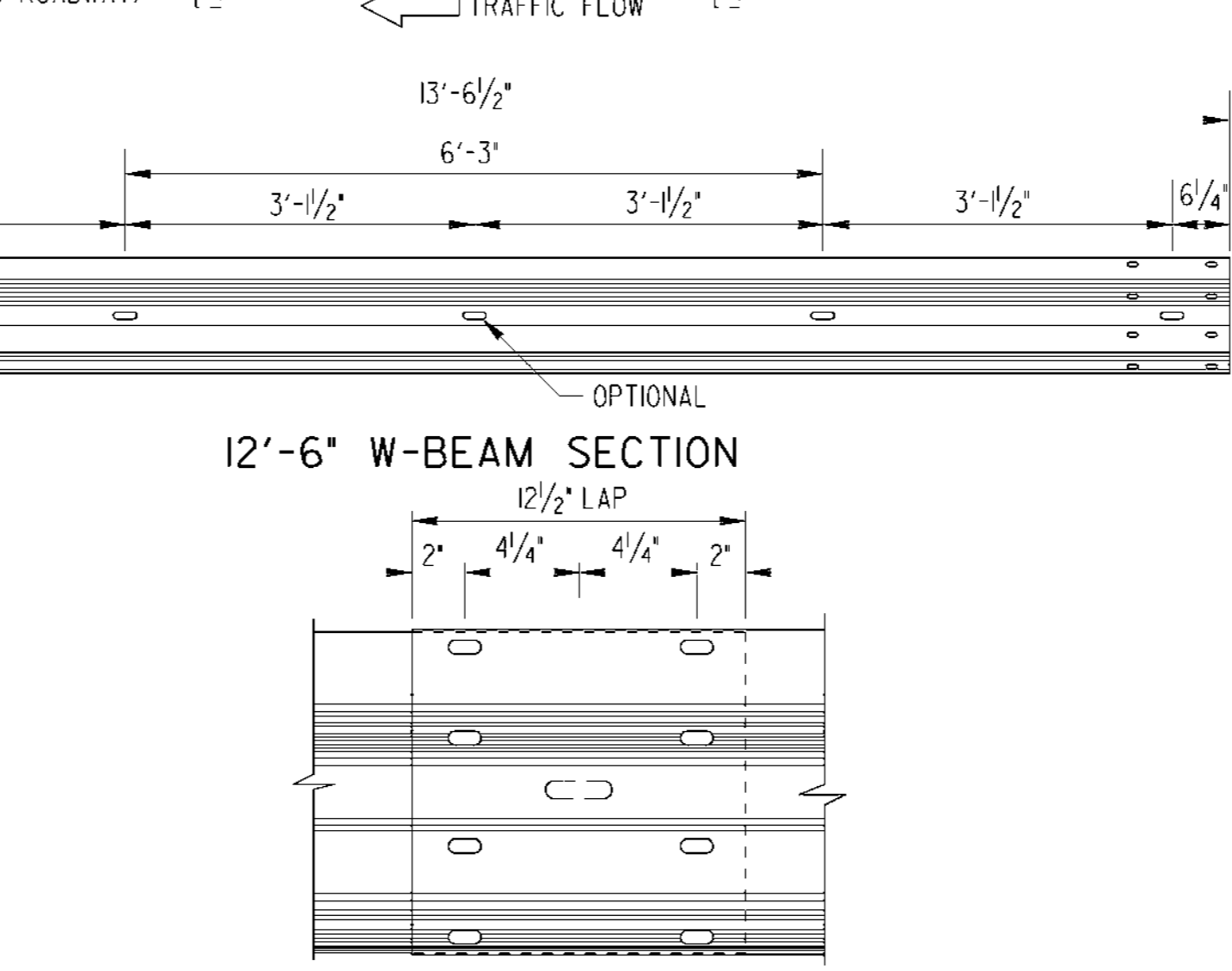
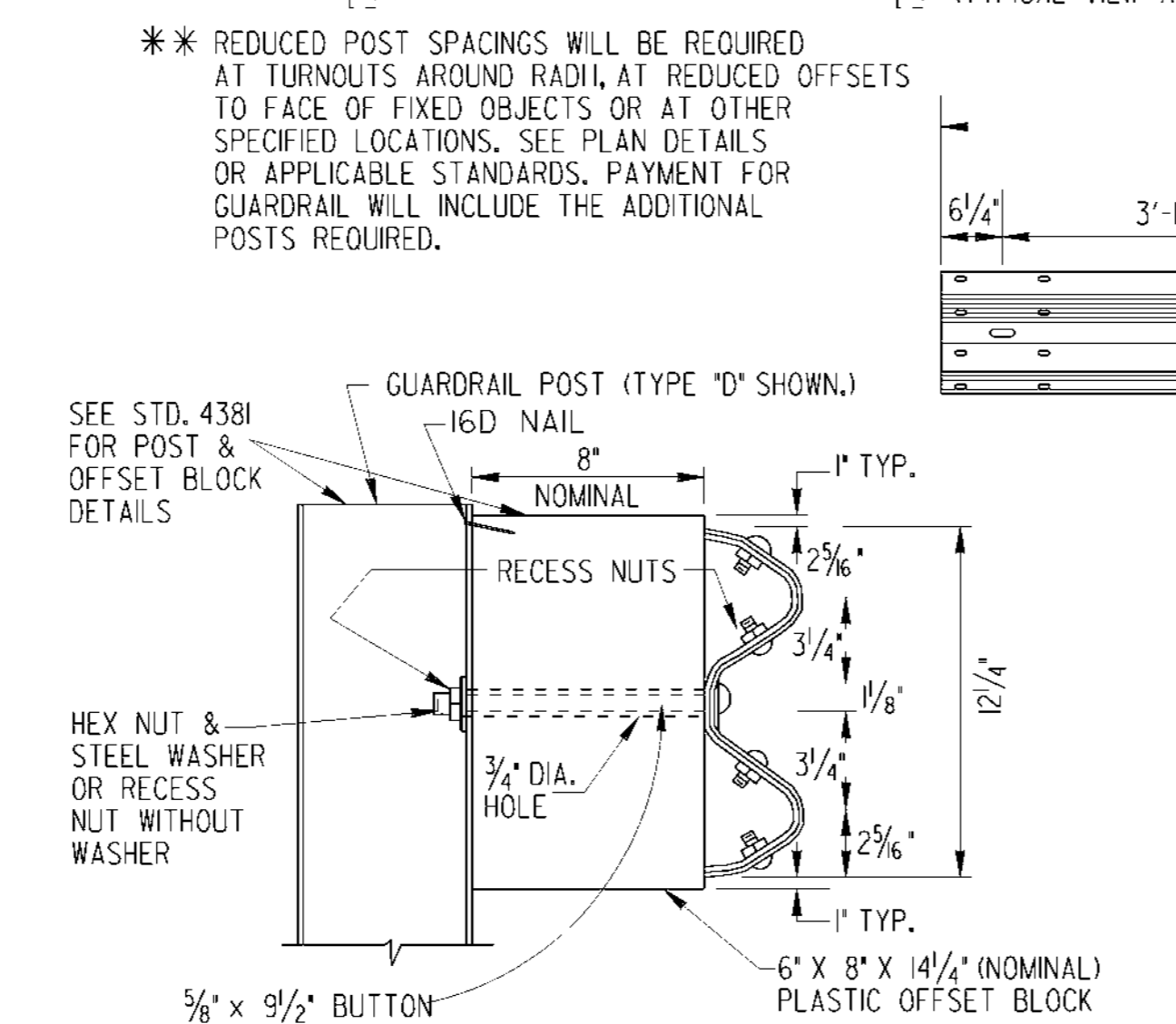
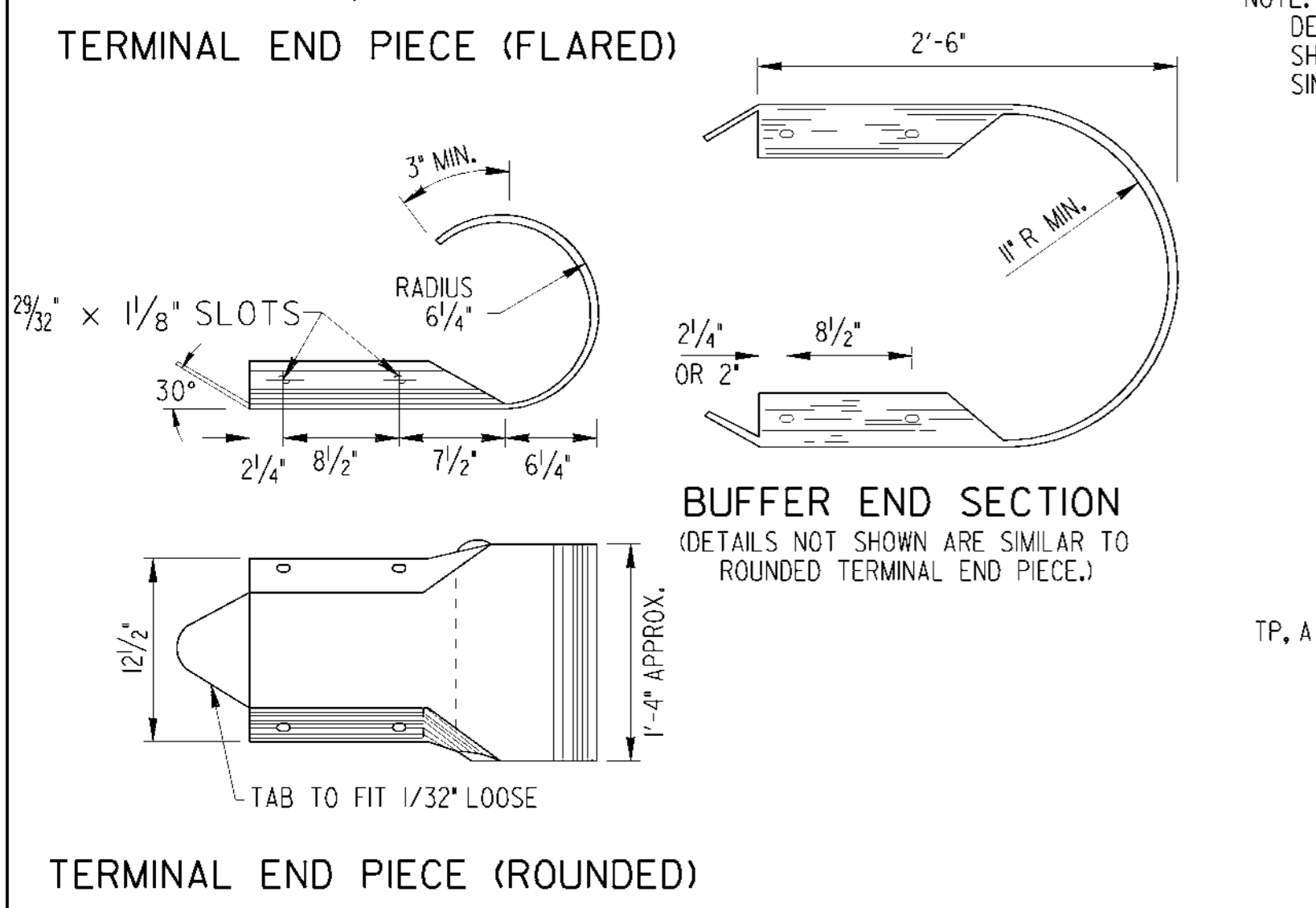
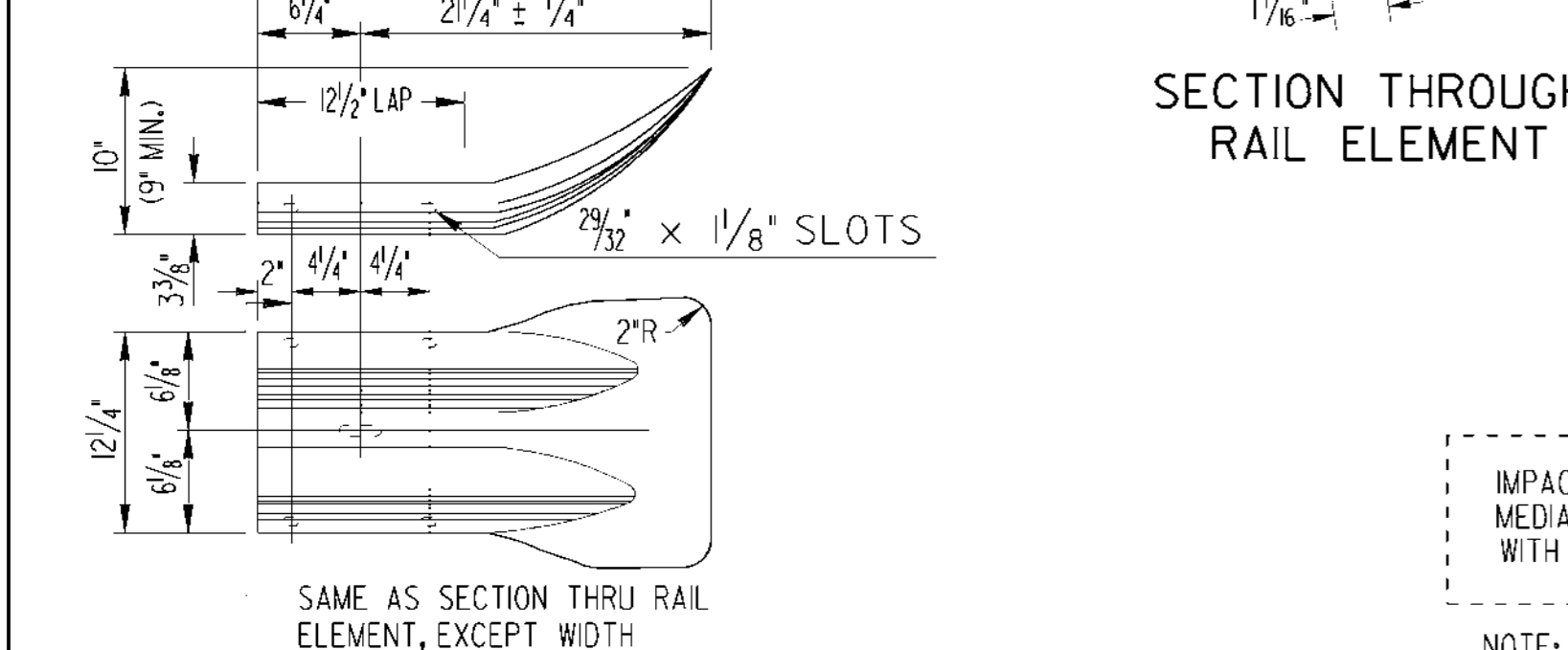
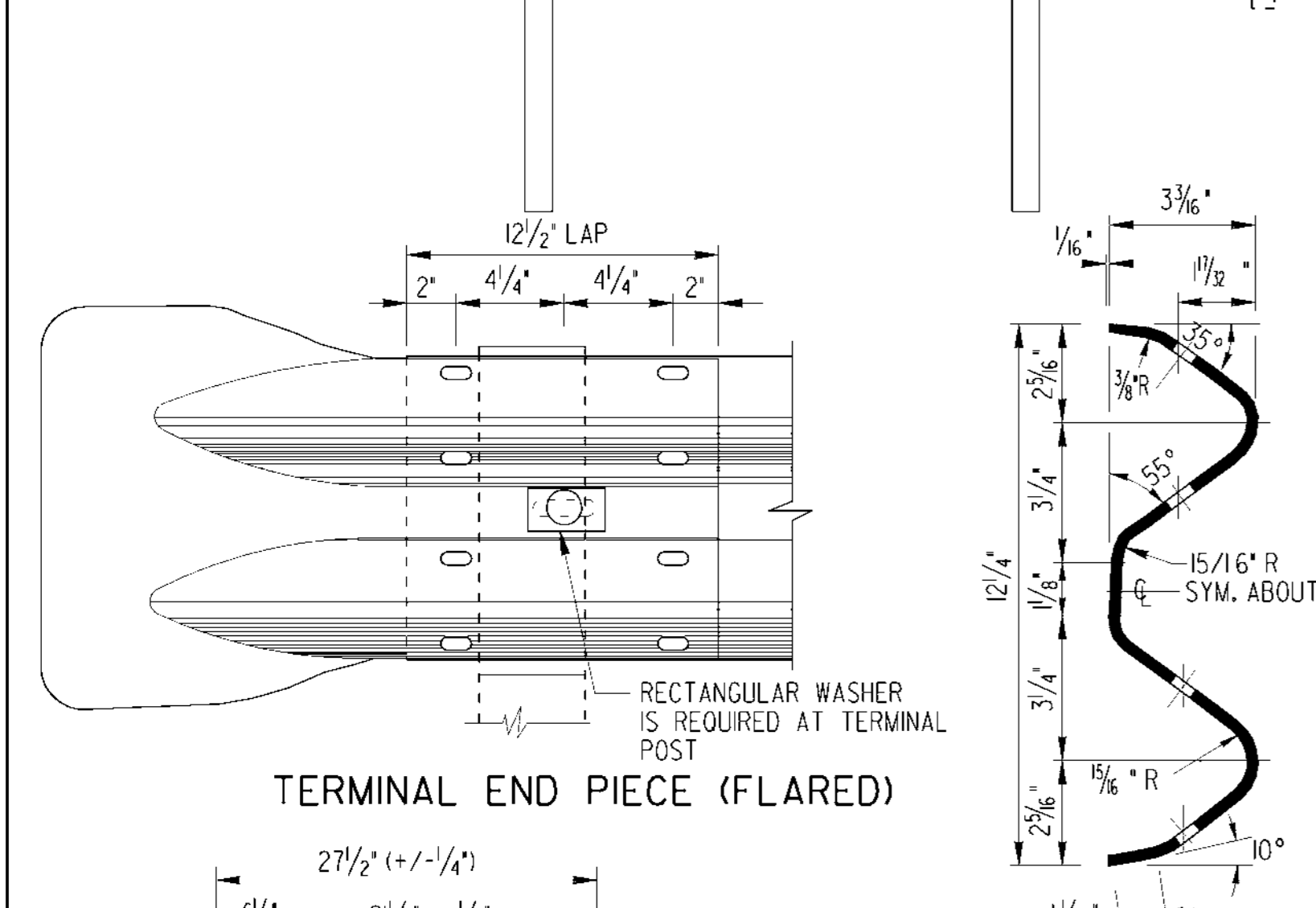
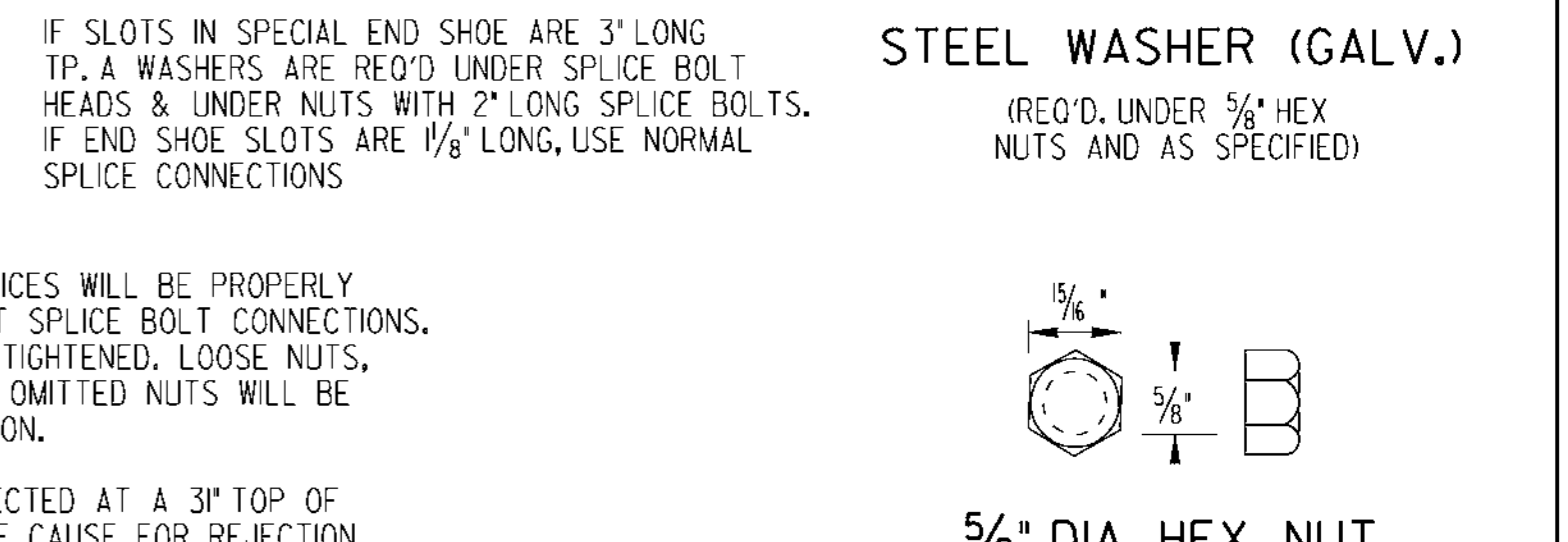
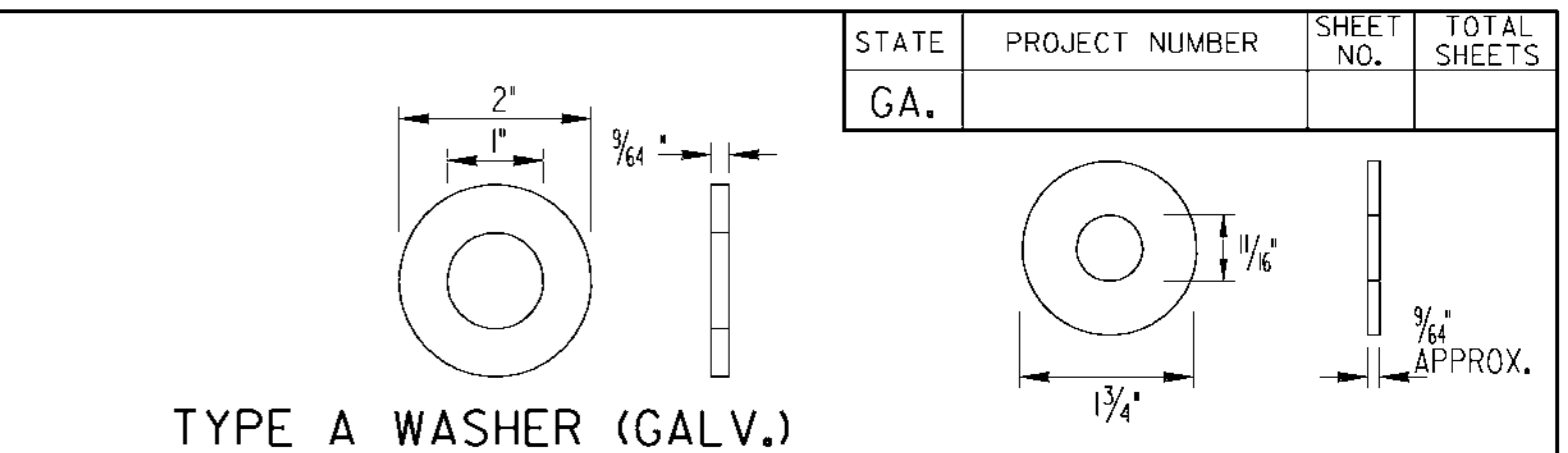
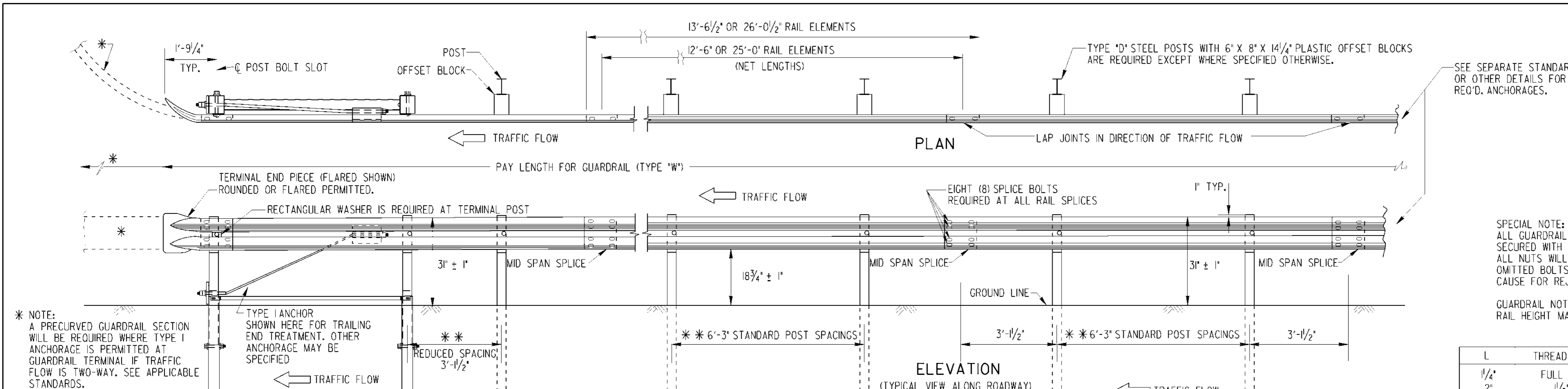
NOTE: THE SPACING WILL BE USED TO INSTALL THE DELINEATOR ON NEW GUARDRAIL, EXISTING GUARDRAIL WITH EXISTING GUARDRAIL WASHERS AND EXISTING GUARDRAIL WITHOUT EXISTING GUARDRAIL WASHERS.



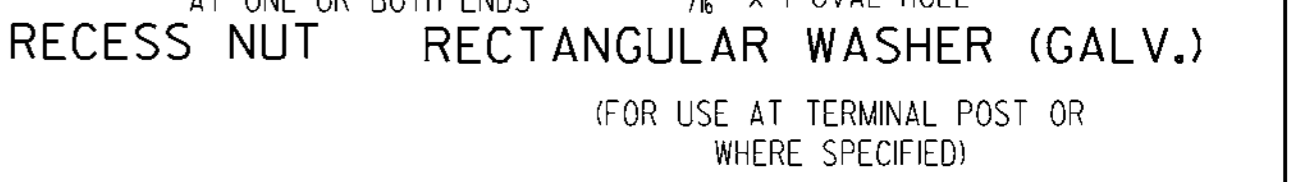
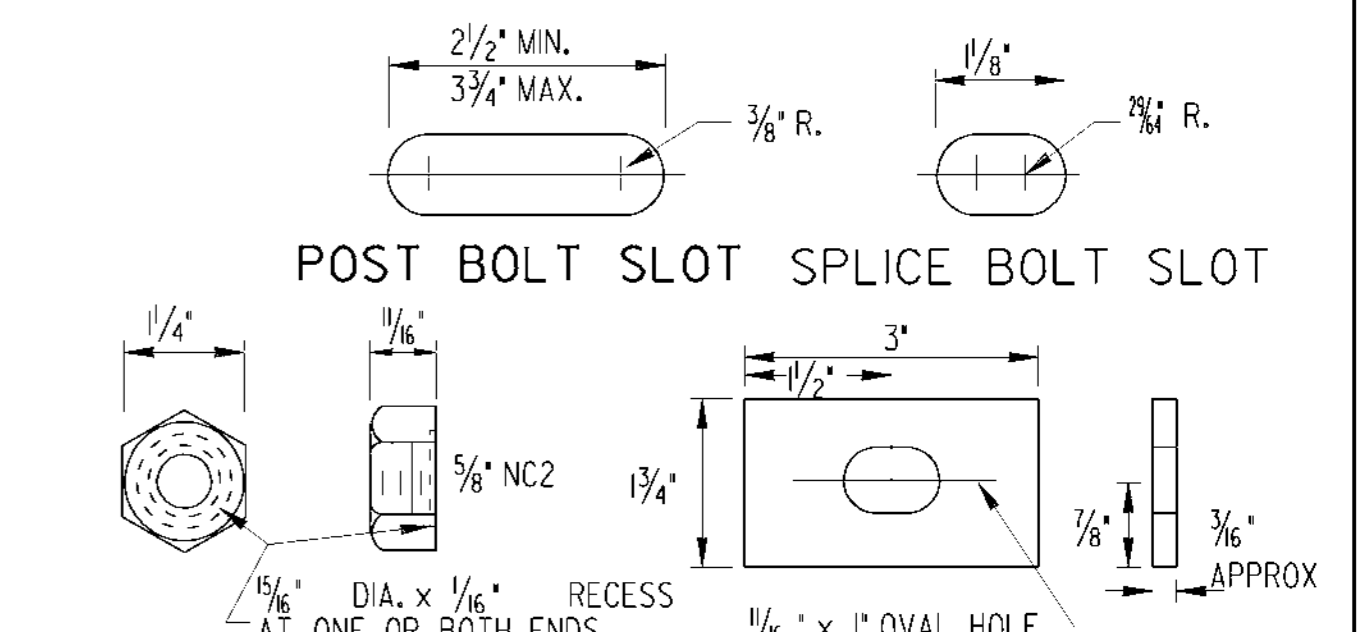
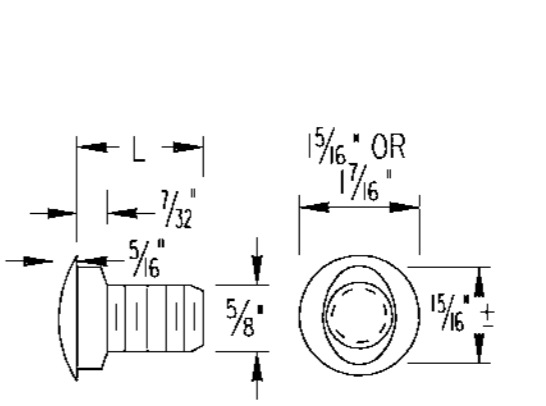
- GENERAL NOTES:
1. SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION, & SUPPLEMENTS THERETO.
 2. SEE SEPARATE STANDARDS FOR DETAILS OF GUARDRAIL INSTALLATIONS, CONNECTING HARDWARE, AND ANCHORAGES.
 3. PAYMENT FOR REFLECTORIZED WASHERS, DELINEATORS AND NOSE STRIPING WILL BE INCLUDED IN THE PAVEMENT FOR GUARDRAIL AND ANCHORS IF INDIVIDUALS PAY ITEMS ARE NOT SHOWN IN THE CONTRACT.
 4. ADJUSTMENTS OF SPACINGS AND/OR REQUIREMENTS FOR REFLECTIVE WASHERS AND DELINEATORS MAY BE DIRECTED BY THE ENGINEER TO SUIT INDIVIDUAL LOCATIONS.
 5. WHERE DOUBLE FACED GUARDRAIL IS LOCATED ON THE INSIDE SHOULDER OF MEDIANS, REFLECTORIZED WASHERS AND DELINEATORS SHALL BE REQUIRED ONLY ON THE SIDE WHICH IS NEAREST TO TRAFFIC, UNLESS SPECIFIED OTHERWISE.
 6. WHEN DOUBLE FACED GUARDRAIL IS LOCATED IN THE CENTER OF THE MEDIAN, REFLECTORIZED WASHER AND DELINEATORS SHALL BE REQUIRED ON BOTH SIDES.

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA			
STANDARD REFLECTORIZED GUARDRAIL WASHERS, DELINEATOR AND ANCHORAGE NOSE STRIPING			
NO SCALE		REV. & REDR. APRIL, 1999	
DES. _____	(SUBMITTED) <i>B. A. State</i>	NUMBER	
DRWN. _____	STATE DESIGN POLICY ENGINEER	4360	
CHK. _____	(APPROVED) <i>Quinn R. McNeely</i>	CHIEF ENGINEER	

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



L	THREAD LENGTH
1/4"	FULL LENGTH
2"	1/2" MIN.
9/2"	1 3/4" MIN.



- GENERAL NOTES:**
- SPECIFICATIONS: GEORGIA STANDARD CURRENT EDITION, AND SUPPLEMENTS THERETO.
 - NUTS, BOLTS, WASHERS, RAIL, TERMINAL SECTIONS, END SHOES, BACK-UP PLATES, END SECTIONS AND OTHER GUARDRAIL HARDWARE ARE IN ACCORDANCE WITH THE CURRENT ARTBA TECHNICAL BULLETIN NO. 268 ... UNLESS SPECIFIED OTHERWISE, DIMENSIONS FOR POSTS AND OFFSET BLOCKS WILL BE ACCORDING TO GA. STANDARD 4381.
 - FOR DETAILS OF GUARDRAIL ANCHORAGES, SEE APPLICABLE STANDARDS AND/OR CONSTRUCTION DETAILS.
 - FOR LOCATION OF GUARDRAIL SEE APPLICABLE LOCATION STANDARDS.
 - ALL STEEL HARDWARE COMPONENTS WILL BE GALVANIZED AFTER FABRICATION. GALVANIZING REPAIR COMPOUND (SEC. 645) WILL BE FIELD APPLIED TO ANY COATINGS DAMAGED.
 - WHEN GUARDRAIL IS REQUIRED ON CURVES WITH RADII LESS THAN 150', PRECURVED RAIL WILL BE REQUIRED.
 - PAYMENT FOR GUARDRAIL (Type "W") TO INCLUDE OFFSET BLOCKS, POST, BACK-UP PLATES WHERE REQUIRED, BOLTS, NUTS, WASHERS, TERMINAL SECTIONS, ADDITIONAL POST WHERE REQUIRED, LEAVE-OUTS INCLUDING GROUT WHERE REQUIRED, & REMOVAL AND REPLACEMENT OF PORTIONS OF MEDIAN PAVING, SPILLWAYS, OR CATCH BASINS WHERE NECESSARY.
 - ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 - STANDARD NET LENGTH OF RAIL ELEMENTS MAY BE EITHER 12'-6" OR 25'-0". THESE LENGTHS SHALL BE ARRANGED TO PROVIDE AS NEARLY AS POSSIBLE THE REQUIRED LENGTH FOR EACH INSTALLATION.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
"W" BEAM GUARDRAIL
31 INCH GUARDRAIL HEIGHT

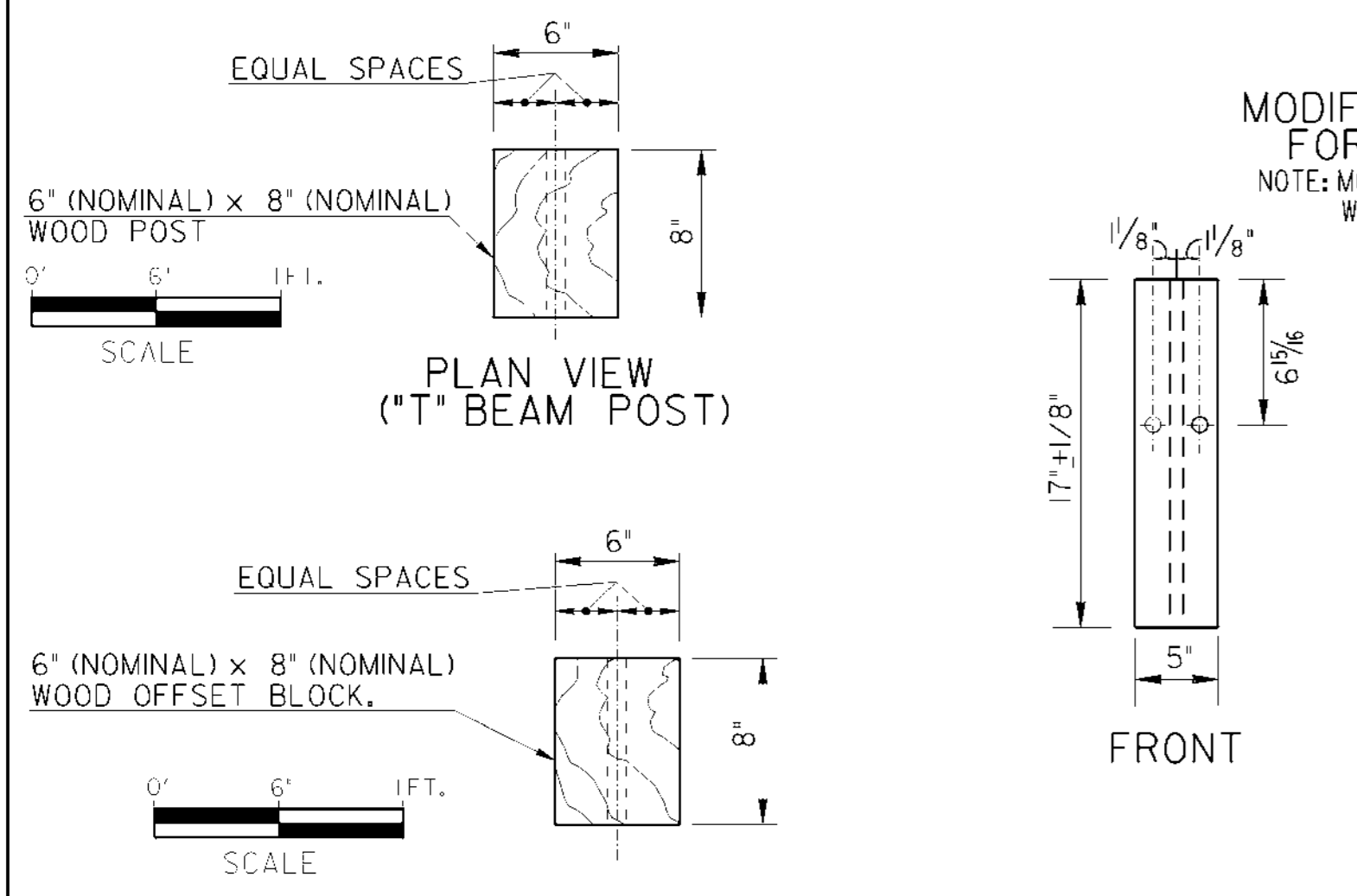
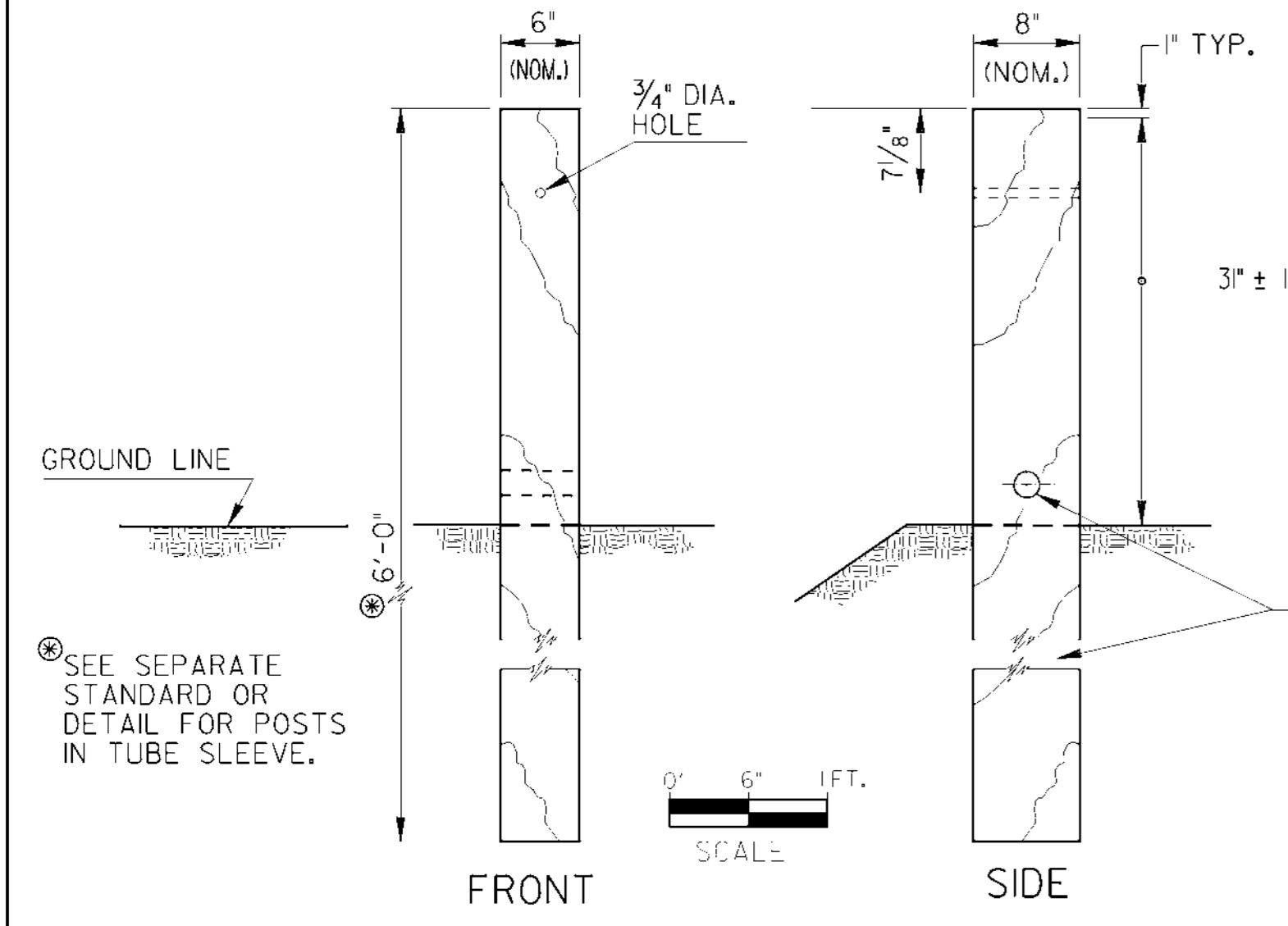
NO SCALE AUGUST 2011

REV.	W-BM BLOCK TO 8" DEPTH	DATE	1-29-16
BY	DES. G.L.O. (SUBMITTED)	DATE	
CHK.	DRW. G.L.O.	DATE	
REVIEW	CHK. B.R.E. (APPROVED)	DATE	
	REVIEW	DATE	

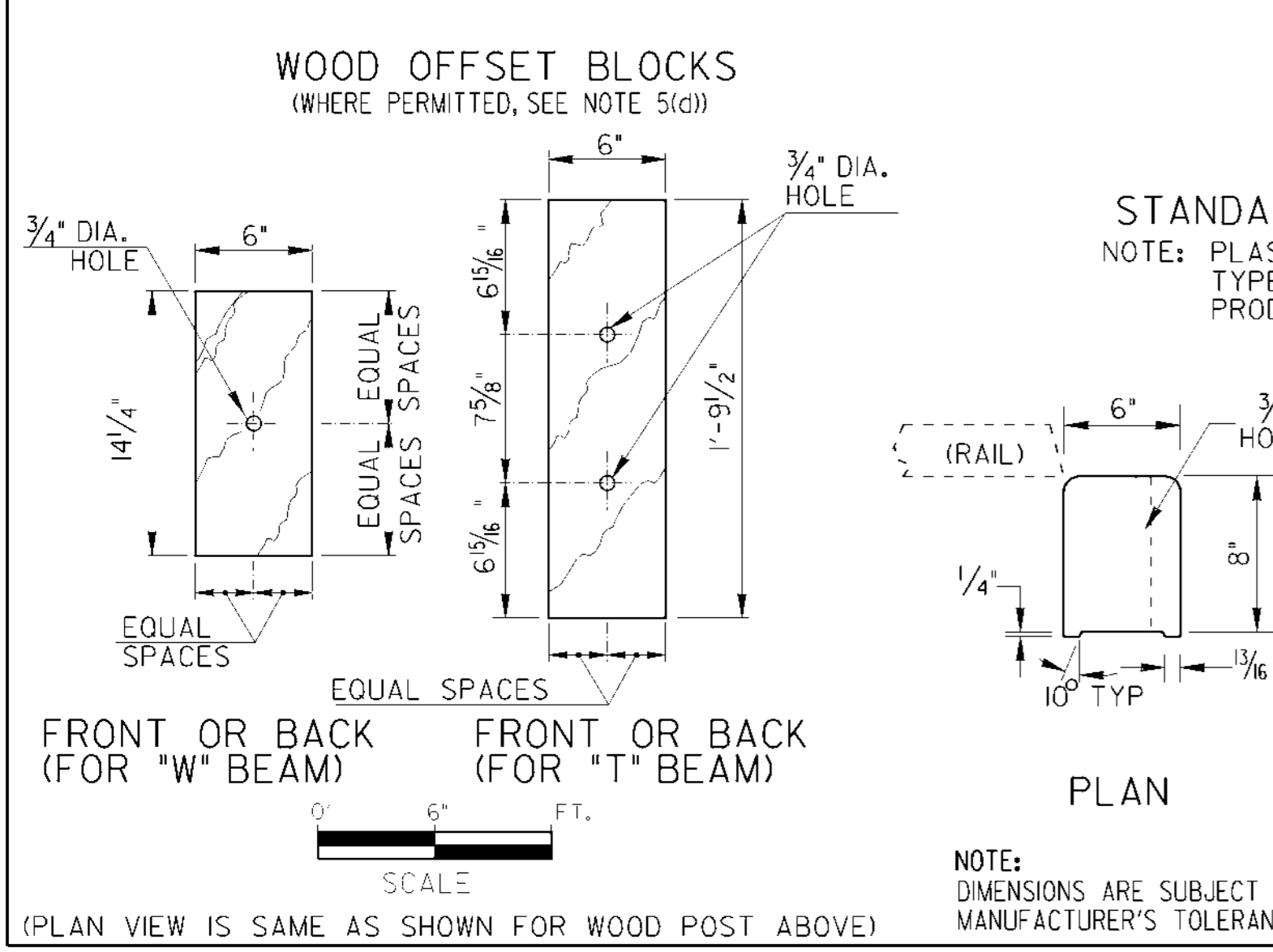
NUMBER
4380

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

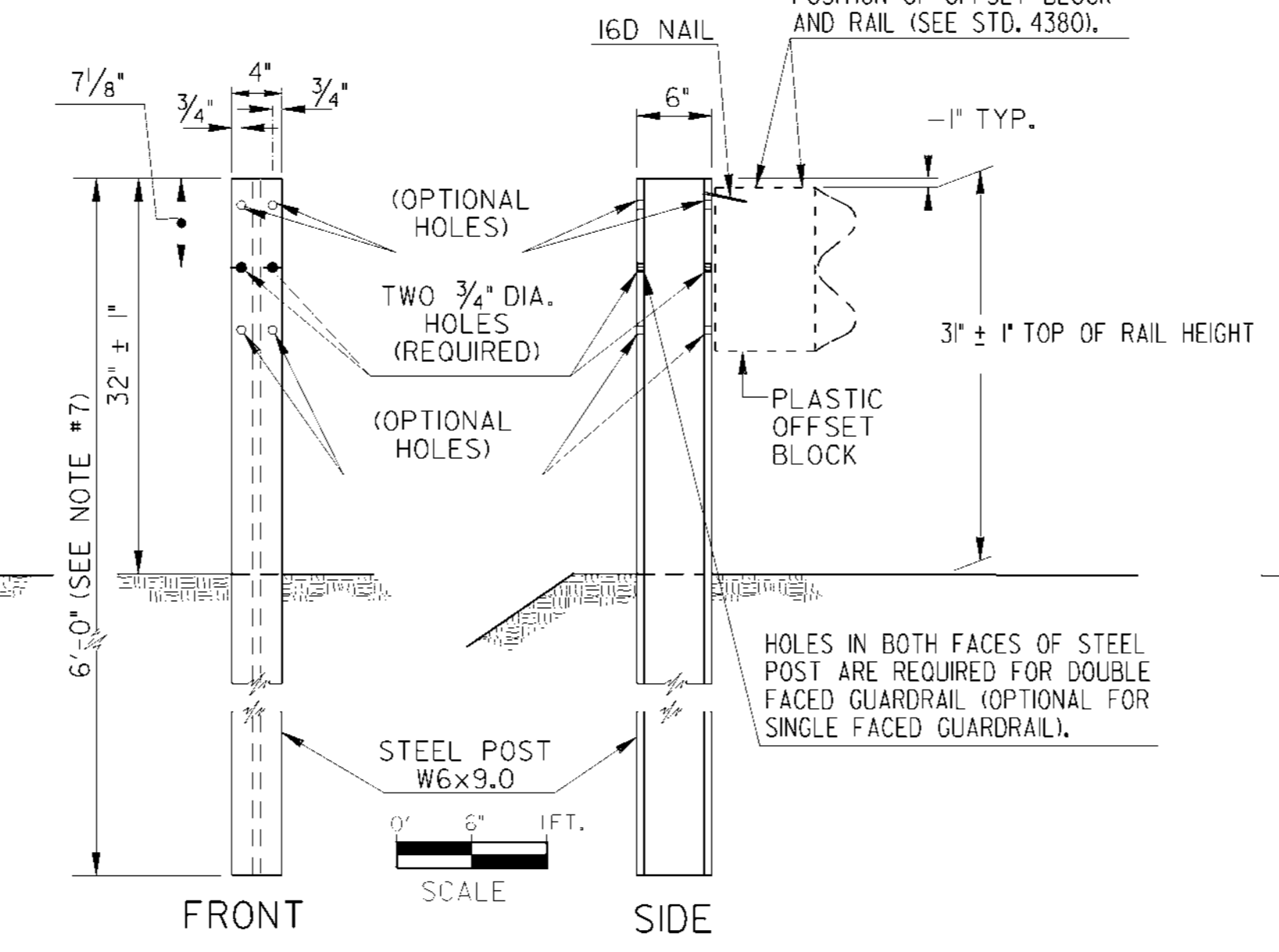
TYPE A WOOD POST (FOR "W" BEAM GUARDRAIL)
NOTE: WOOD POST ARE ALLOWABLE ONLY WHERE SPECIFIED.



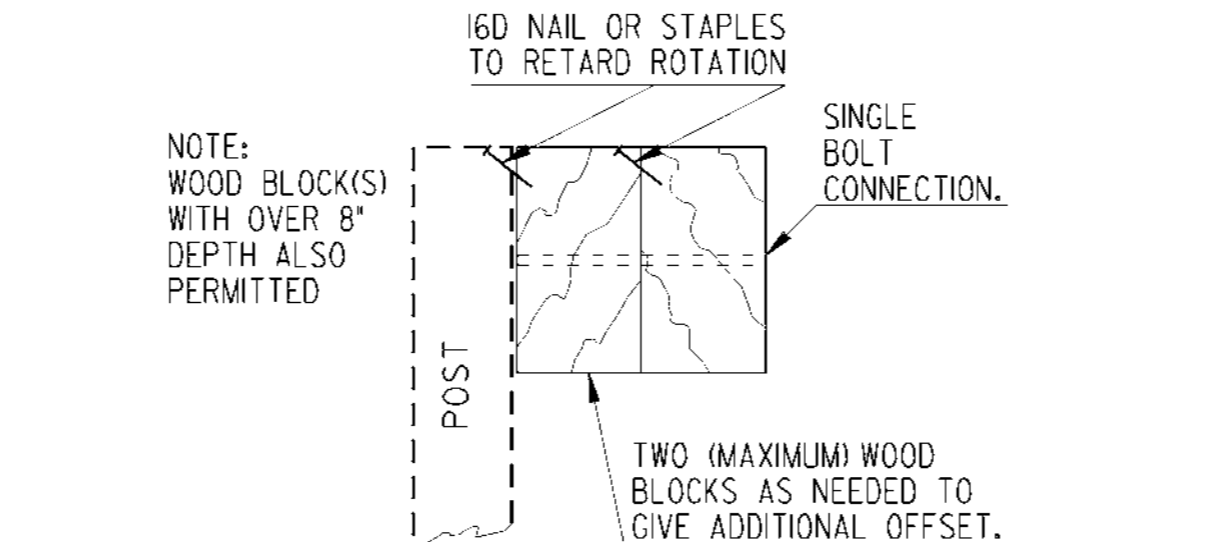
WOOD POSTS AND WOOD OFFSET BLOCKS MAY BE ROUGH OR SURFACED.
DIMENSIONS FOR WOOD POSTS AND WOOD OFFSET BLOCKS ARE NOMINAL IN ACCORDANCE WITH ACCEPTED LUMBER INDUSTRY STANDARDS.
NOTE: WHERE WOOD OFFSET BLOCK ON STEEL POST IS PERMITTED IN "W" BEAM INSTALLATION, A NAIL OR SCREW FROM POST TO WOOD IS REQUIRED TO PREVENT ROTATION OF THE BLOCK.



TYPE D STEEL POST (FOR "W" BEAM GUARDRAIL)

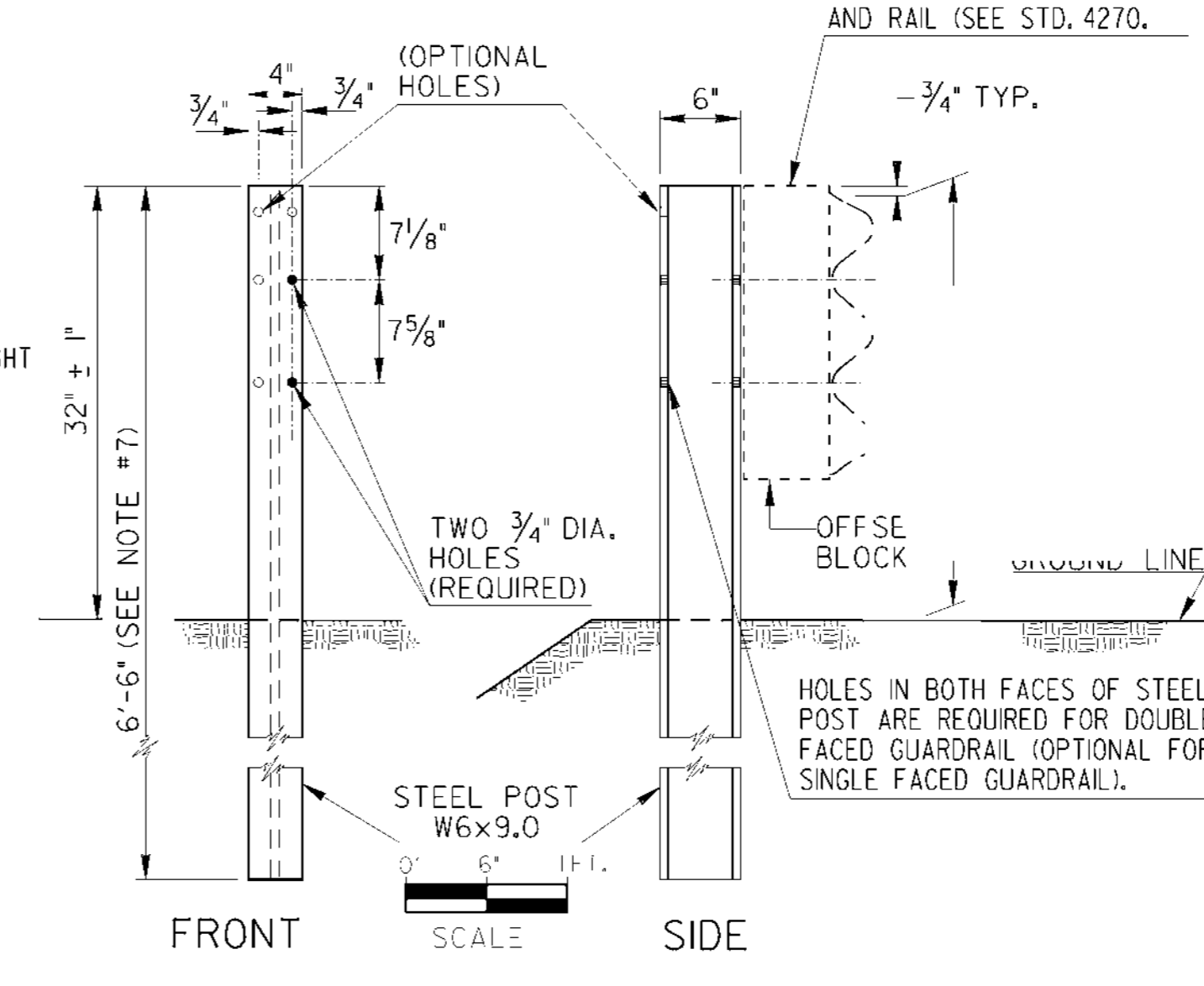


ADDITIONAL DEPTH OFFSET BLOCKOUTS
(FOR USE WHERE GREATER THAN STANDARD OFFSET IS SPECIFIED)

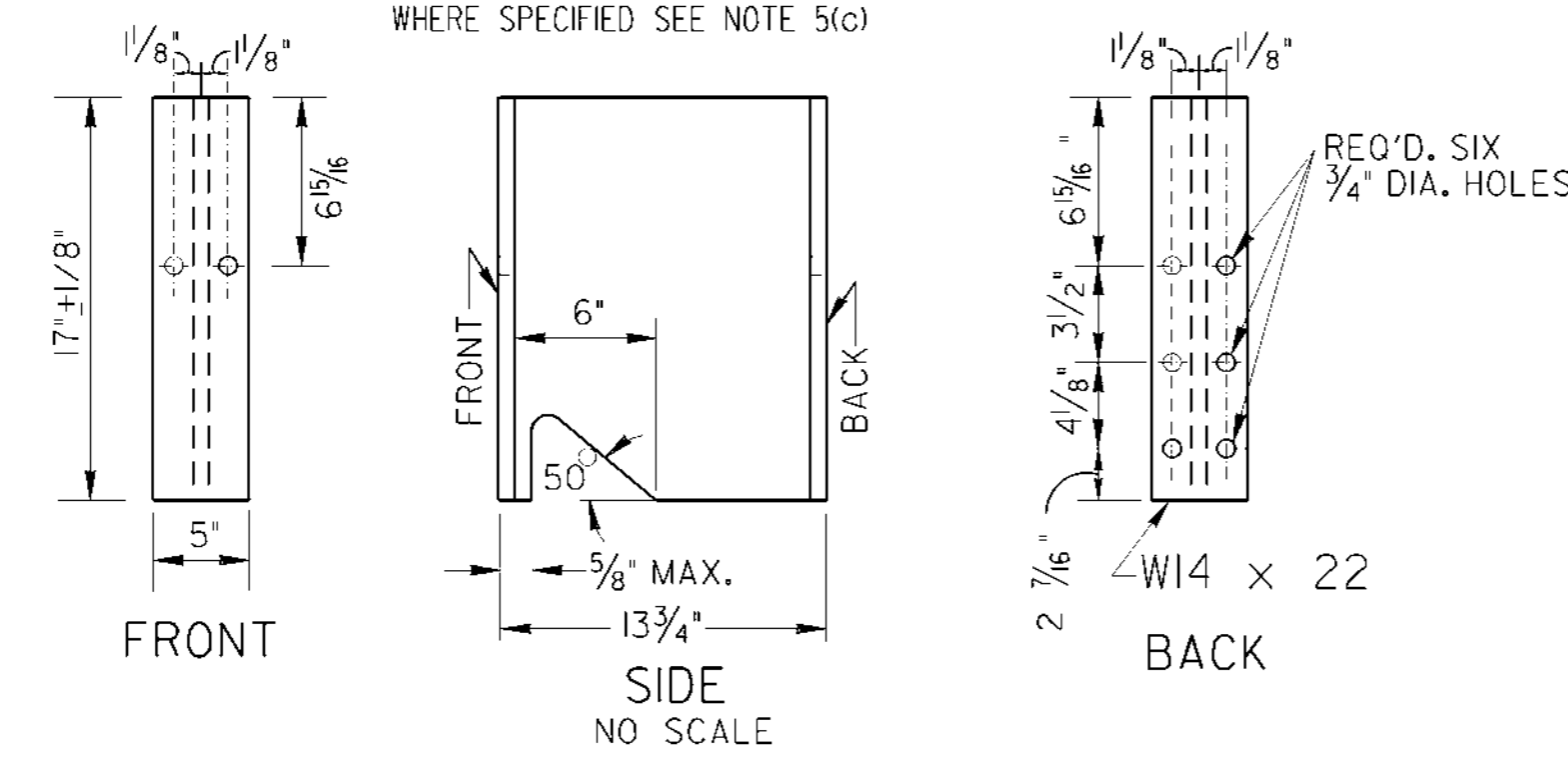


NOTE: ADDITIONAL DEPTH OFFSETS BELOW ARE SHOWN FOR "W" BEAM. SIMILAR OFFSETS MAY BE APPLIED FOR "T" BEAM GUARDRAIL.
NOTE: ADDITIONAL DEPTH OFFSETS ARE PERMITTED ONLY WHERE AN ISOLATED POST MUST BE PLACED AT A GREATER THAN NORMAL OFFSET.
NOTE: FOR BLOCK CONNECTION TO POST AND TO RAIL SEE STD. 4380 OR 4385.

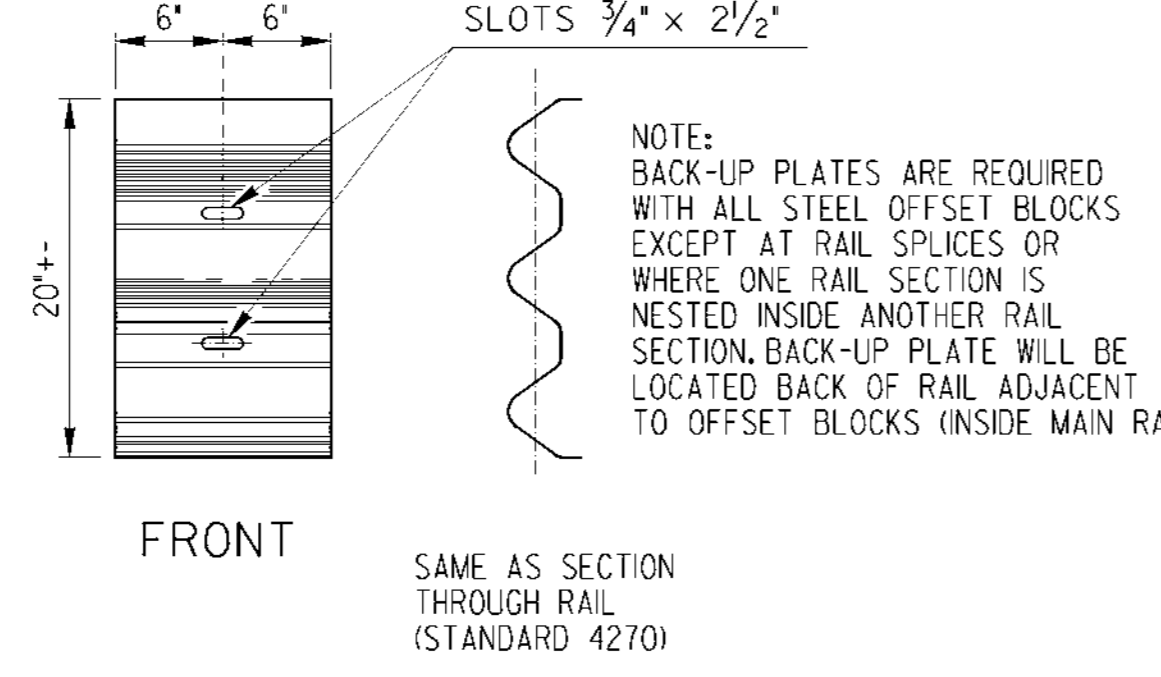
TYPE D-T STEEL POST (FOR "T" BEAM GUARDRAIL)



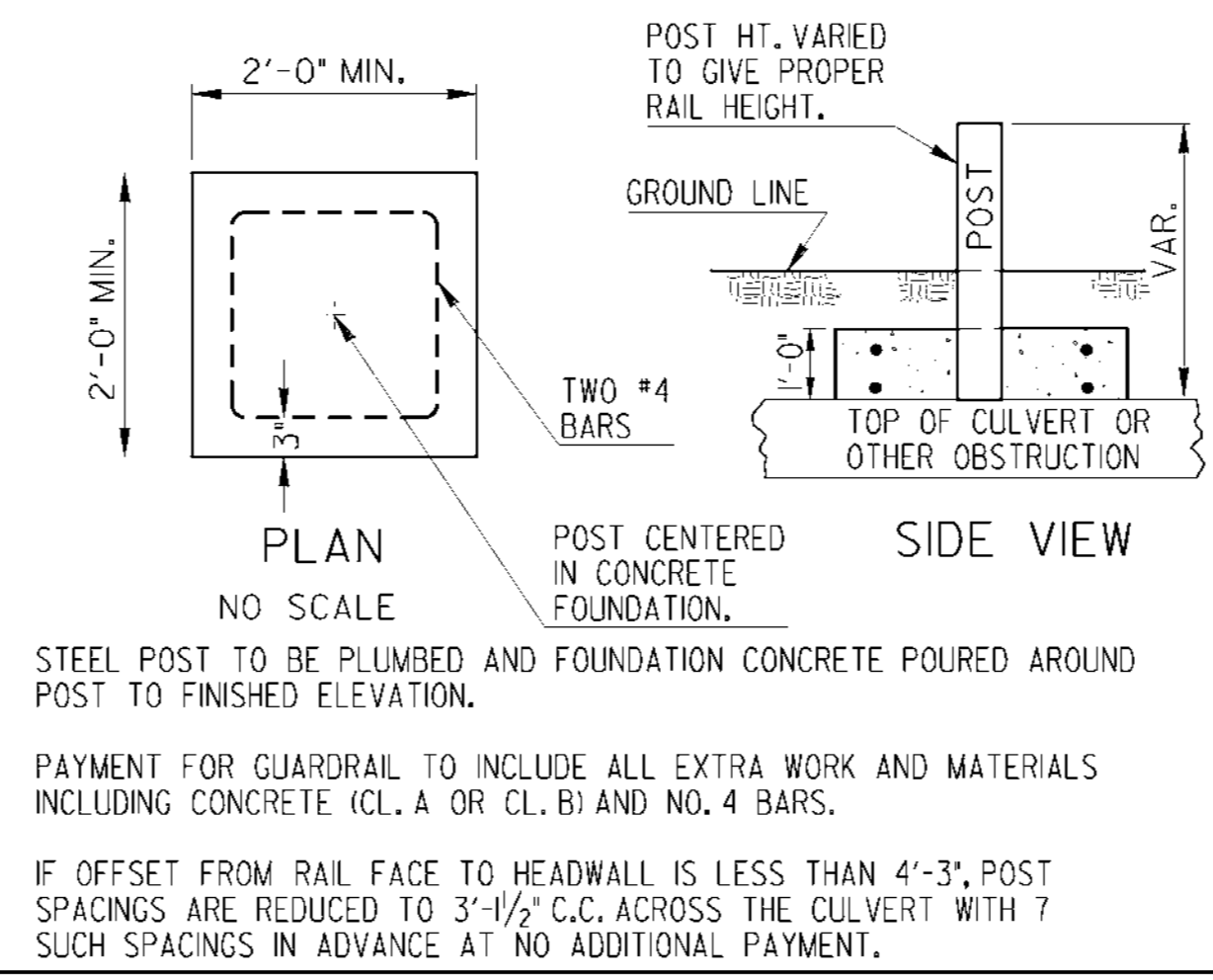
MODIFIED STEEL OFFSET BLOCK FOR "T" BEAM GUARDRAIL
NOTE: MODIFIED STEEL OFFSET BLOCK ARE USED ONLY WHERE SPECIFIED SEE NOTE 5(c)



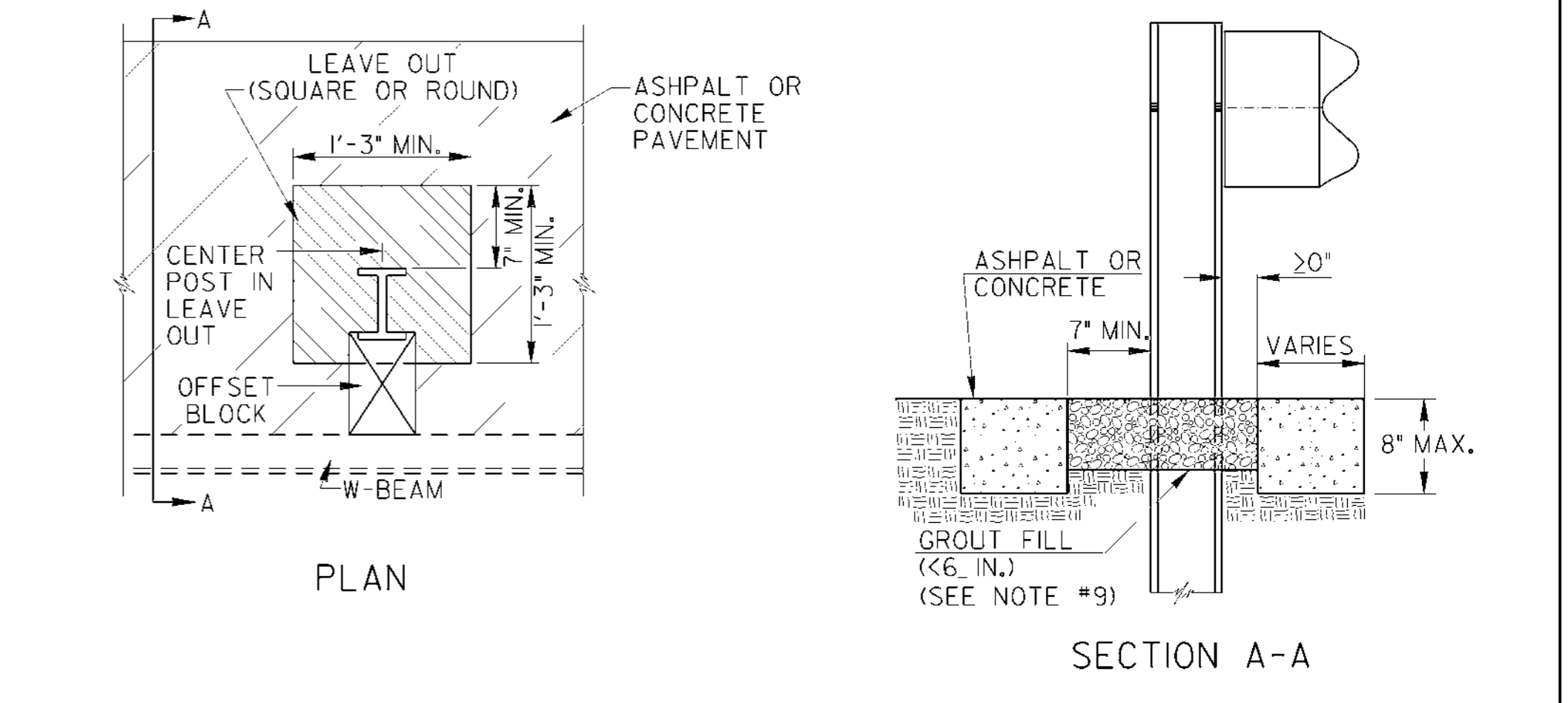
BACK-UP PLATE (FOR "T" BEAM GUARDRAIL)



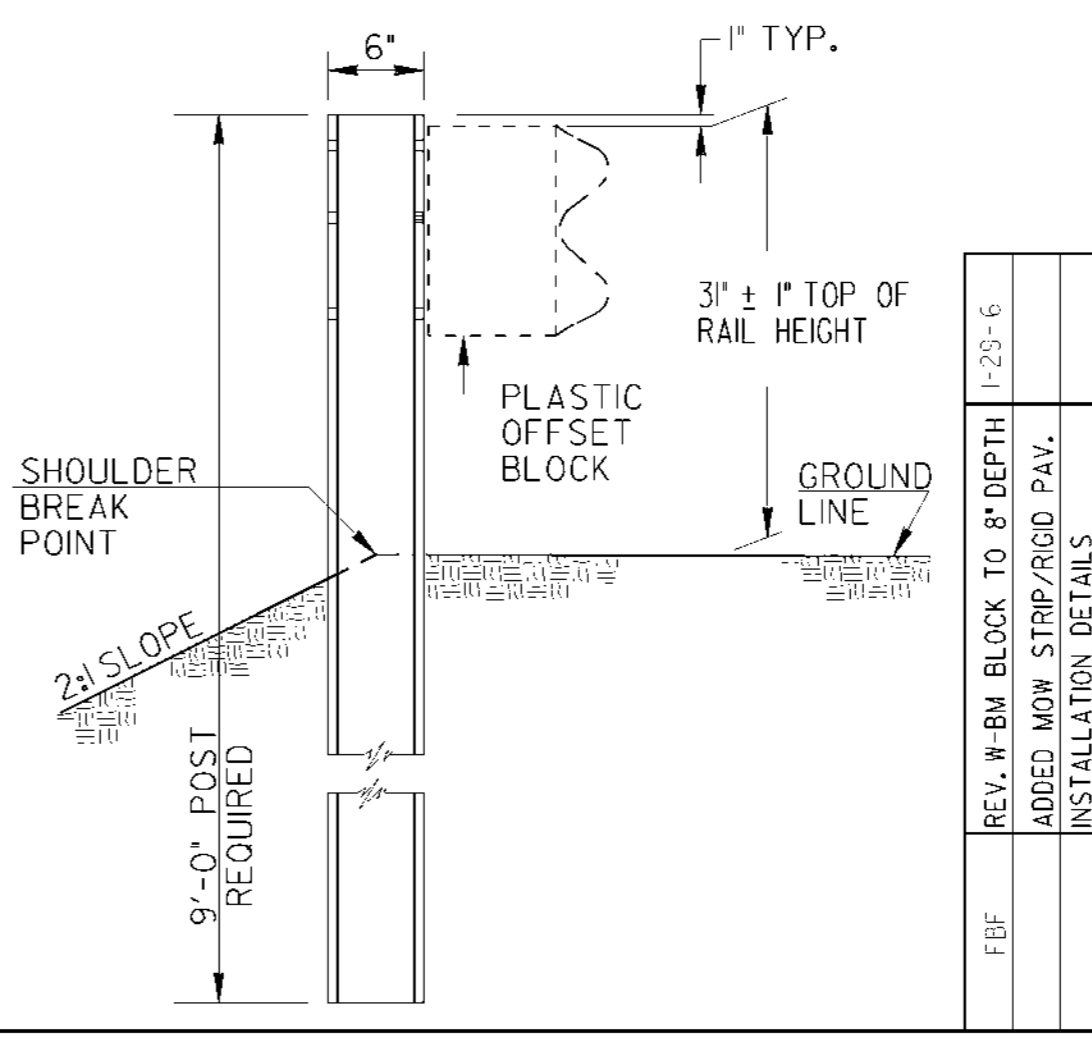
CONCRETE FOUNDATION FOR POST IN SHALLOW FILLS OVER CULVERTS OR OTHER OBSTRUCTIONS
(NOTE: PLATE MOUNTED POST MAY BE USED AS AN ALTERNATE, SEE SEPARATE SHEET)



GUARDRAIL POST DETAILS IN ASPHALT OR CONCRETE PAVEMENT APPLICATIONS



2:1 SLOPE DETAIL



- GENERAL NOTES:**
- SPECIFICATIONS GEORGIA STANDARD, CURRENT EDITION AND SUPPLEMENTS THERETO.
 - STEEL POSTS MAY BE EITHER ROLLED OR WELDED STRUCTURAL SHAPES. STEEL OFFSET BLOCKS SHALL BE ROLLED. WELDED POSTS SHALL BE SEAL WELDED BETWEEN WEB AND FLANGE BEFORE GALVANIZING.
 - WHERE WOOD POST OR WOOD OFFSET BLOCKS ARE PERMITTED, THE WOOD SHALL BE TREATED IN ACCORDANCE WITH GEORGIA STANDARD SPECIFICATIONS.
 - ALL BOLTS USED FOR FASTENING THE RAIL AND OFFSET BLOCKS TO WOOD POSTS SHALL HAVE SUFFICIENT LENGTH TO EXTEND AT LEAST 1/4" BEYOND THE FULL NUT, UP TO 3" BEYOND.
 - (c) "W" BEAM GUARDRAIL: ALL OFFSET BLOCKS SHALL BE 8" DEPTH PLASTIC BLOCKS EXCEPT FOR (d) BELOW.
(b) "T" BEAM GUARDRAIL: STANDARD INSTALLATION WILL USE 8" DEPTH PLASTIC BLOCKS UNLESS OTHERWISE APPROVED.
(c) 13 3/4" DEPTH MODIFIED STEEL OFFSETS MAY BE SPECIFIED WHERE JUSTIFIED FOR MORE SEVERE CONDITIONS. PAY ITEM IS --GUARDRAIL, TP T, MODIFIED OFFSET BLOCK-- PER LIN. FT.
(d) WOOD OFFSET BLOCKS MAY BE USED ONLY AT AN ISOLATED LOCATION WITHIN A RUN OF GUARDRAIL, WHERE OTHER BLOCK TYPES WOULD NOT PROVIDE PROPER FIT, AS DETERMINED BY THE ENGINEER OR SHOWN IN THE PLANS.
 - POSTS WILL BE SPACED AT 6'-3" C. TO C., UNLESS OTHERWISE NOTED.
 - ADDITIONAL LENGTH POSTS, WHERE SPECIFIED, SHALL BE 7'-0" AND 7'-6" LONG FOR "W" BEAM AND "T" BEAM GUARDRAILS RESPECTIVELY, WITH HOLES DIMENSIONED FROM THE POST-TOP THE SAME AS SHOWN.
 - 9'-0" POST REQUIRED IF GUARDRAIL INSTALLED ON A 2:1 SLOPE.
 - GROUT FILL SHALL BE A CONTROLLED LOW STRENGTH FLOWABLE FILL THAT HAS A MAXIMUM 28-DAY COMPRESSIVE STRENGTH OF 100 P.S.I. ACCORDING TO SPEC. 600.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
POSTS AND OFFSET BLOCKS
FOR "W" & "T" BEAM GUARDRAIL
31 INCH GUARDRAIL HEIGHT

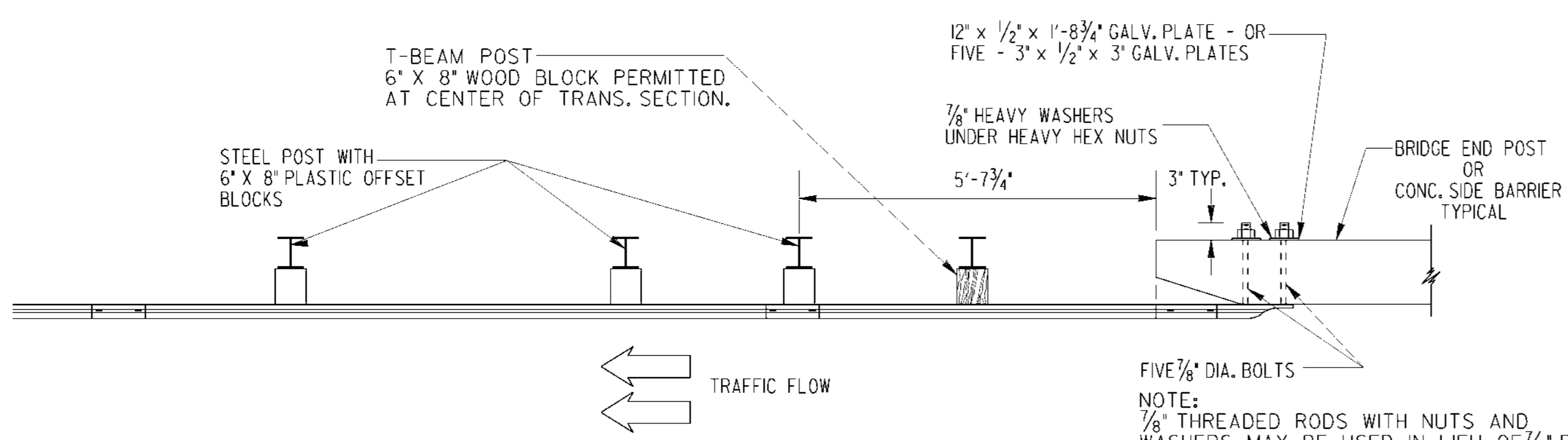
SCALE: AS SHOWN
AUGUST 2011

DES. G.L.O. (SUBMITTED) *B.A. St...*
DRW. G.L.O.
CHK. B.R.E. STATE DESIGN POLICY ENGINEER
REVIEW B.A.S. (APPROVED) *Marion B. Pucko* CHIEF ENGINEER

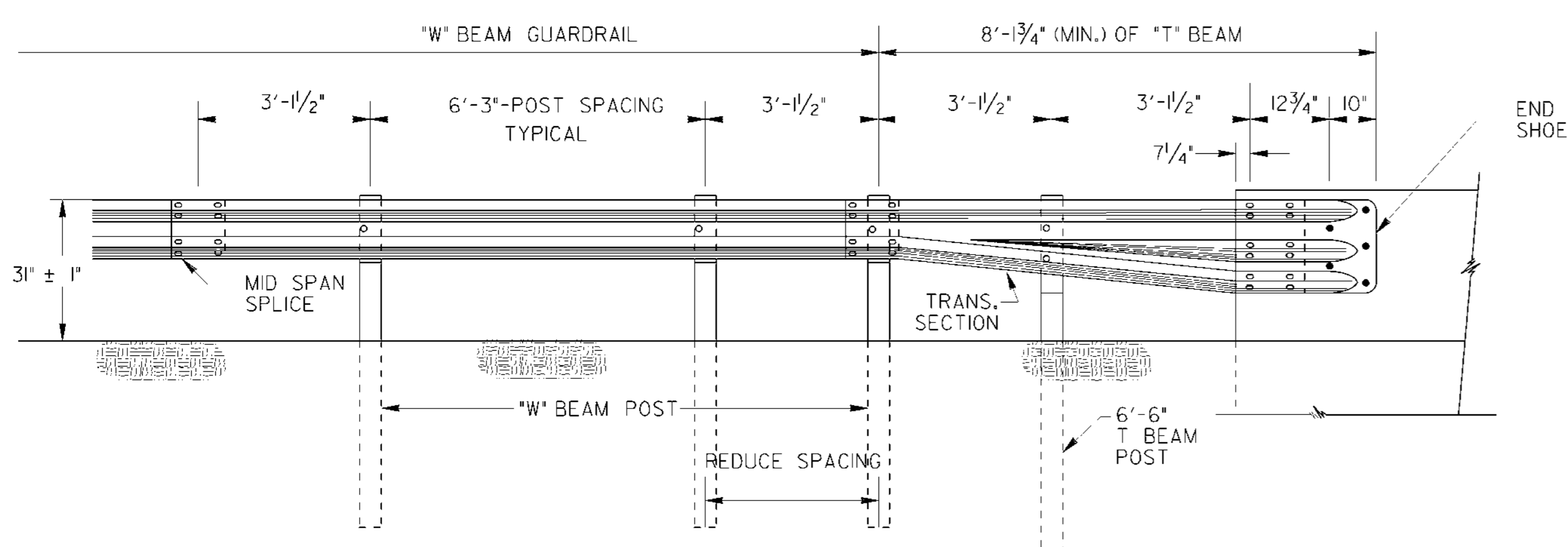
NUMBER
4381

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

31 INCH HIGH GUARDRAIL CONNECTION AT TRAILING ENDS
(SEE NOTE AT BOTTOM LEFT)



PLAN



ELEVATION

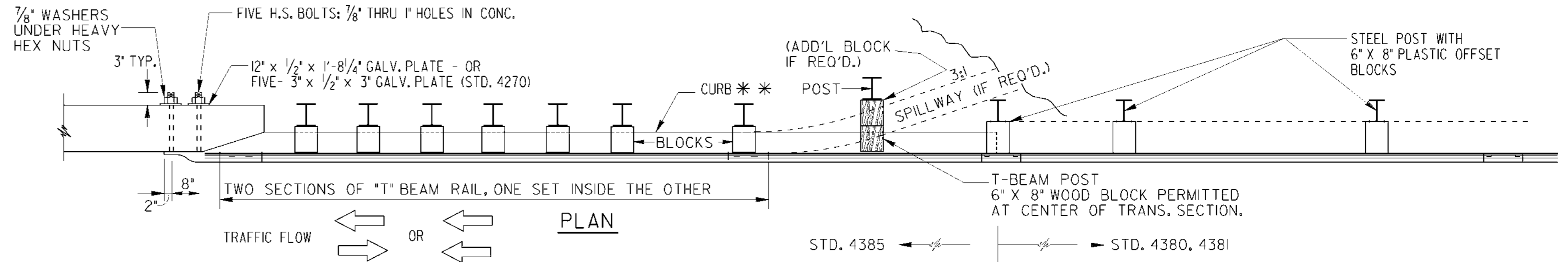
NOTE:
DETAILS AT TOP LEFT ARE APPLICABLE FOR CONNECTIONS AT THE TRAILING ENDS OF ONE-WAY TRAFFIC OR AT THE TRAILING END OF MULTI-LANE (4 OR MORE) FACILITIES.

NOTE:
DETAILS AT TOP RIGHT ARE APPLICABLE FOR CONNECTIONS AT THE APPROACH ENDS OF BRIDGES OR CONCRETE SIDE BARRIERS OR AT ALL FOUR ENDS FOR TWO-LANE, TWO WAY TRAFFIC.

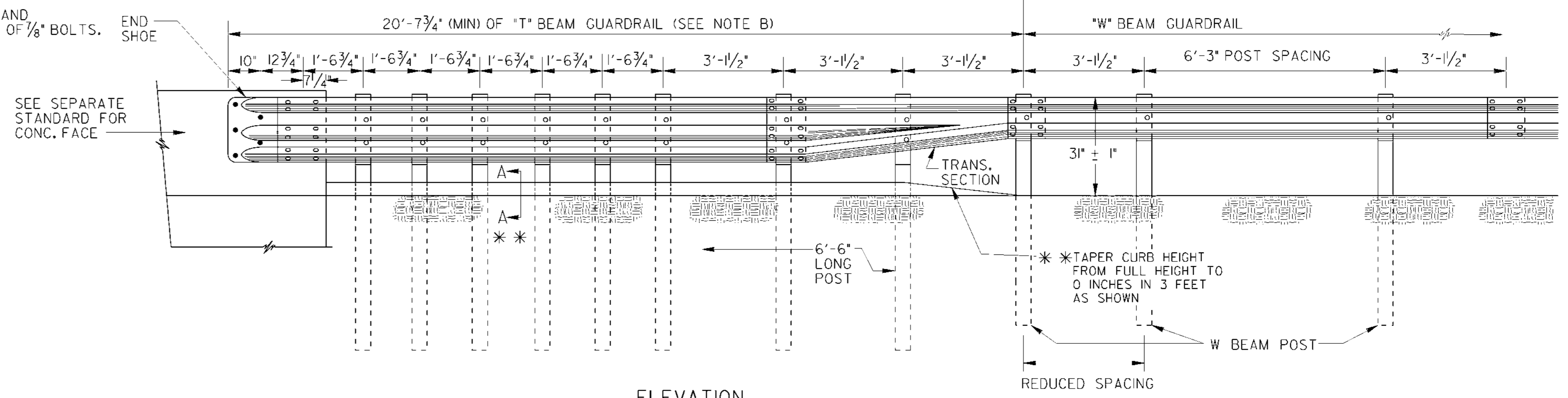
GUARDRAIL CONNECTION AT BRIDGE END (OR CONCRETE BARRIER)

(DETAILS ARE ILLUSTRATED WITH APPROACH SLAB, SPILLWAY, ETC. FOR TYPICAL BRIDGE END, POST SPACINGS AND END SHOE CONNECTION APPLIES TO ROADWAY CONCRETE BARRIER AS WELL AS BRIDGE ENDS.)

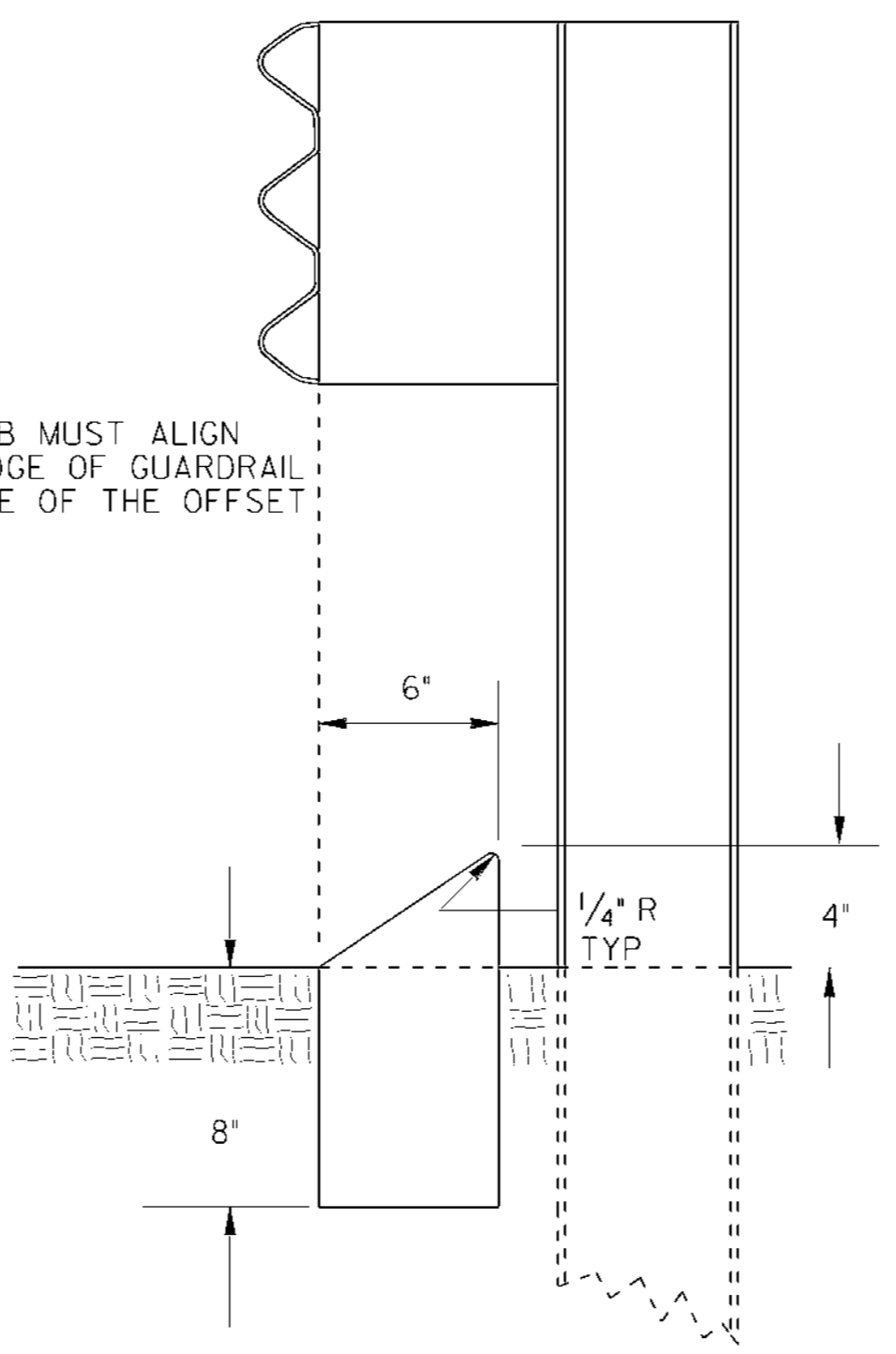
NOTE:
5/8\"/>



PLAN



ELEVATION



SECTION A-A **

NOTES FOR GUARDRAIL CONNECTION:

- A. WHERE GREATER THAN THE MINIMUM LENGTH OF T-BEAM GUARDRAIL IS REQUIRED, ADDITIONAL POST REMAIN AS SHOWN WITHIN THE FIRST 20'-7 3/4\"/>
- B. PAYMENT FOR GUARDRAIL TYPE T INCLUDES ALL ADDITIONAL POST, ALL ADDITIONAL OFFSET BLOCKS, THE SPECIAL END SHOE CONNECTION WITH ACCOMPANY HARDWARE, THE EXTRA SECTION OF T-BEAM RAIL NESTED INSIDE THE OTHER, AND THE T-BEAM TO W-BEAM TRANSITION SECTION.
- C. WHERE GUARDRAIL POST ARE ERECTED THRU SPILLWAY, CONCRETE CAP OR PAVING UNDER GUARDRAIL, PAYMENT FOR GUARDRAIL, OF ANY TYPE SHALL INCLUDE REPLACING THE BLOCKED OUT CONCRETE AND/OR REMOVING AND REPLACING PORTIONS OF SPILLWAY, CONCRETE, OR GROUT AS NECESSARY FOR POST INSTALLATIONS.
- ** FOR CURB DETAILS ASSOCIATED WITH APPROACH SLAB, SEE APPROACH SLAB STANDARD. FOR GUARDRAIL INSTALLATION LOCATIONS WHERE AN APPROACH SLAB IS NOT USED, PROVIDE A CONCRETE CURB IN ACCORDANCE WITH SECTION A-A. CONCRETE CURB SHALL BE PAID FOR PER LINEAR FOOT.

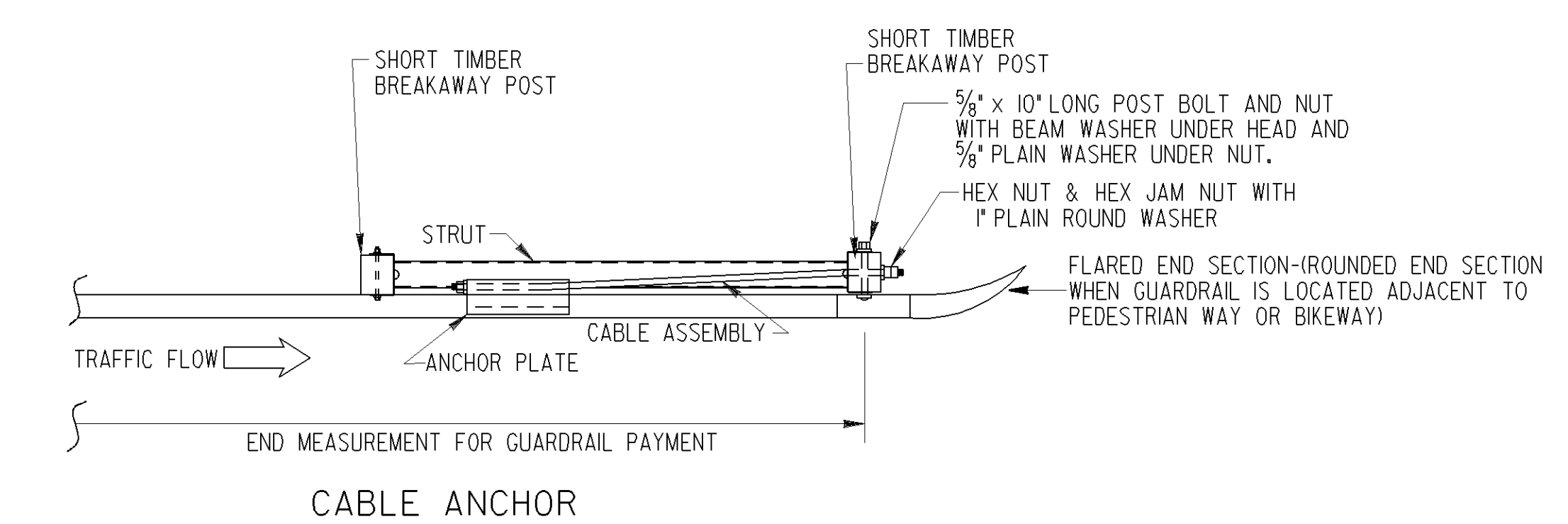
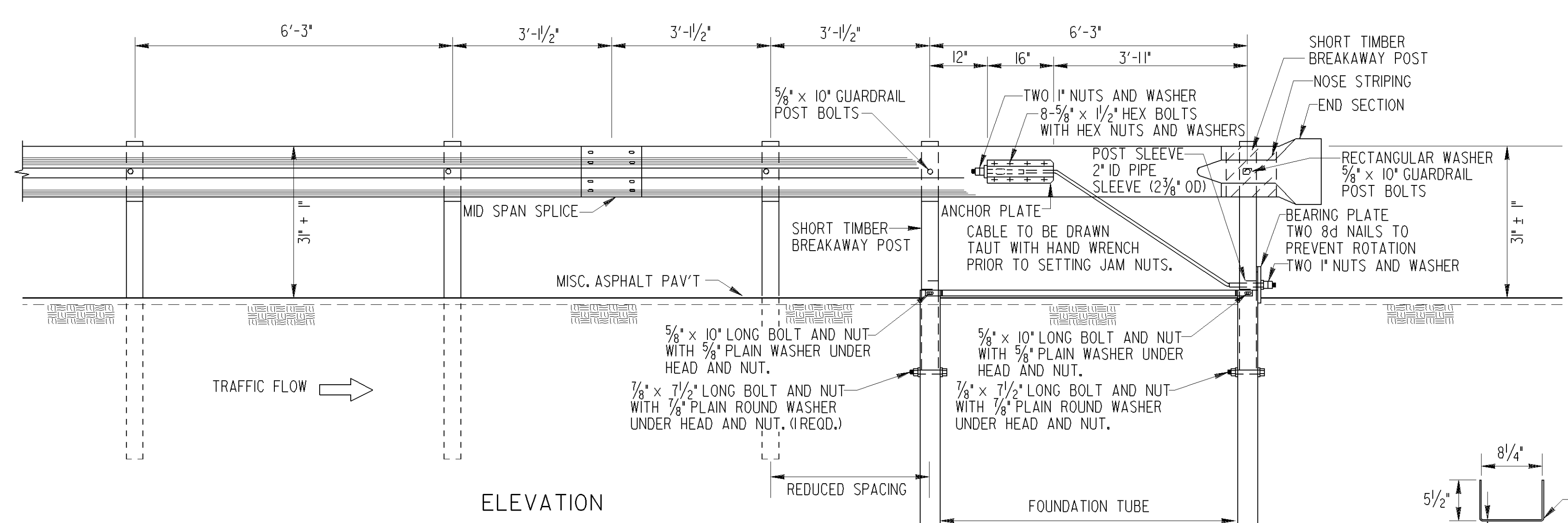
NOTE: POST SPACINGS SHOWN ARE TYPICAL AVERAGE WITH NORMAL CONSTRUCTION TOLERANCES ALLOWED.

GENERAL NOTES:

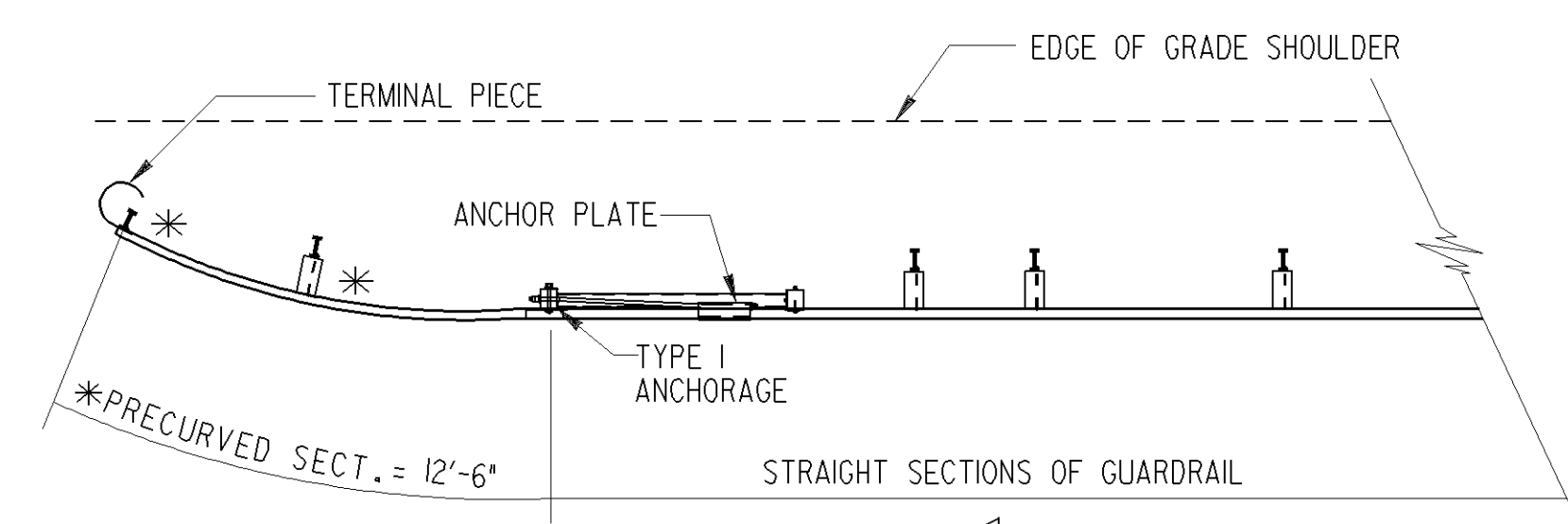
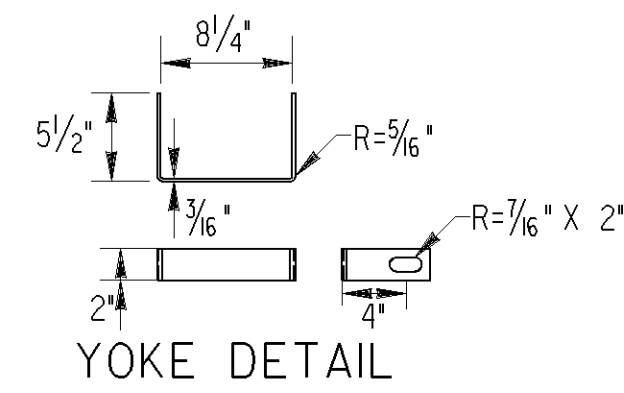
- 1. SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION & SUPPLEMENTS THERETO.
- 2. FOR DETAILS OF GUARDRAIL HARDWARE, POST, OFFSET BLOCKS, END SHOE, TRANSITION SECTION, ETC., SEE SEPARATE STANDARDS AS APPLICABLE.
- 3. GUARDRAIL INSTALLATIONS, INCLUDING ANCHORAGES AND CONNECTIONS, ARE TO BE COMPLETED BEFORE BEING SUBJECT TO TRAFFIC UNLESS OTHERWISE APPROVED.
- 4. OFFSET BLOCKS SHALL BE PLASTIC UNLESS SPECIFIED OTHERWISE. OFFSET BLOCKS ARE REQUIRED AT ALL POSTS.
- 5. THE COST FOR DRILLING HOLES FOR THE END SHOE CONNECTION SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE GUARDRAIL.

		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
		STANDARD	
		GUARDRAIL CONNECTION AT BRIDGE END OR AT CONCRETE BARRIER END FOR 31 INCH HIGH GUARDRAIL	
		NO SCALE	AUGUST 2011
REV	DATE	DES. G.L.O. (SUBMITTED)	NUMBER
1-29-16		DRW. G.L.O.	4382
BY		CHK. B.R.E. (APPROVED)	
FBF		REVIEW G.A.S.	

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

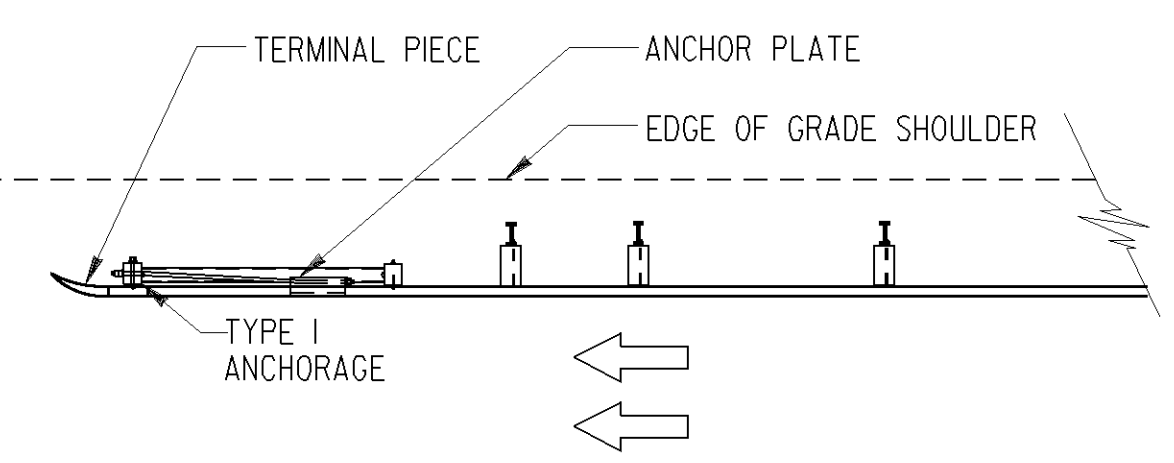


THE PAYMENT FOR THE ITEMS OF END ANCHORAGE ASSEMBLY TYPE I-31(CABLE OPTION) SHALL BE FULL COMPENSATION FOR FURNISHING AND INSTALLING EITHER THE ROUND OR THE BUFFER END SECTION, THE BEAM ANCHOR PLATE, CABLE ASSEMBLY, PIPE SLEEVE, SOIL PLATE, STEEL TUBE, BEARING PLATE, SHORT TIMBER BREAKAWAY POST, OFFSET BLOCKS AND THE NECESSARY HARDWARE.

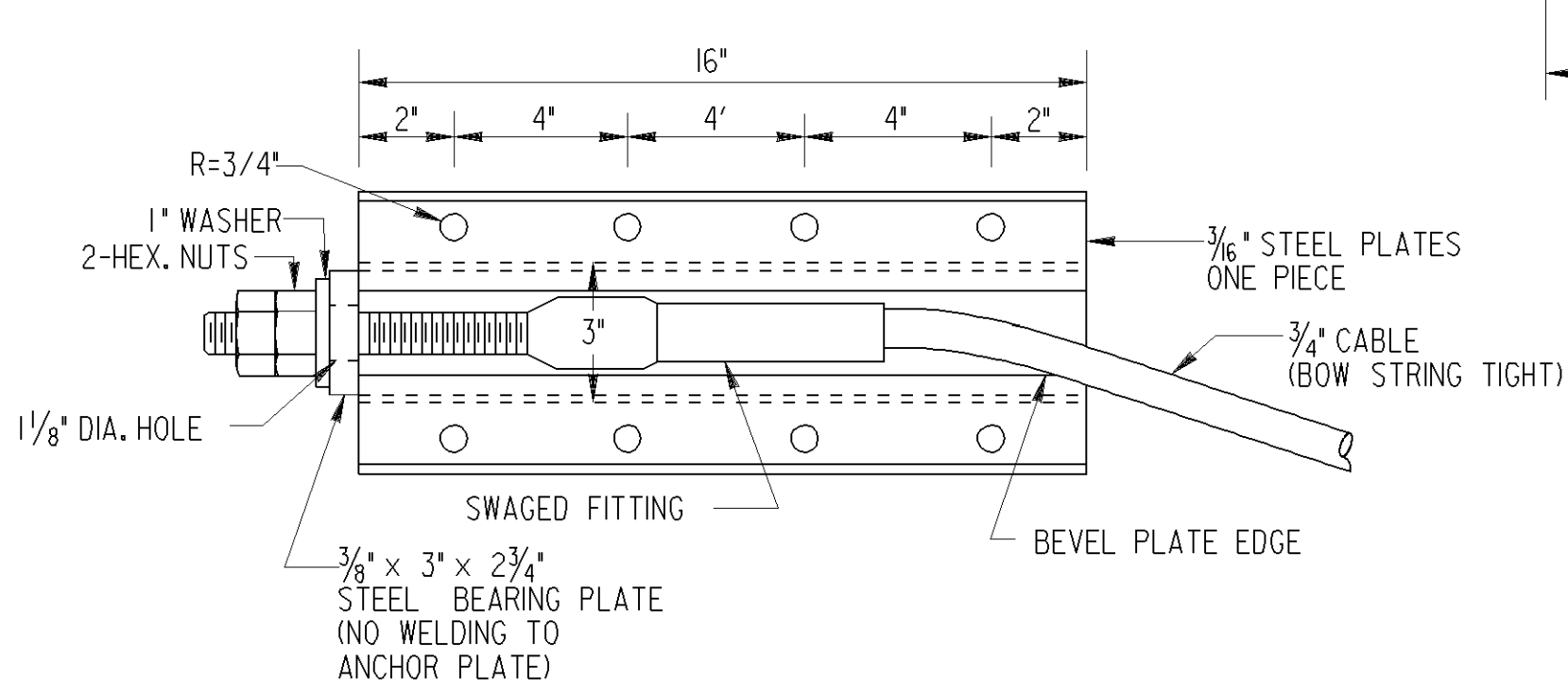
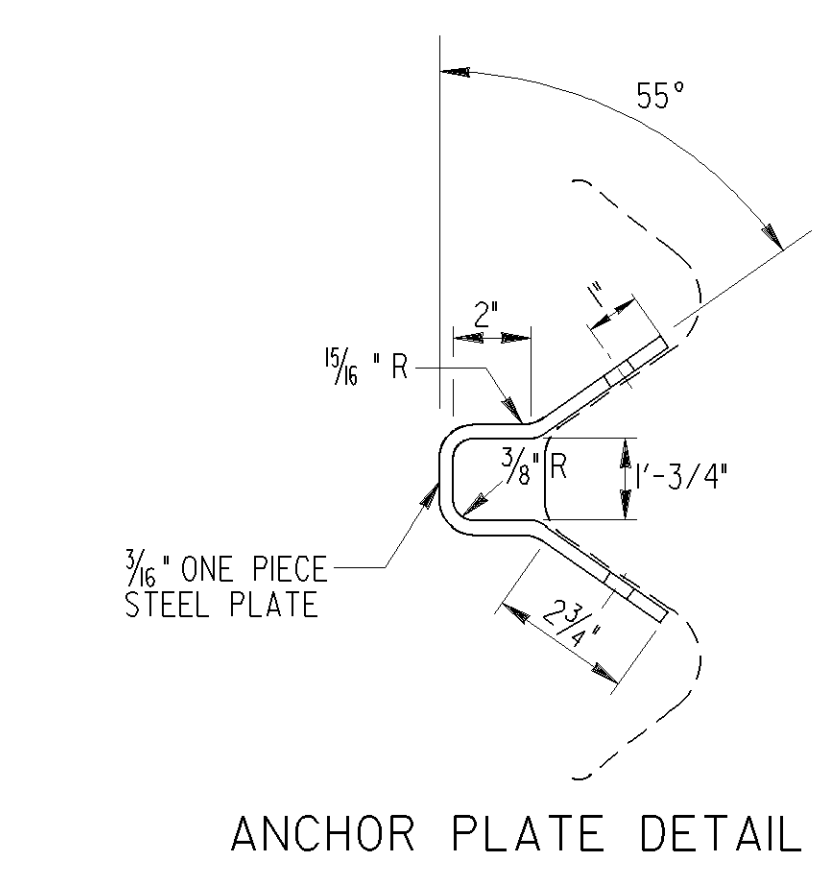
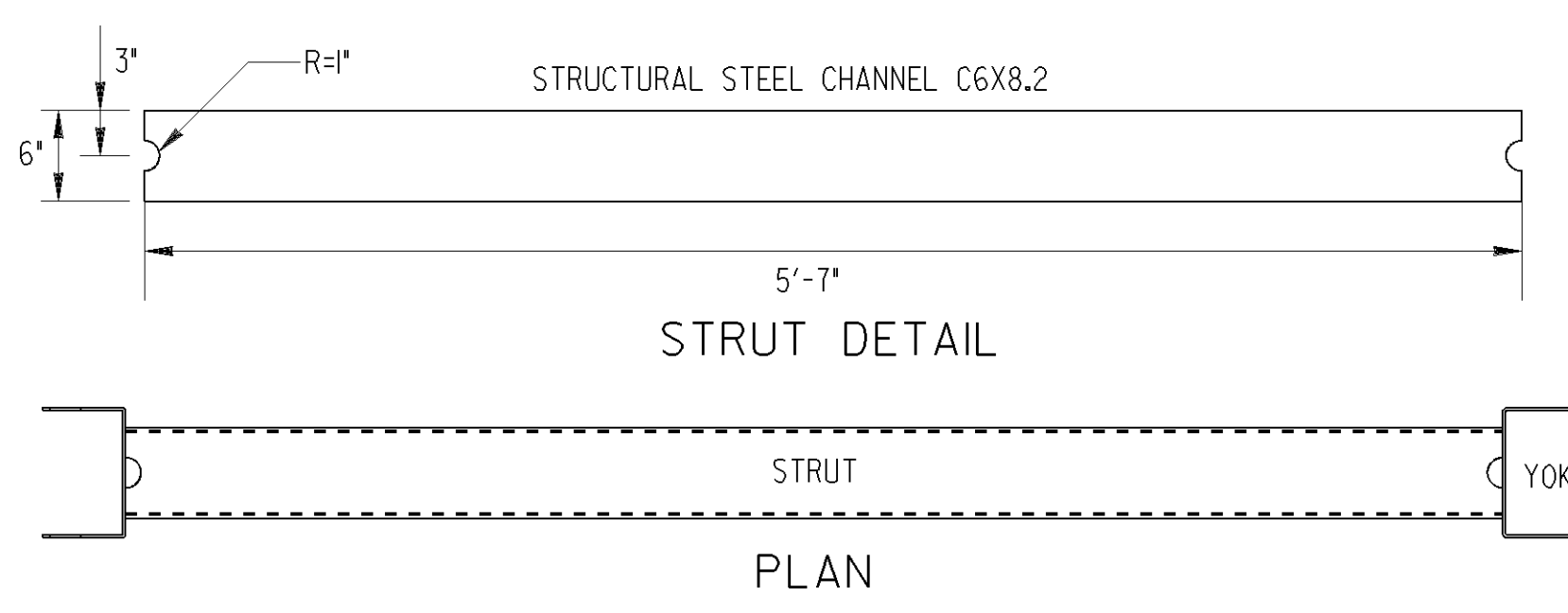
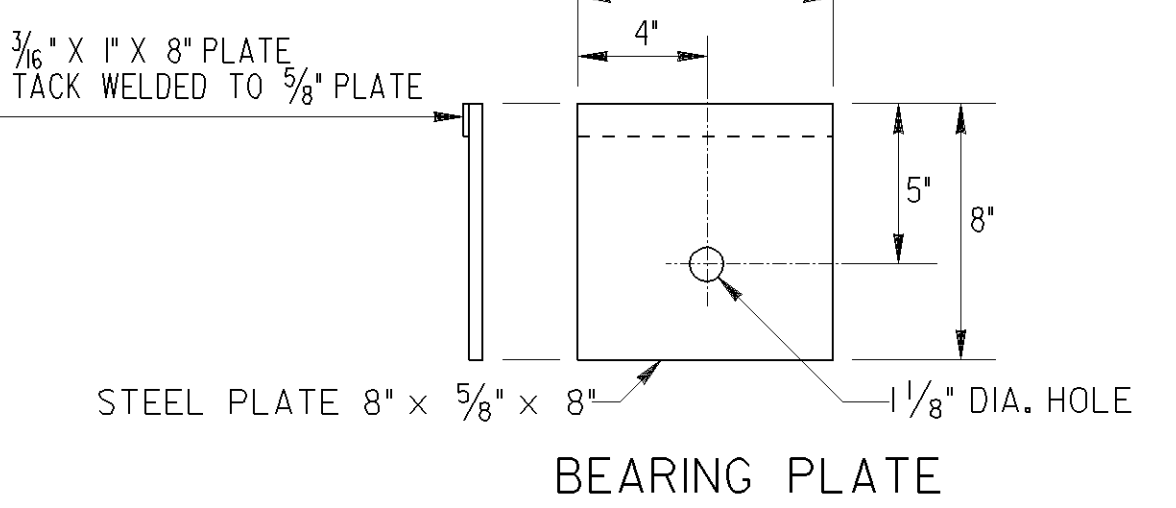
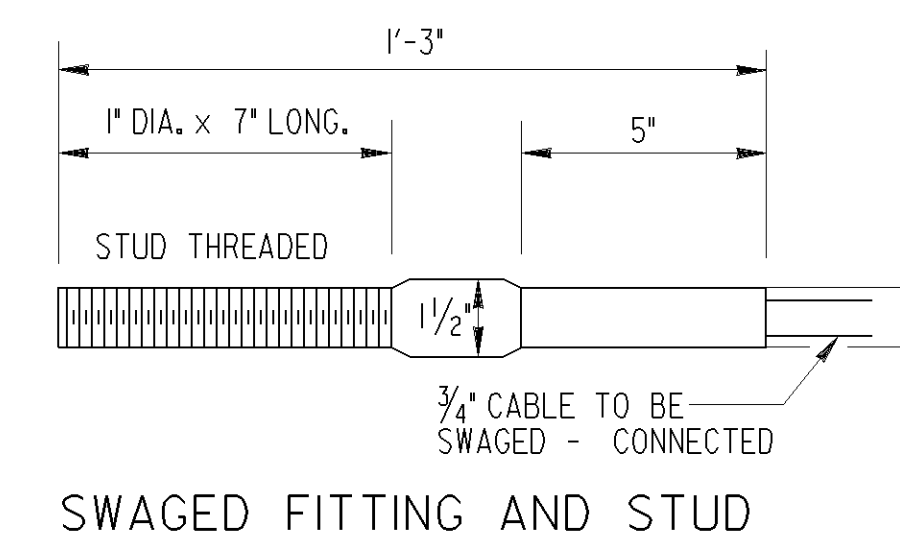


* PRECURVED SECTION SHALL UTILIZE POST OF THE SAME LENGTH AS REQUIRED FOR THE ADJOINING STRAIGHT SECTIONS, REGARDLESS OF DISTANCE TO GRADED SHOULDER EDGE.

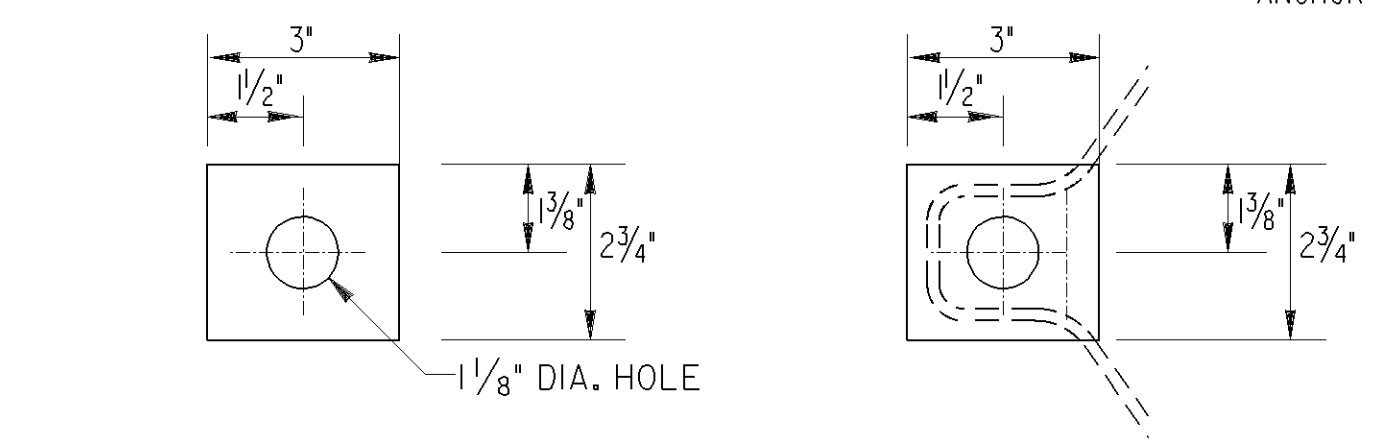
AT TRAILING END OF TWO-WAY TRAFFIC (WHICH FALLS OUTSIDE CLEAR ZONE OF OPPOSING TRAFFIC)



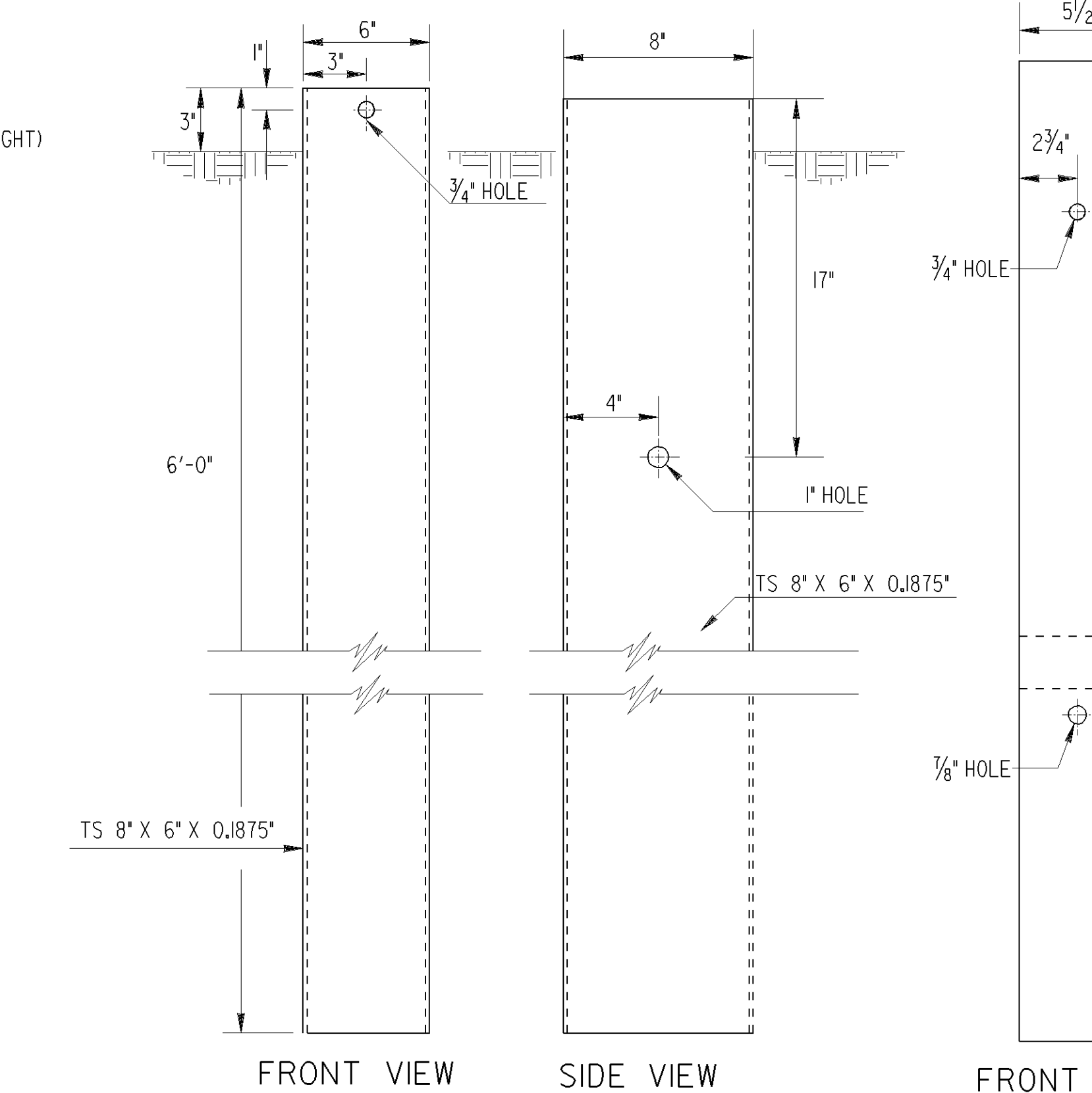
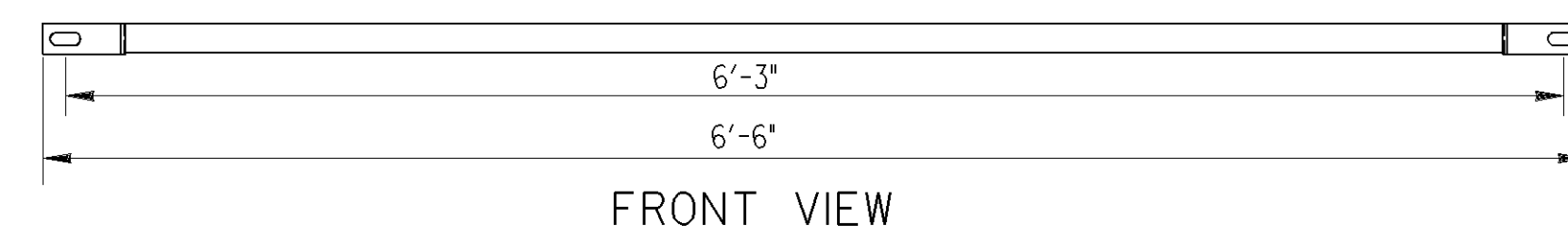
NOTE: SEE STD. 4388 OR OTHER APPLICABLE DETAILS FOR REQUIREMENT FOR TYPE 12 ANCHORAGE ON THE TRAILING END.



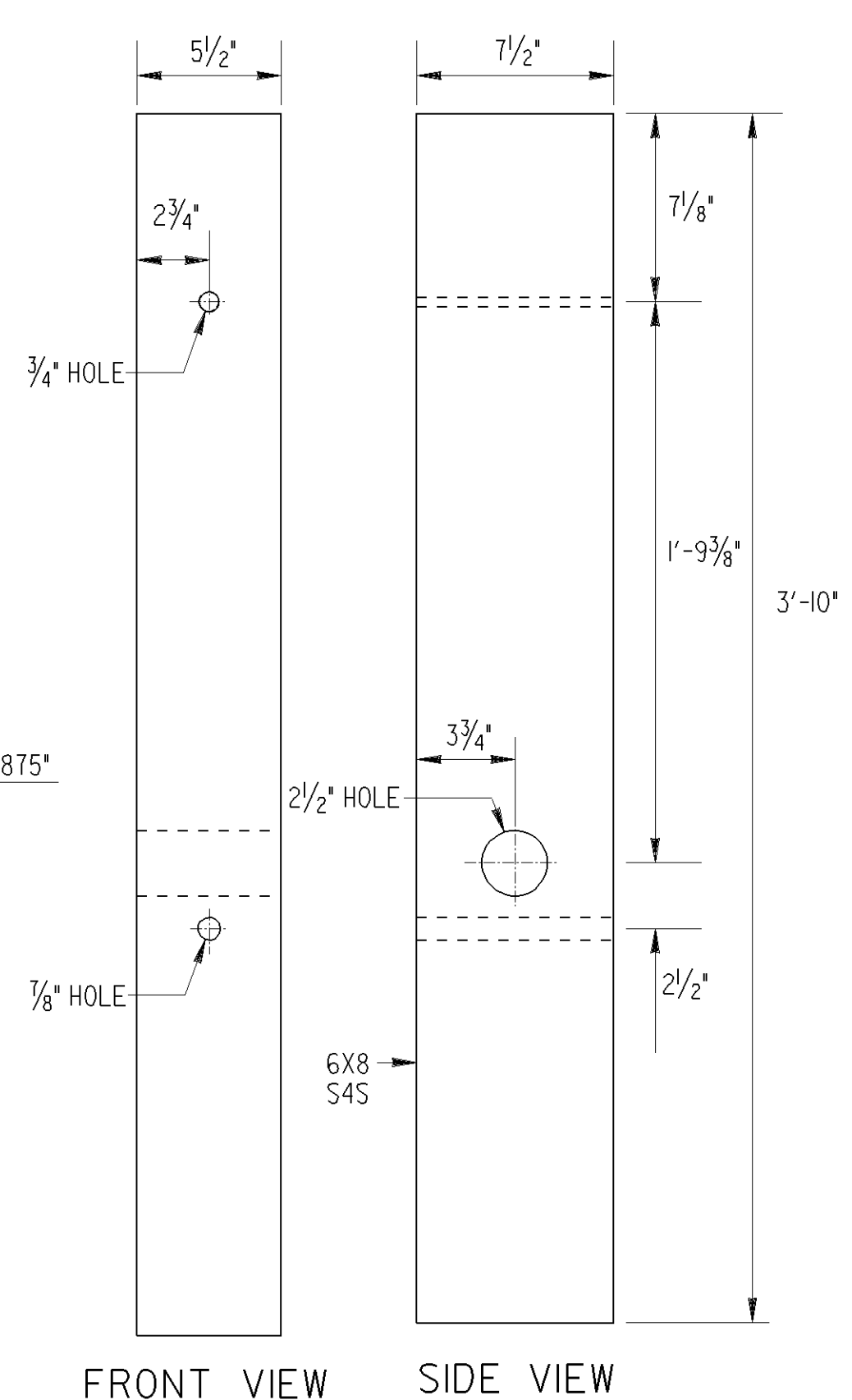
NOTE: ANCHOR PLATES SHOWN HERE WITH GUARDRAIL (TYPE "W") ATTACHMENT TO GUARDRAIL (TYPE "T") WILL BE THE SAME EXCEPT THAT THE ANCHOR PLATE WILL BE LOCATED BETWEEN THE BOTTOM AND MIDDLE CORRUGATIONS.



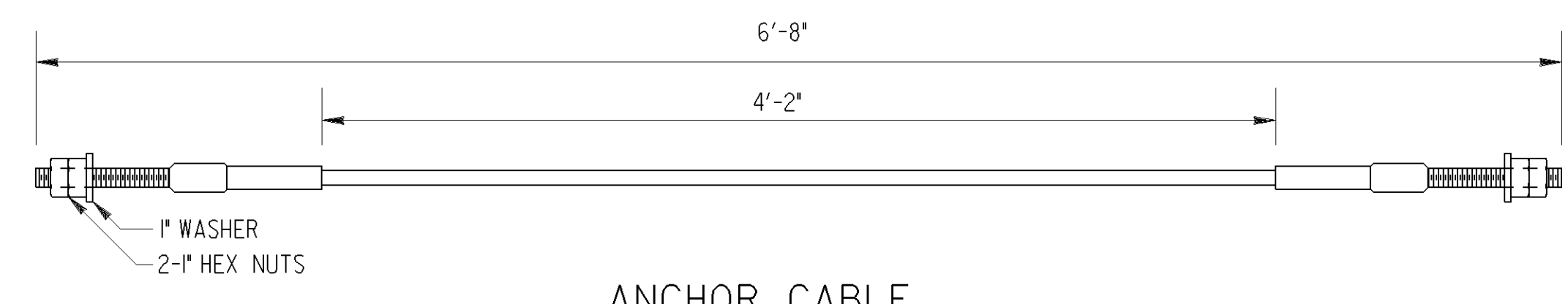
STANDARD ANCHOR PLATE DETAILS



FOUNDATION TUBE



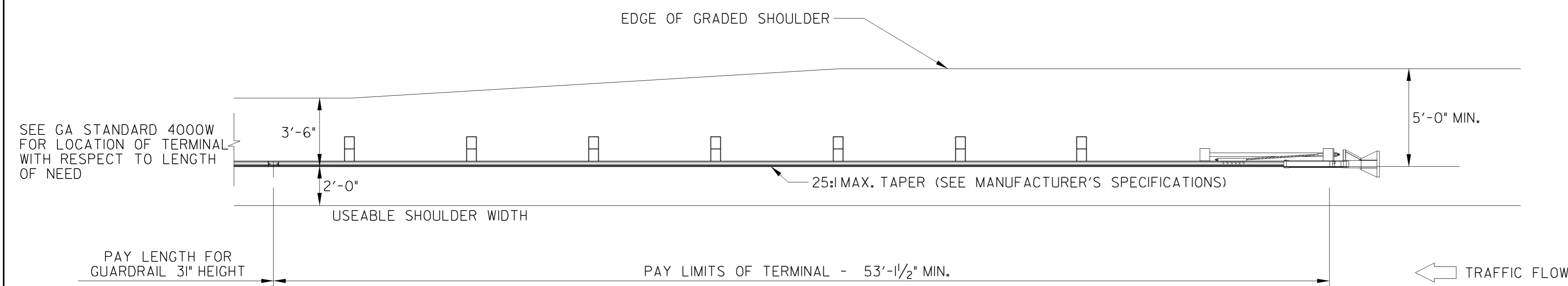
NOTE: SEE STANDARD 4382 FOR GUARDRAIL CONNECTION TO CONCRETE FACE.



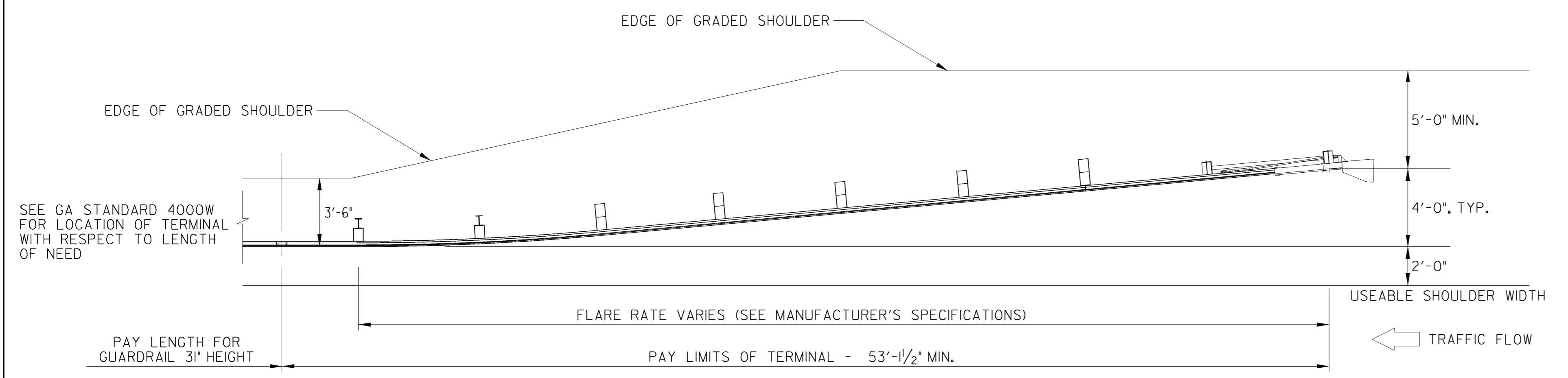
- GENERAL NOTES:
- SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION & SUPPLEMENTS THERE TO.
 - FOR DETAILS OF GUARDRAIL HARDWARE, POST, OTHER TYPE ANCHORAGE, LOCATION, ETC. SEE SEPARATE STANDARDS AS APPLICABLE.
 - GUARDRAIL INSTALLATIONS, INCLUDING ANCHORAGES AND CONNECTIONS, ARE TO BE COMPLETED BEFORE BEING SUBJECT TO TRAFFIC UNLESS OTHERWISE APPROVED.
 - PAYMENT FOR ANCHORAGE INCLUDES ANCHOR PLATE; 3/4" CABLE; BREAKAWAY POSTS; FOUNDATION TUBES; STRUT AND ALL ACCOMPANYING HARDWARE.

DATE		DEPARTMENT OF TRANSPORTATION	
REVISION		STATE OF GEORGIA	
		STANDARD	
		GUARDRAIL ANCHORAGE TYPE I	
		31 INCH GUARDRAIL HEIGHT	
		NO SCALE	AUGUST 2011
BY	DES. G.L.O. (SUBMITTED)	NUMBER	
	DRW. G.L.O.	4383	
	CHK. B.R.E. (APPROVED)	STATE DESIGN POLICY ENGINEER	
	REVIEW B.A.S.	CHIEF ENGINEER	

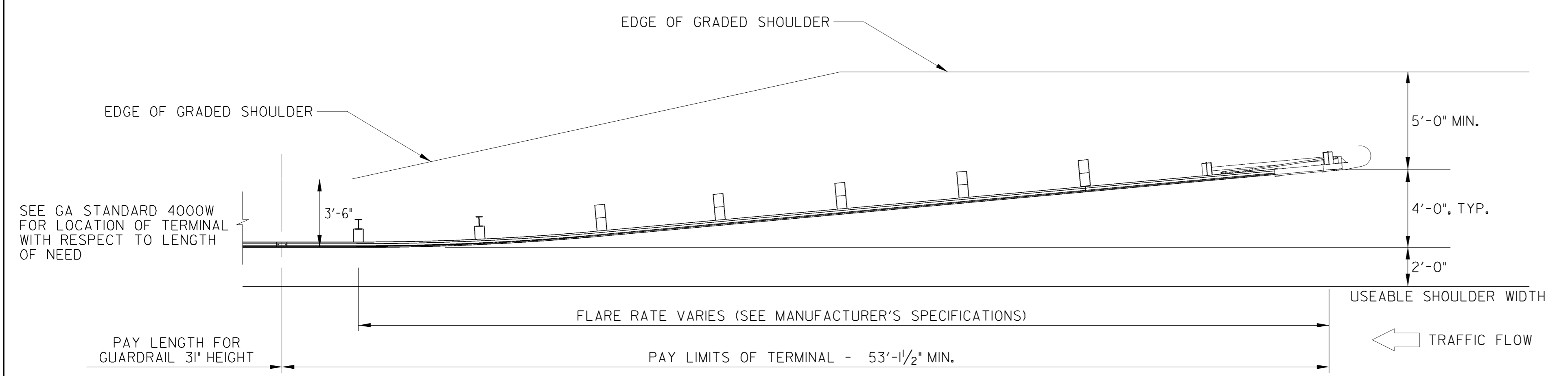
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



**TYPE I2A - 31" GUARDRAIL TERMINAL
(TANGENT, ENERGY-ABSORBING)**



**TYPE I2B - 31" GUARDRAIL TERMINAL
(FLARED, ENERGY-ABSORBING)**

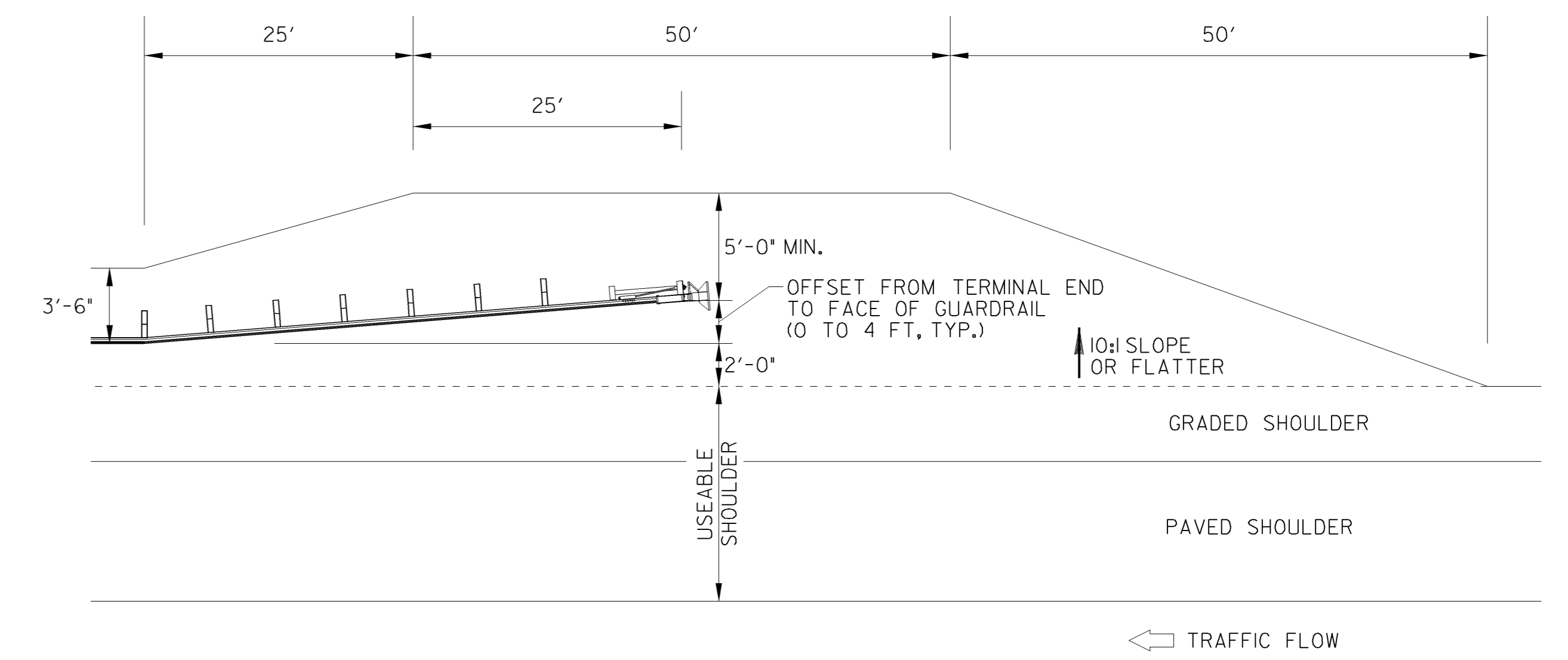


**TYPE I2C - 31" TERMINAL
(FLARED, NON-ENERGY-ABSORBING)**

GENERAL NOTES:

- SPECIFICATIONS: GEORGIA STANDARD CURRENT EDITION, AND SUPPLEMENTS THERETO.
- SEE GDOT OPL 64 FOR APPROVED PRODUCTS.
- THIS SHEET DEPICTS THE PAY LIMITS FOR GUARDRAIL AND TYPE I2 TERMINALS. TYPE I2 TERMINALS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- W-BEAM INSTALLATIONS LESS THAN 150 FEET IN ADVANCE OF ANY SHIELDED OBJECT OR TOTAL LENGTH OF W-BEAM INSTALLATION IS LESS THAN ABOUT 150 FEET, AN ENERGERY-ABSORBING TERMINAL SHOULD BE SELECTED.

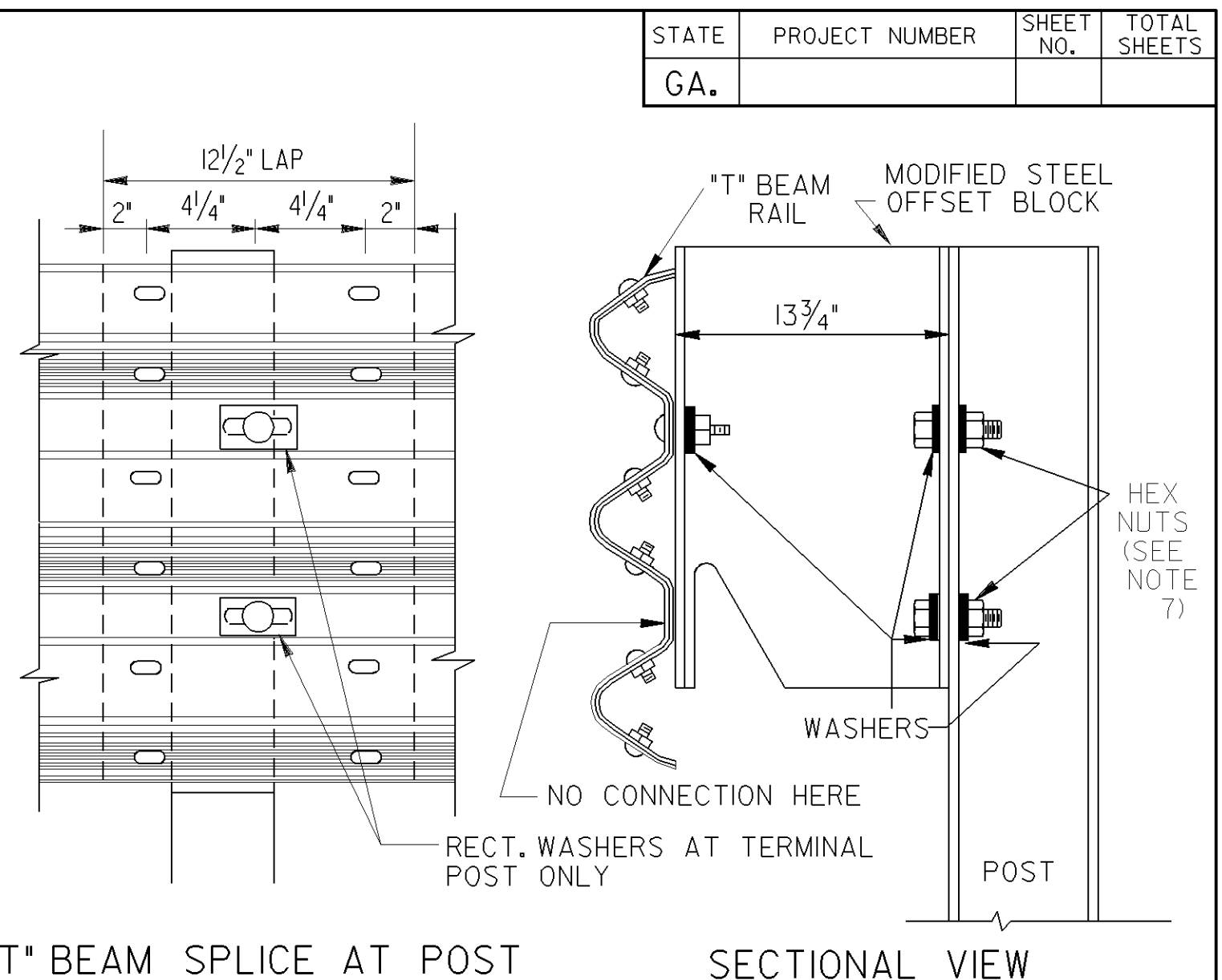
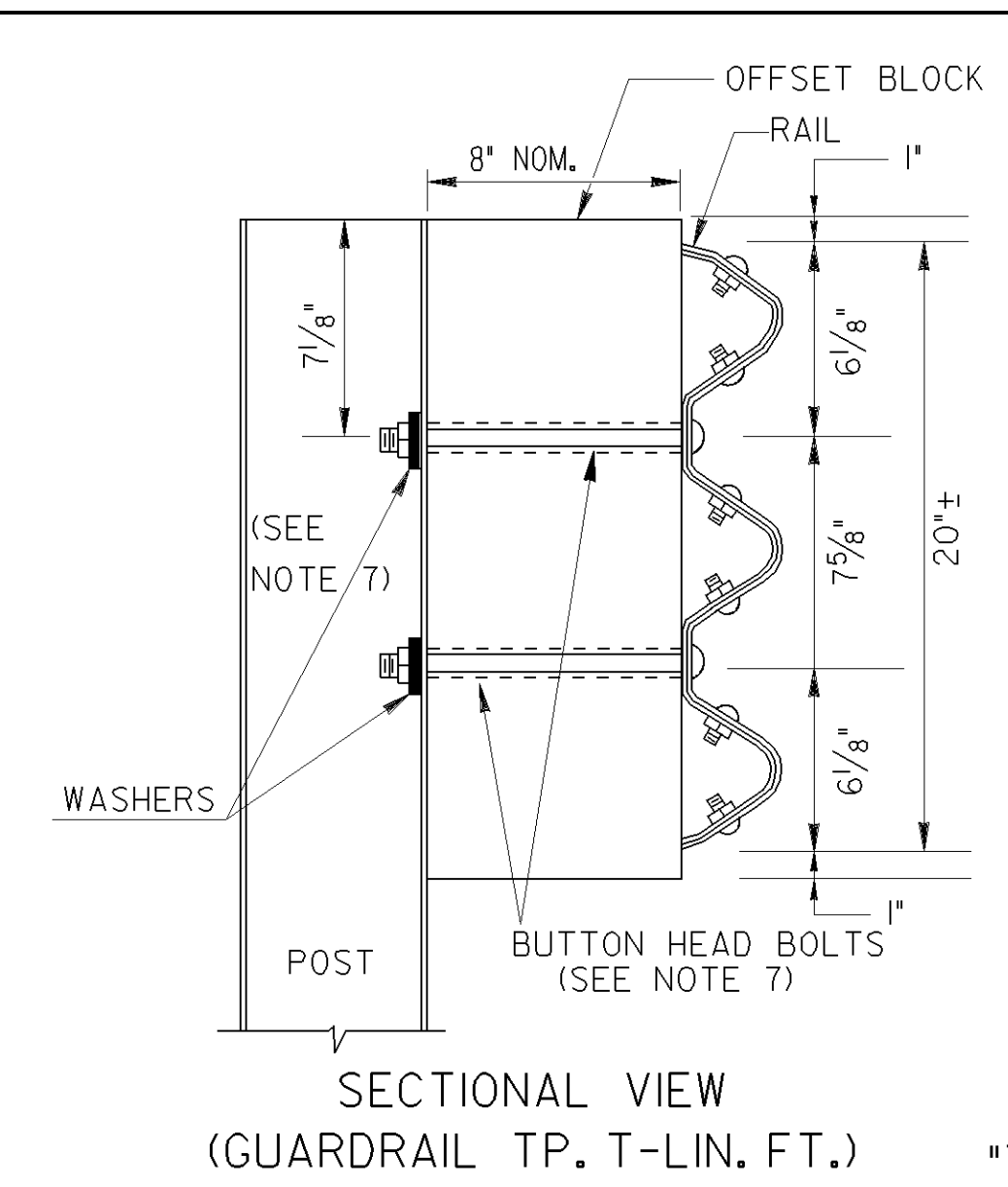
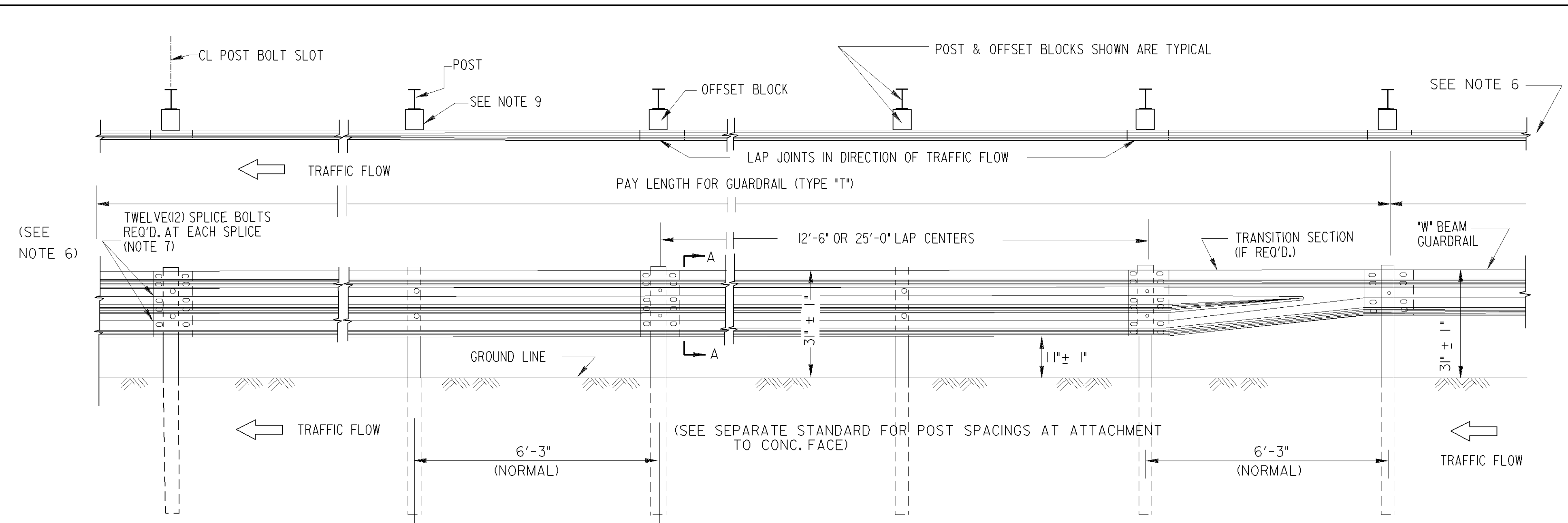
ITEM NO.	UNITS	DESCRIPTION
64I-5015	EA	GUARDRAIL TERMINAL, TP I2A - 31", TANGENT, ENERGY-ABSORBING
64I-5020	EA	GUARDRAIL TERMINAL, TP I2B - 31", FLARED, ENERGY-ABSORBING
64I-5025	EA	GUARDRAIL TERMINAL, TP I2C - 31", FLARED, NON-ENERGY-ABSORBING



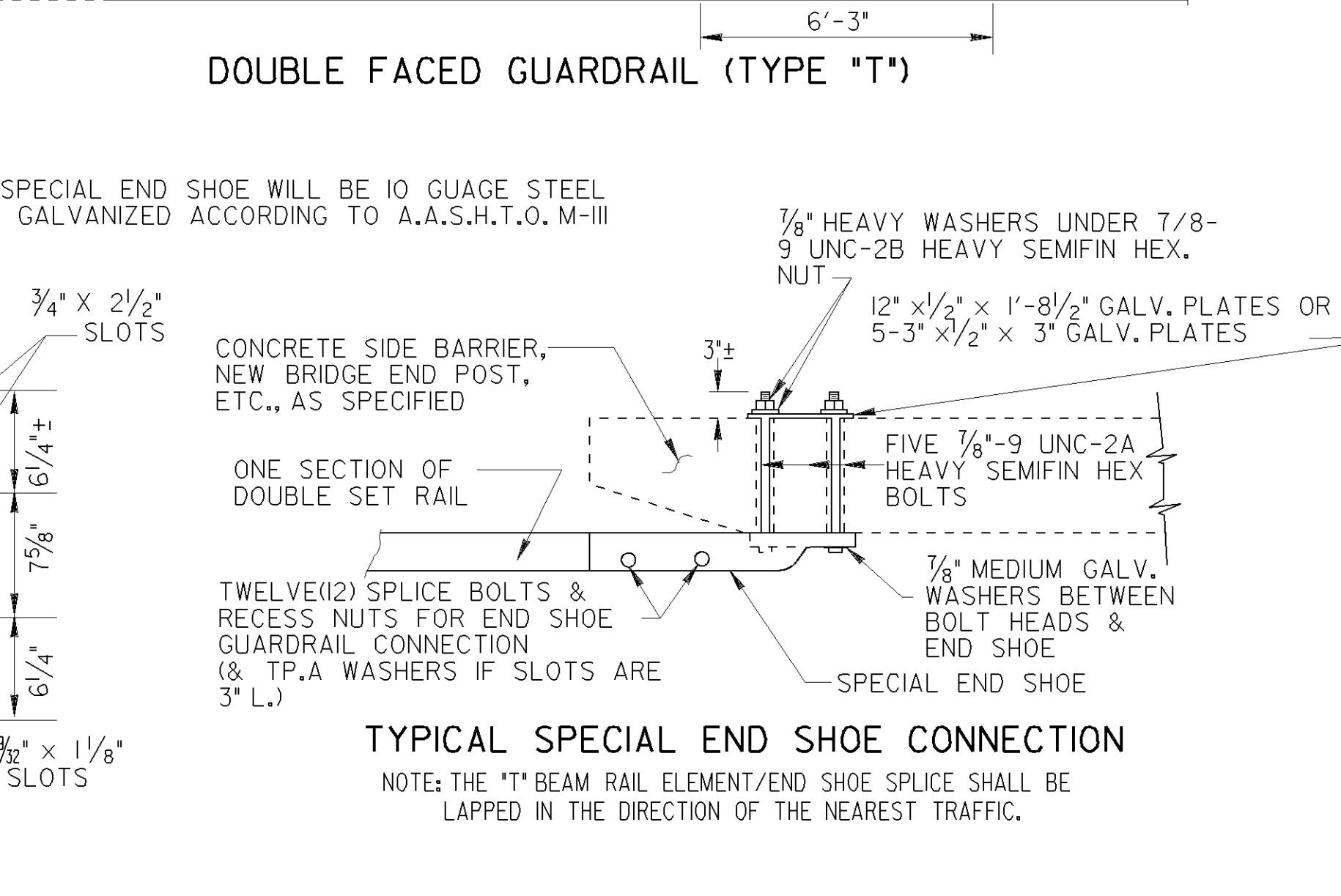
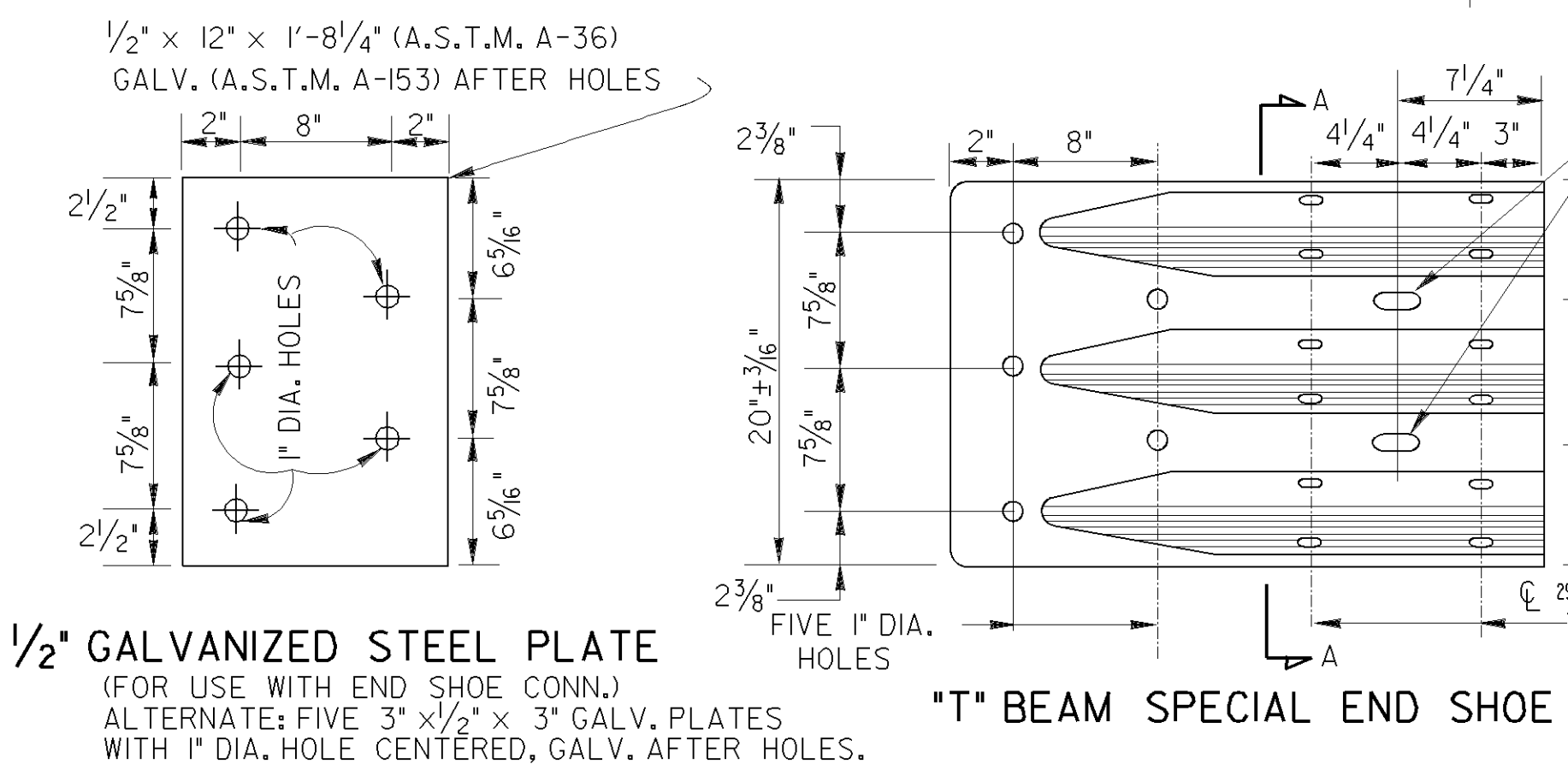
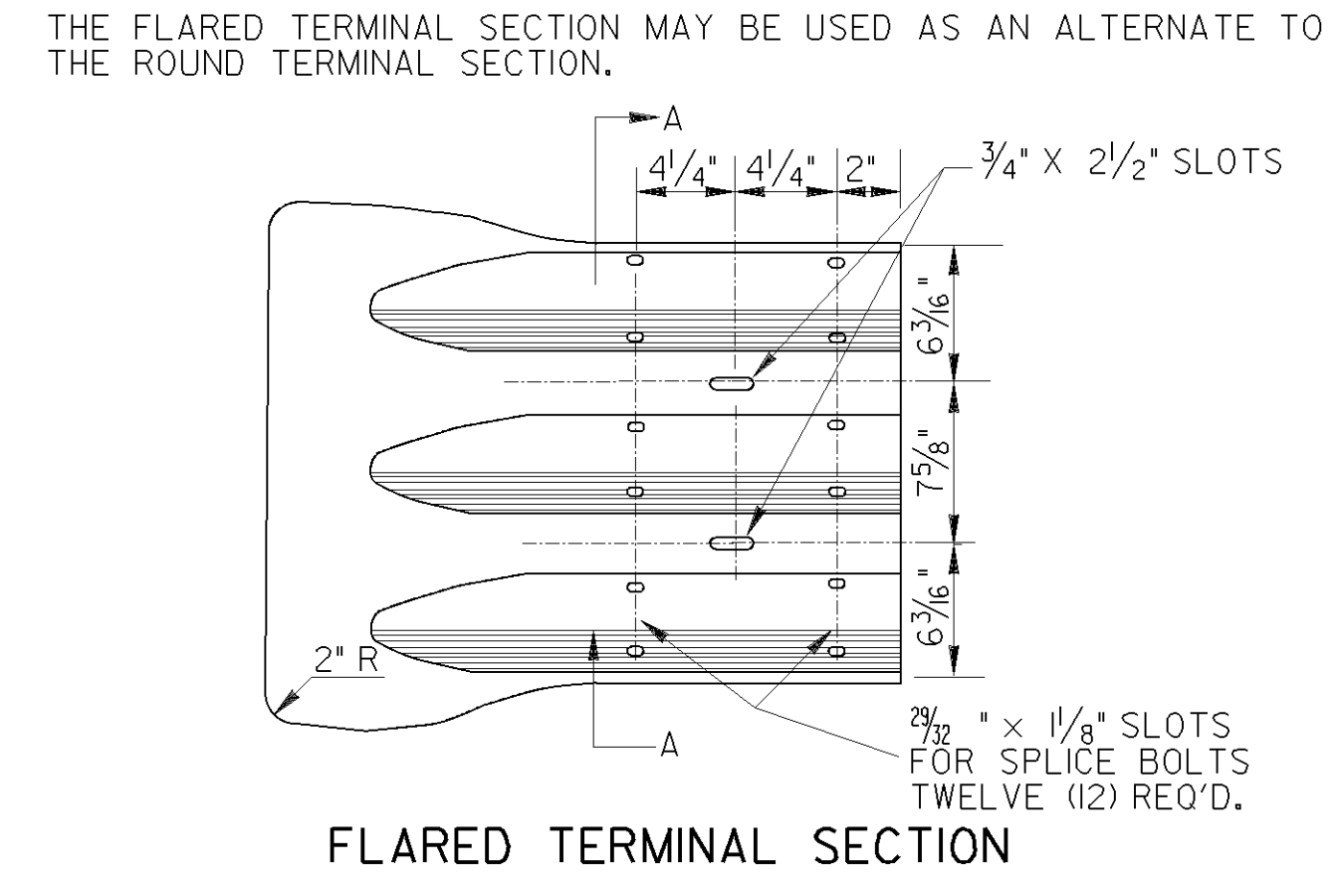
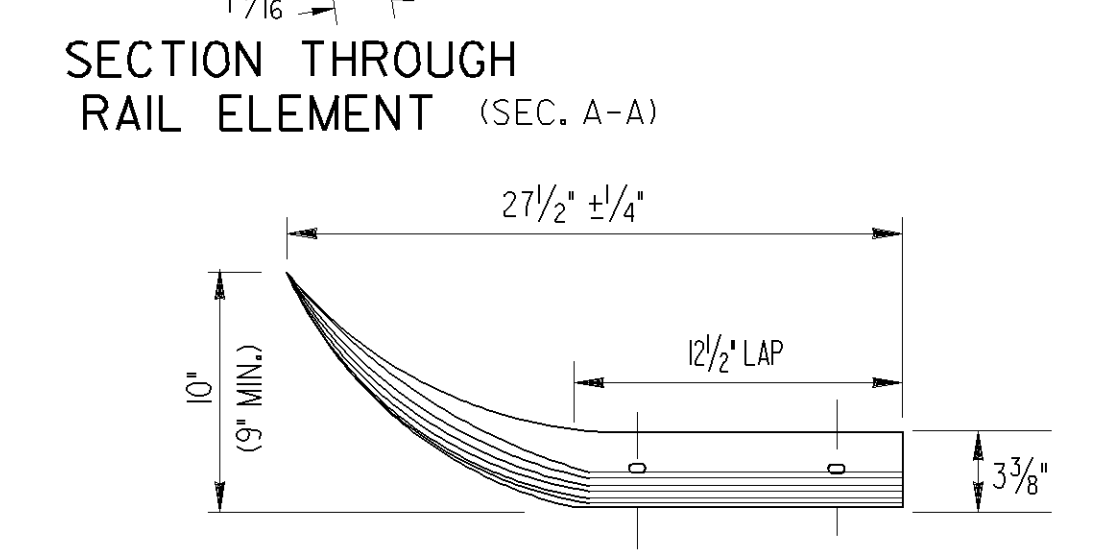
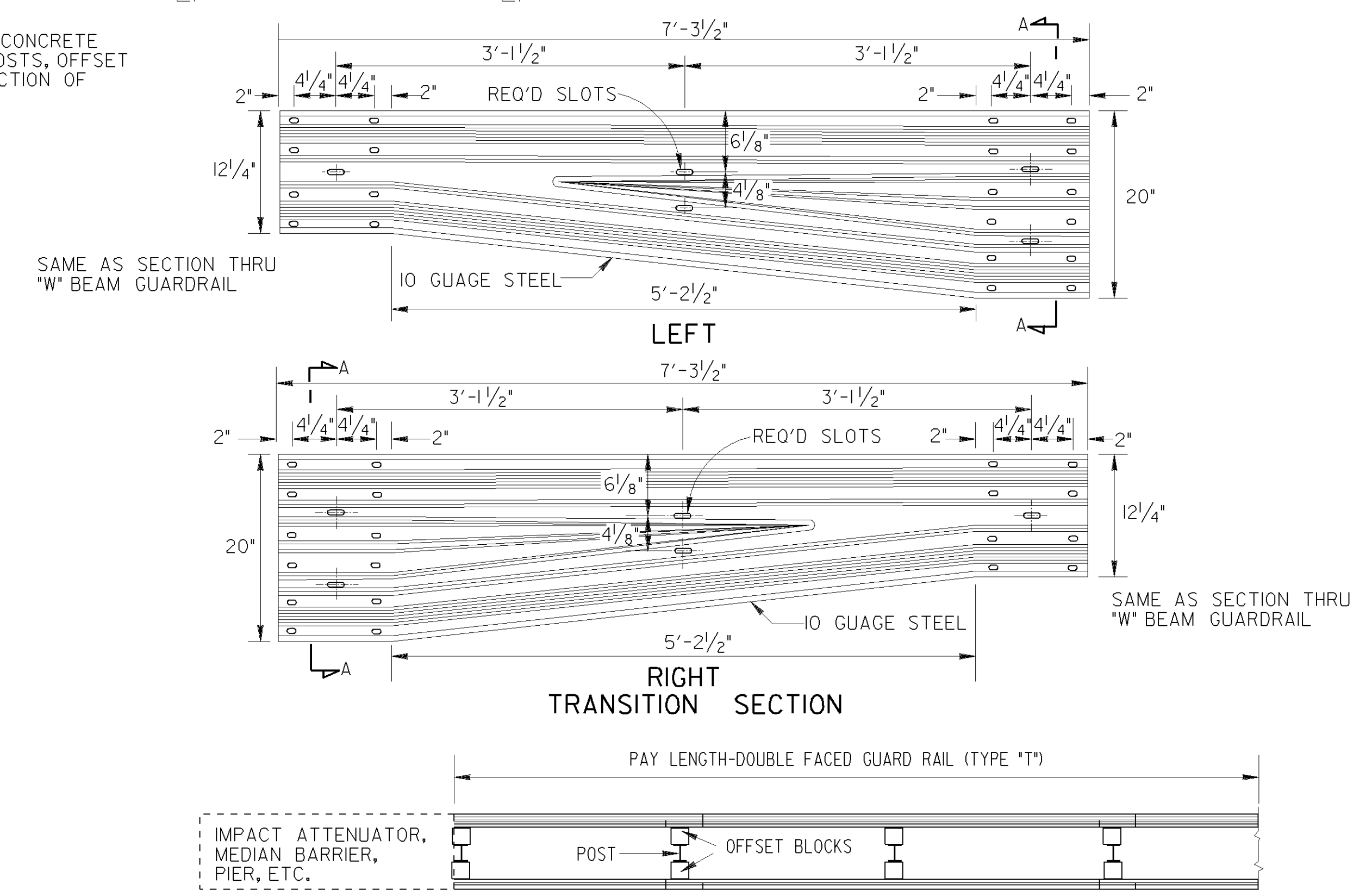
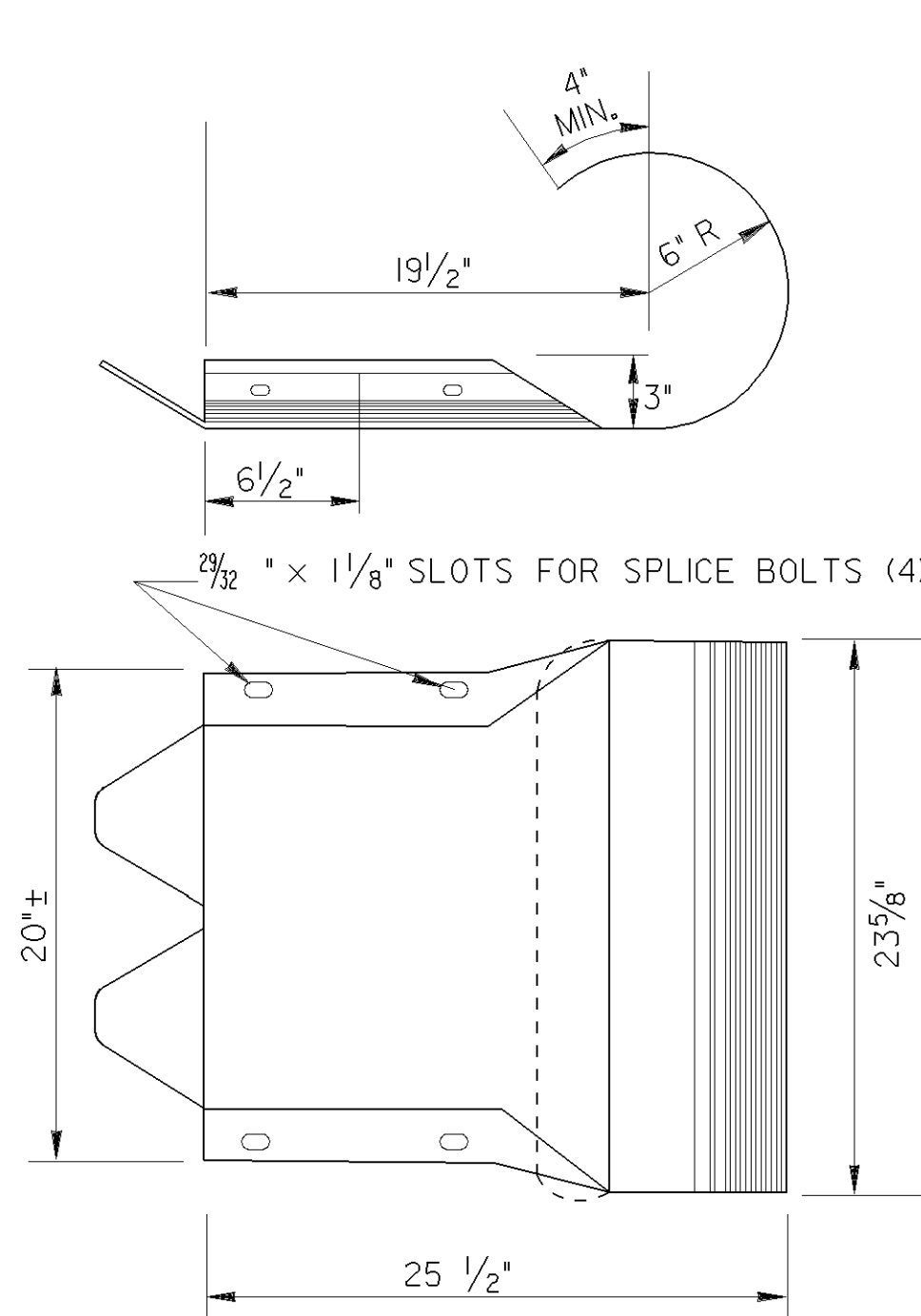
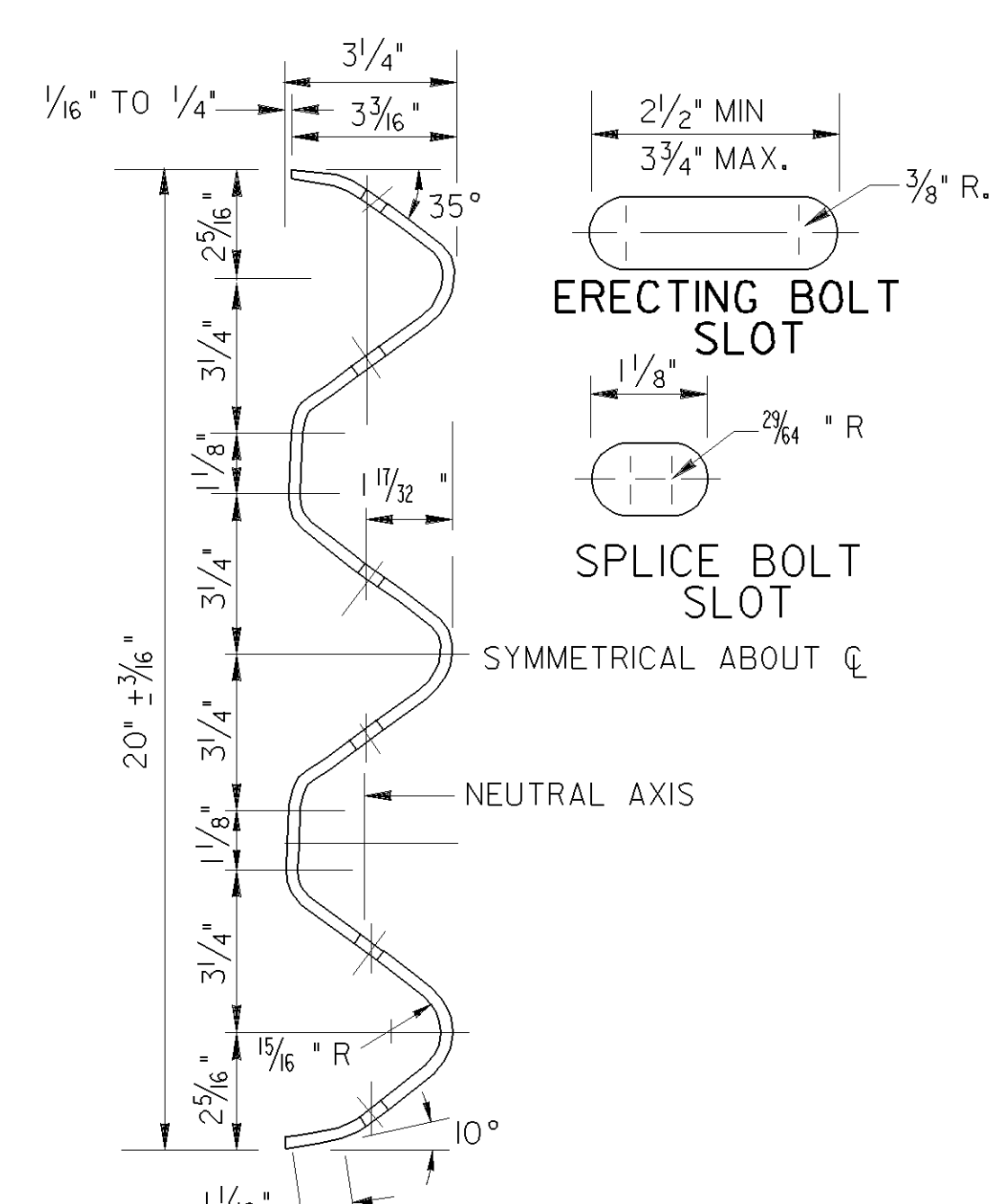
TERMINAL PAD GRADING DETAIL

1-29-16		DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
ADDED I2A, I2B, & I2C; ADDED GRADING DTL		REVISION	STANDARD GUARDRAIL TERMINALS, TYPE I2A, I2B, AND I2C 31 INCH GUARDRAIL HEIGHT	
NO SCALE			AUGUST 2011	
DES. G.L.O. (SUBMITTED)	DRW. G.L.O.	CHK. B.R.E. (APPROVED)	REVIEW. A.S.	NUMBER 4384
			STATE DESIGN POLICY ENGINEER	
			CHIEF ENGINEER	

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



NOTE: WHERE ATTACHED TO CONCRETE BARRIER, BRIDGE END POST OR OTHER CONCRETE FACE, PAYMENT FOR T BEAM GUARDRAIL SHALL INCLUDE ADDITIONAL POSTS, OFFSET BLOCKS AND DOUBLE THICKNESS (ONE RAIL NESTED INSIDE ANOTHER) SECTION OF T BEAM GUARDRAIL AS SPECIFIED.

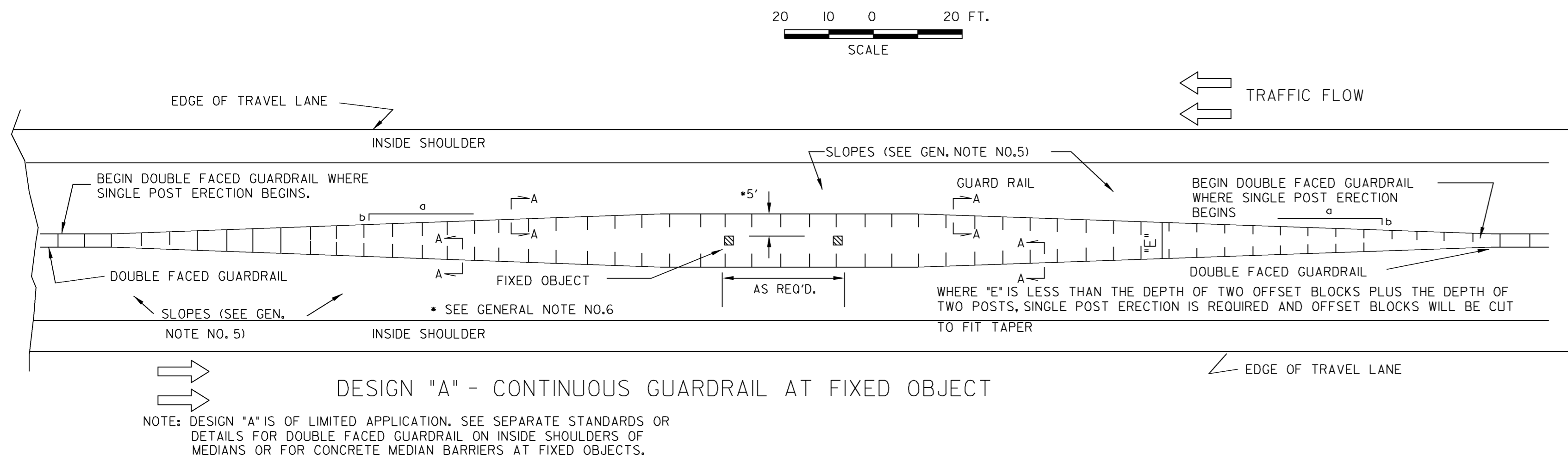


- GENERAL NOTES:
- SPECIFICATIONS: GA. STANDARD CURRENT EDITION & SUPPLEMENTS THERETO
 - DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 - NET LENGTH OF RAIL ELEMENTS MAY BE EITHER 12'-6" OR 25'-0".
 - RAIL ELEMENTS ON CURVES OF RADII LESS THAN 150' WILL BE PRECURVED.
 - PAYMENT FOR GUARDRAIL (TYPE "T") WILL INCLUDE ALL POSTS, BLOCKS, HARDWARE ACCESSORIES AND WHERE REQUIRED ALL ADDITIONAL POSTS, END SHOES, TERMINAL SECTIONS, TRANSITION SECTIONS, BACK-UP PLATES AND REMOVAL AND REPLACEMENT OF PORTIONS OF MEDIAN PAVING, SPILLWAYS OR CATCH BASINS WHERE NECESSARY.
 - ALL GUARDRAIL TERMINALS SHALL REQUIRE AN APPROVED ANCHORAGE AS SPECIFIED IN THE PLANS OR APPROVED BY THE ENGINEER EXCEPT WHERE CONNECTED TO A BRIDGE END OR OTHER CONCRETE FACE.
 - NUTS, BOLTS AND WASHERS WHICH ARE NOT DETAILED ON THIS STANDARD, SHALL BE AS SHOWN FOR W BEAM GUARDRAIL ON STANDARD 4380.
 - SEE SEPARATE STANDARDS AS APPLICABLE FOR ANCHORAGES, POSTS, OFFSET BLOCKS, CONNECTIONS TO CONCRETE FACE, W BEAM GUARDRAIL, ETC.
 - SEE STANDARD 4381 FOR DETAILS AND REQUIREMENTS OF BACK-UP PLATES, WHERE STEEL OFFSET BLOCKS ARE ALLOWED OR SPECIFIED.
 - OFFSET BLOCKS SHALL BE PLASTIC UNLESS OTHERWISE APPROVED OR SPECIFIED.

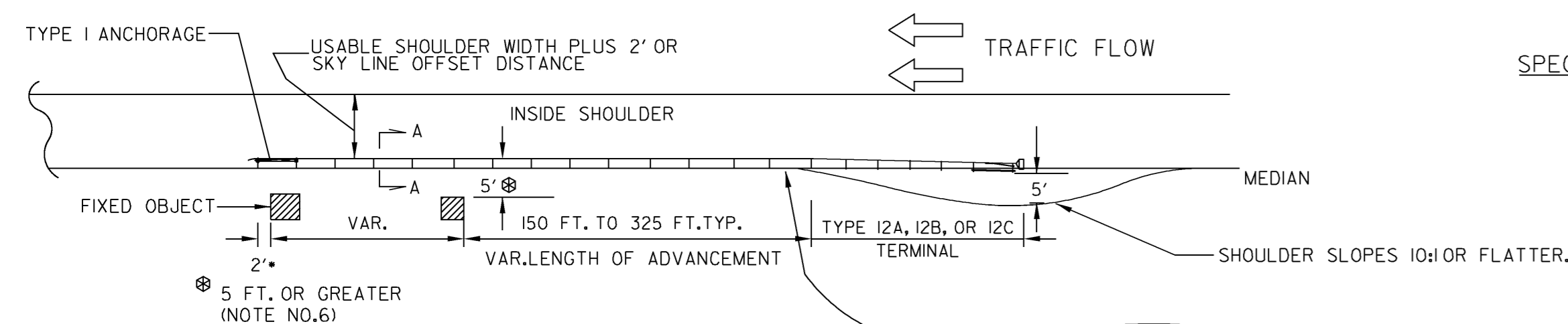
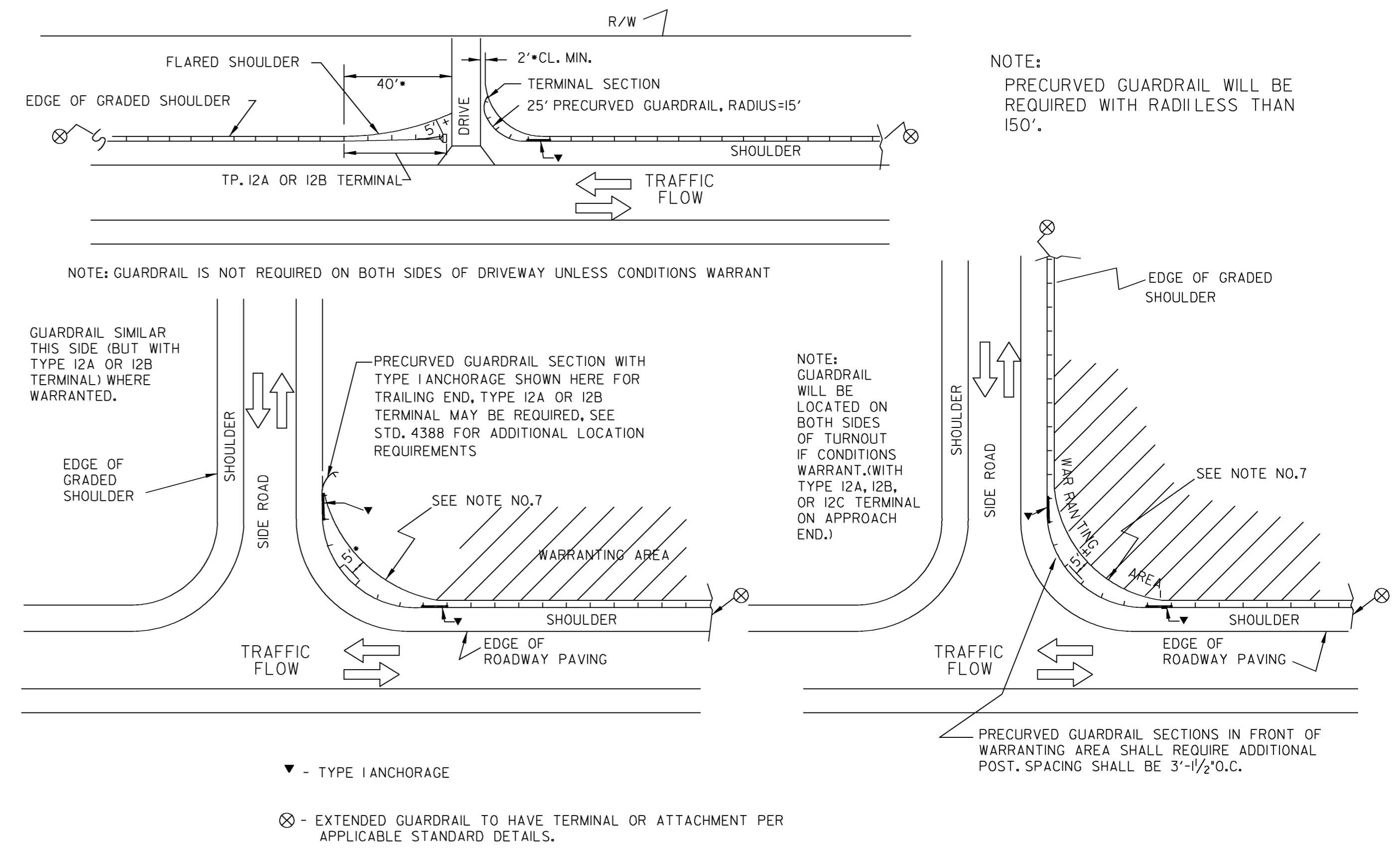
DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REVISION	STANDARD "T" BEAM GUARDRAIL CONNECTION TO 31 INCH HEIGHT "W" BEAM	
	NO SCALE	AUGUST 2011
BY	DES. G.L.O. (SUBMITTED) <i>Ben A. Ste...</i> DRW. G.L.O. CHK. B.R.E. (APPROVED) <i>Donnell M. P...</i> REVIEW B.A.S.	NUMBER 4385

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

GUARDRAIL LOCATIONS IN MEDIANS



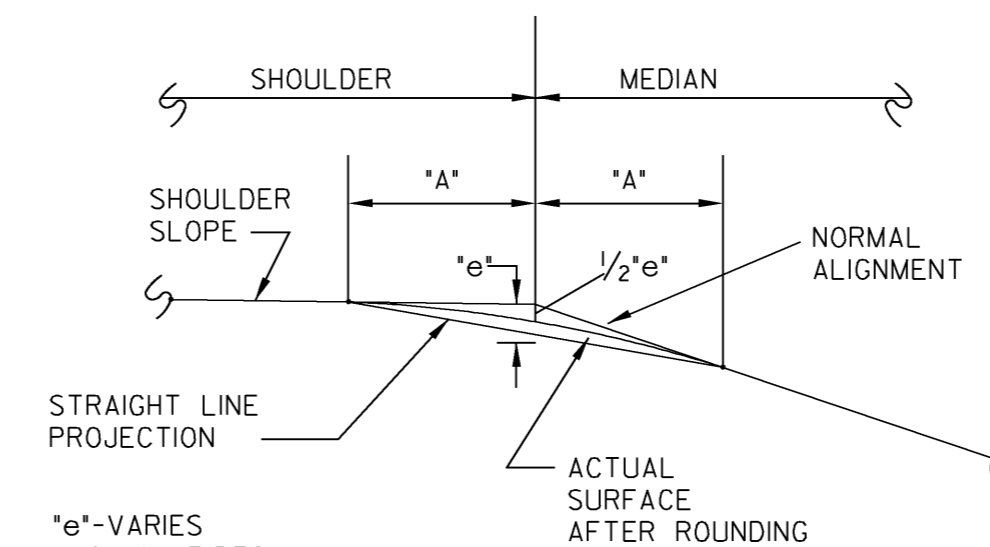
GUARDRAIL LOCATIONS AT TURNOUTS



SPECIAL NOTE: FOR CONTINUOUS DOUBLE FACED GUARDRAIL ON THE INSIDE SHOULDER OF MEDIAN, SEE SEPARATE DETAILS.

FLARE RATE: DESIGN "A", "B", & "D"			
DESIGN SPEED (mph)	SHY-LINE OFFSET (ft)	MAX. FLARE RATE (d/b) BARRIER INSIDE SHY-LINE	BARRIER AT OR BEYOND SHY-LINE
70	9	30	15
60	8	26	14
55	7	24	12
50	6.5	21	11
45	6	18	10
40	5	16	8
30	4	13	7

IF THE OFFSET FROM THE EDGE OF THE TRAVEL LANE TO THE FACE OF THE GUARDRAIL AT ANY POINT ALONG THE INSTALLATION IS LESS THAN THE SHY-LINE OFFSET, USE THE FLATTER RATES GIVEN IN THE TABLE.



DETAIL OF SHOULDER ROUNDING
(TYPICAL FOR EXISTING GUARDRAIL INSTALLATIONS ON 6:1 OR ON 8:1 SLOPE)

GENERAL NOTES:

- SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION, AND SUPPLEMENTS THERETO.
- FOR DETAILS OF GUARDRAIL HARDWARE, POST, AND OFFSET BLOCKS, SEE STANDARDS 4381 AND 4382.
- FOR DETAILS OF GUARDRAIL TERMINALS AND ANCHORAGES, SEE SEPARATE STANDARDS, OR CONSTRUCTION DETAILS AS APPLICABLE.
- FOR DETAILS OF DOUBLE FACED GUARDRAIL ATTACHED TO OR TERMINATED AT CONCRETE MEDIAN BARRIER, SEE STANDARD 4940.
- NEGATIVE SLOPES IN FRONT OF GUARDRAIL AND ALL TERMINALS SHALL BE 10:1, OR FLATTER, FOR ALL NEW INSTALLATIONS.
- OFFSET BETWEEN FACE OF GUARDRAIL AND FACE OF FIXED OBJECT SHALL BE 5 FT. + DESIRABLE, 4'-3" MINIMUM. WHERE AN OFFSET OF LEAST 4'-3" CANNOT BE OBTAINED, DOUBLE POST SPACINGS (3'-1/2' O.C.) IN FRONT OF OBJECT PLUS A MINIMUM OF 7 SUCH SPACINGS IN ADVANCE OF OBJECT IS REQUIRED WITH A 3 FT. MINIMUM OFFSET.
- WHERE PRECURVED GUARDRAIL IS INSTALLED AROUND RADIAT INTERSECTING SIDE ROADS, THE SHOULDER AREA BACK OF THE GUARDRAIL IS TO BE WIDENED AS SHOWN ABOVE WITH THE OFFSET BETWEEN THE TRAVEL LANE AND GUARDRAIL REMAINING APPROXIMATELY CONSTANT.

DESIGN "C" - GUARDRAIL ON INSIDE SHOULDERS AT FIXED OBJECTS

NOTE: GUARDRAIL PROTECTION SHALL BE REQUIRED ON BOTH SIDES OF OBJECT FOR DESIGN "C", UNLESS OTHERWISE SPECIFIED.

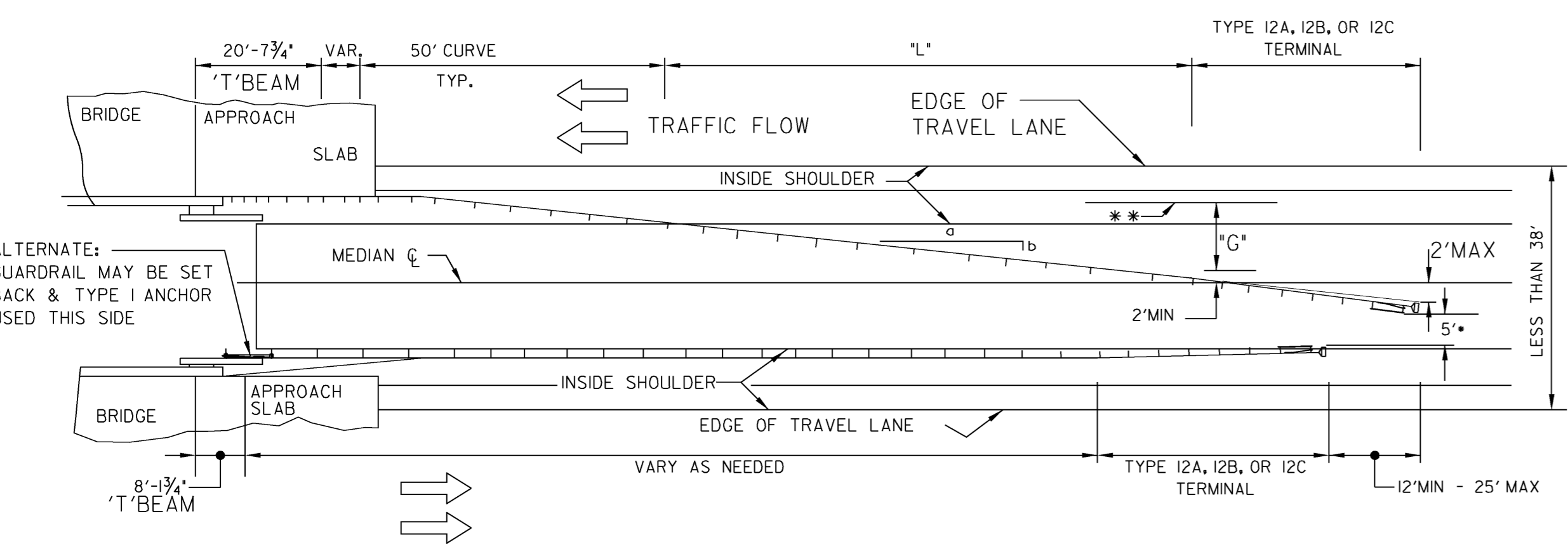
ANY PORTION OF GUARDRAIL WITH THE BACK SIDE OF POST EXPOSED INSIDE THE CLEAR ZONE OF OPPOSING TRAFFIC SHALL BE DOUBLE FACED, EXCEPT FOR BREAK-AWAY POSTS.

**PROJECTION FROM FACE OF GUARDRAIL AT BRIDGE END

G = DISTANCE FROM ** TO WITHIN 2' OF MEDIAN C
MIN "L" = "G"(d/b) - 25'

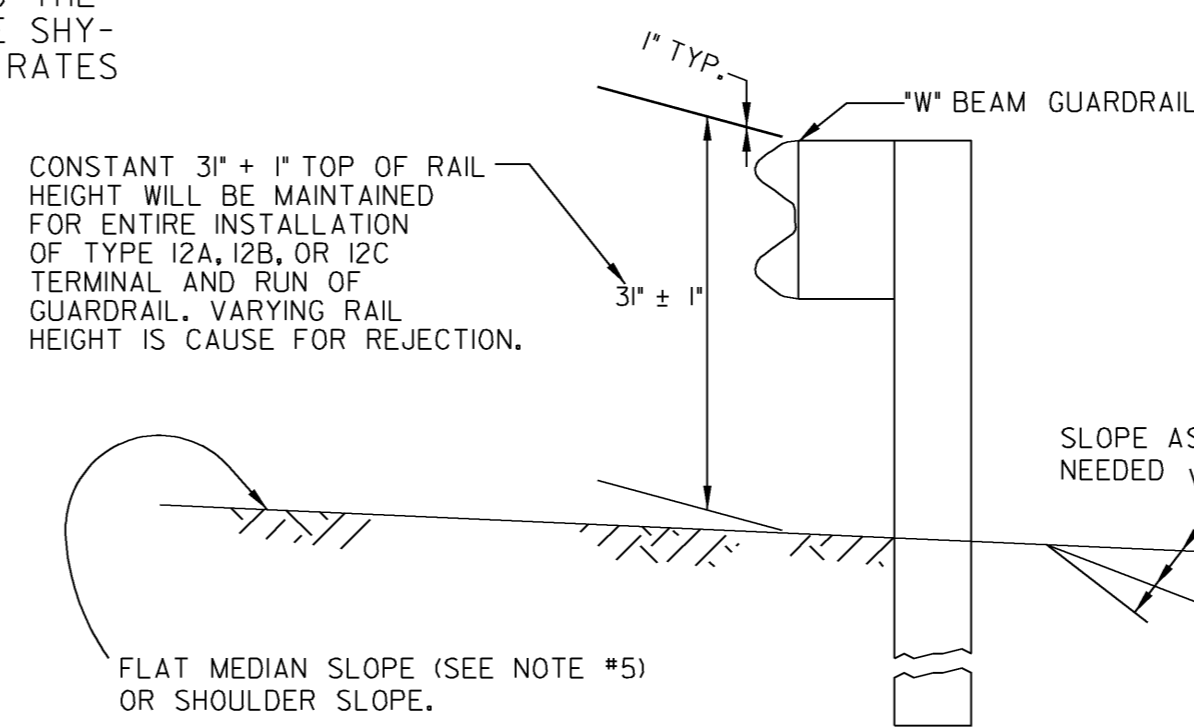
FOR MINIMUM FLARE d/b SEE CHART AT TOP.

⊗ FOR WIDER MEDIANS, SEE STD. 4051



DESIGN "D" - GUARDRAIL AT BRIDGE ENDS IN NARROW MEDIAN

DESIGN "D" IS LIMITED FOR USE WHERE THE GRASSED MEDIAN AT BRIDGE APPROACHES IS ALMOST FLUSH (SLOPES NOT STEEPER THAN 20:1) AND MEDIAN IS LESS THAN 38 FT. IN WIDTH FOR OTHER CONDITIONS, SEE STD. 4387 OR CONSTRUCTION DETAILS.



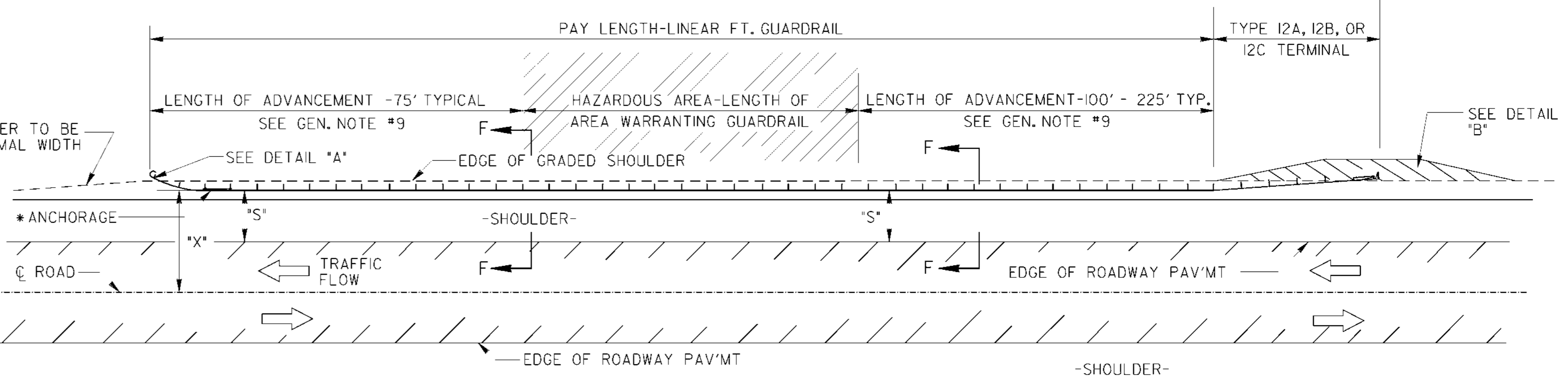
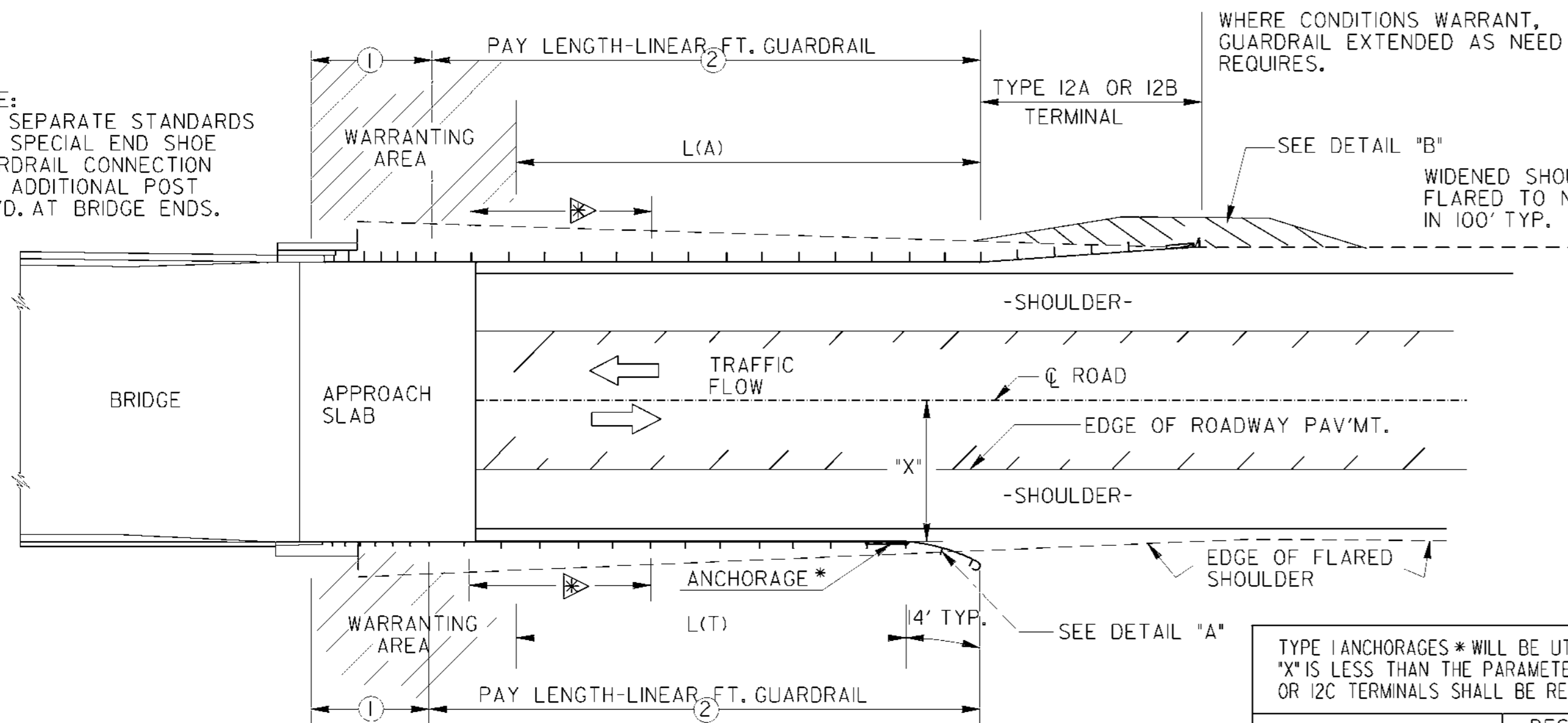
SECTION A-A
(SHOWN FOR "W" BEAM GUARDRAIL)

REV 1-29-16		DATE	DEPARTMENT OF TRANSPORTATION	
REV TP12 TO I2A/B/C TRML		REVISION	STATE OF GEORGIA	
			STANDARD	
			GUARDRAIL LOCATIONS IN MEDIANS	
			GUARDRAIL LOCATIONS AT TURNOUTS	
			31 INCH GUARDRAIL HEIGHT	
			SCALE: AS SHOWN	
			AUGUST 2011	
DES. G.L.O. (SUBMITTED)	DRW. G.L.O.	BY	STATE DESIGN POLICY ENGINEER	NUMBER
CHK. B.R.E. (APPROVED)	REVIEW B.A.S.		CHIEF ENGINEER	4386

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

NOTE: FOR MINIMAL REDUCTION (TO 2') OF SHOULDER ACROSS BRIDGE, ALIGNMENT SHALL BE STRAIGHT FOR SHORT INSTALLATIONS (LESS THAN 200' TOTAL) AS SHOWN HEREON. FOR LONGER INSTALLATIONS, OR GREATER REDUCTION OF SHOULDER WIDTH, GUARDRAIL INSTALLATION SHALL BE AS PER DETAIL AT BOTTOM MIDDLE.

NOTE: SEE SEPARATE STANDARDS FOR SPECIAL END SHOE GUARDRAIL CONNECTION AND ADDITIONAL POST REQ'D. AT BRIDGE ENDS.



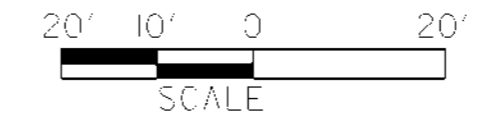
TRAFFIC VOLUME	MIN. L(T)	MIN. L(A)
DHV OVER 400	100'-0"	137'-6"
DHV 200-400	87'-6"	125'-0"
DHV 100-200	75'-0"	112'-6"
ADT 400 & OVER	62'-6"	100'-0"
ADT UNDER 400	50'-0"	87'-6"

① = 20'-7 3/4" OF "T" BEAM (STD. 4382)
 ② = VARIABLE LENGTH OF "W" BEAM (6'-3" POST SPA.)
GUARDRAIL LOCATION AT BRIDGE ENDS

TYPE I ANCHORAGES * WILL BE UTILIZED AT THE TRAILING END, UNLESS THE DISTANCE "X" IS LESS THAN THE PARAMETER GIVEN IN THIS TABLE IN WHICH CASE TYPE I2A, I2B, OR I2C TERMINALS SHALL BE REQUIRED.

DESIGN TRAFFIC VOLUME	DESIGN SPEEDS (AS SHOWN ON COVER SHEET)				
	40 MPH	50 MPH	55 MPH	60 MPH	70 MPH
OVER 6000 A.D.T.	14'	20'	22'	30'	30'
1500 - 6000 A.D.T.	12'	16'	20'	26'	28'
750 - 1500 A.D.T.	10'	14'	16'	20'	24'
UNDER 750 A.D.T.	7'	10'	12'	16'	20'

GUARDRAIL LOCATION ALONG ROADWAY

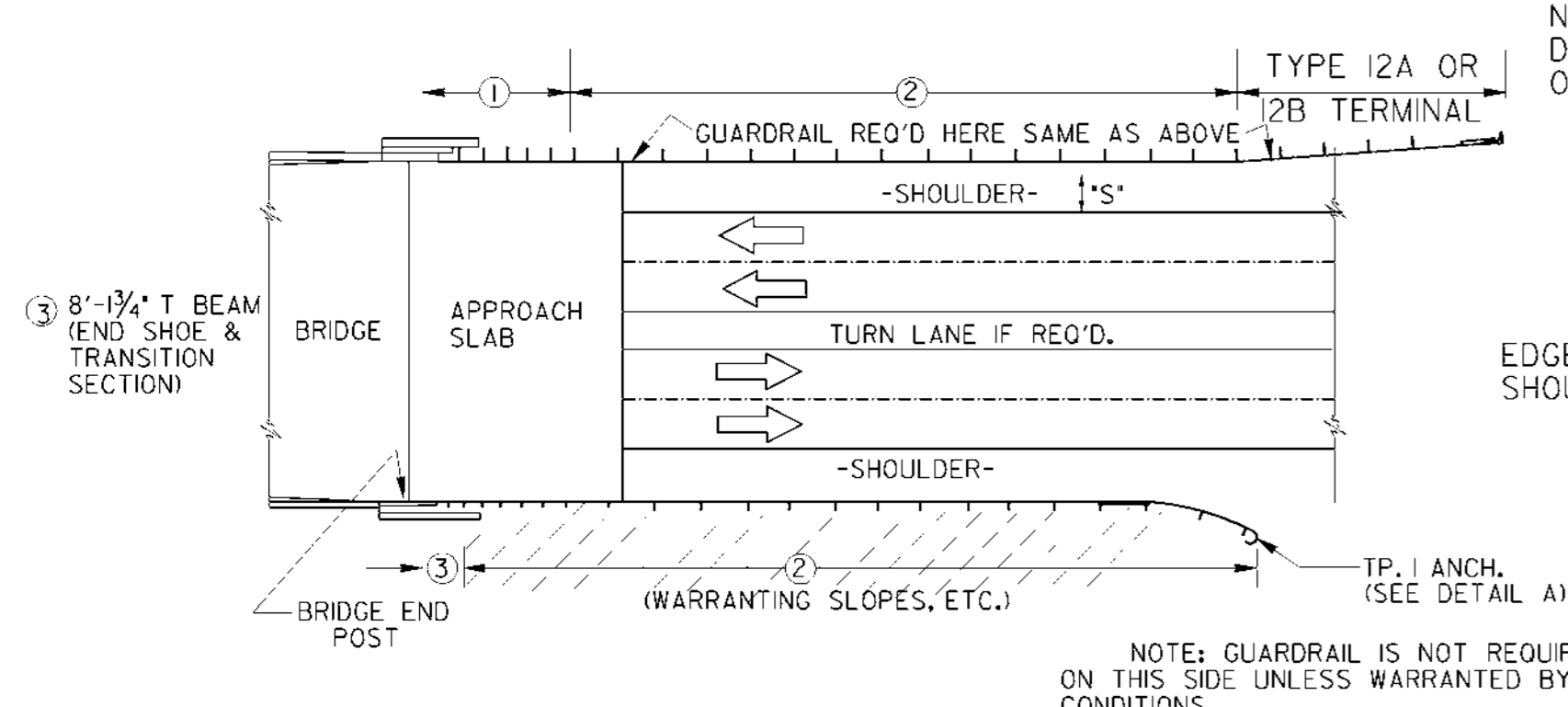
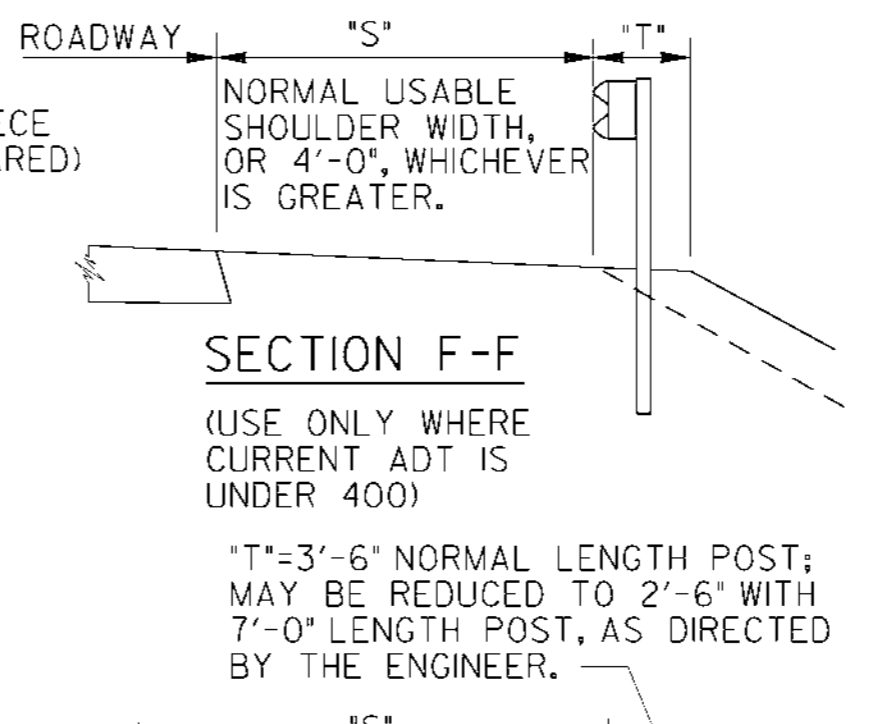
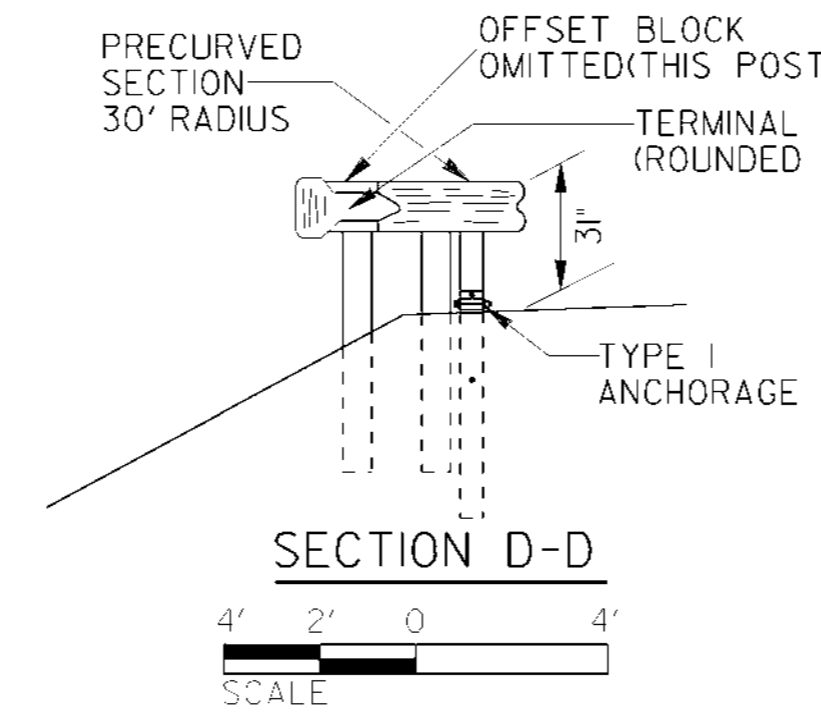
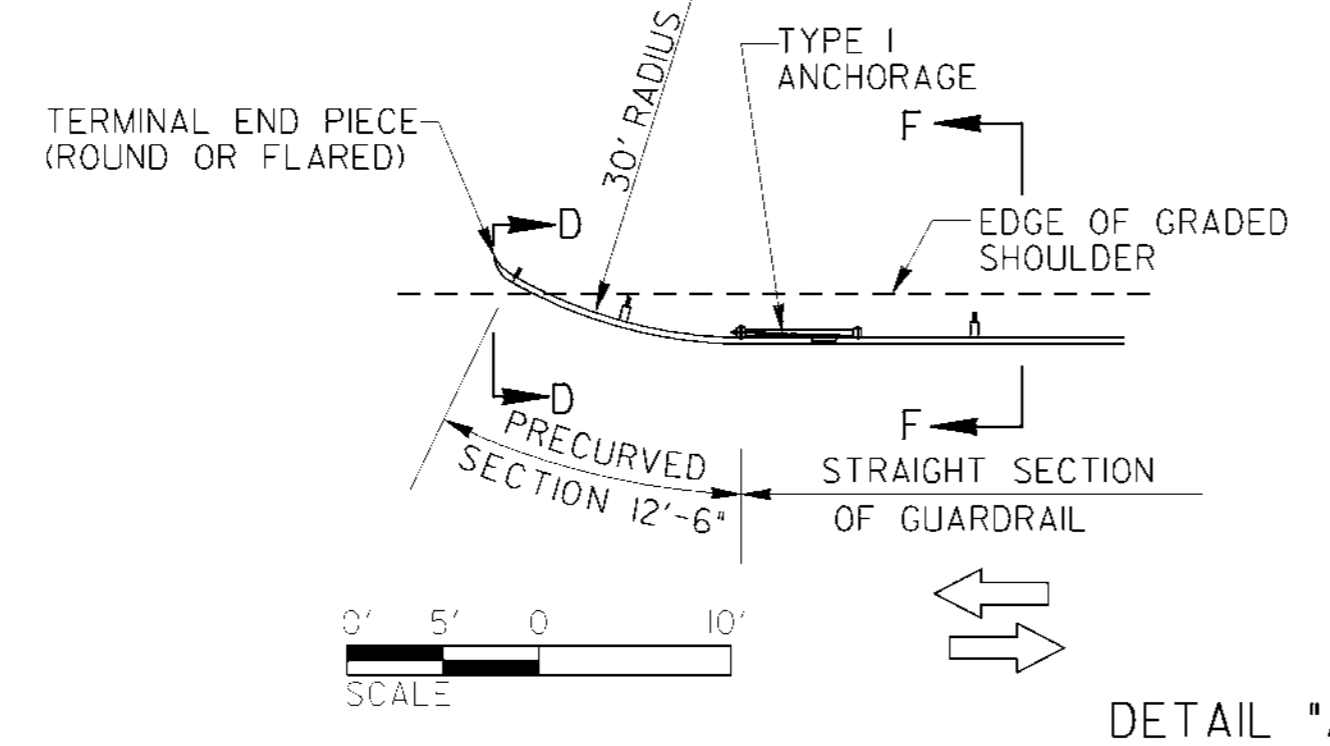


"S" IS THE OFFSET TO THE FACE OF THE GUARDRAIL; THIS WILL BE TWO(2) FEET GREATER THAN THE USABLE SHOULDER WIDTH (PER AASHTO MINIMUM SHOULDER REQUIREMENTS) EXCEPT WHERE THE CURRENT A.D.T. IS UNDER 400, IN WHICH CASE "S" MAY BE EQUAL TO THE USABLE OR GRADED SHOULDER WIDTH (NOT LESS THAN 4).

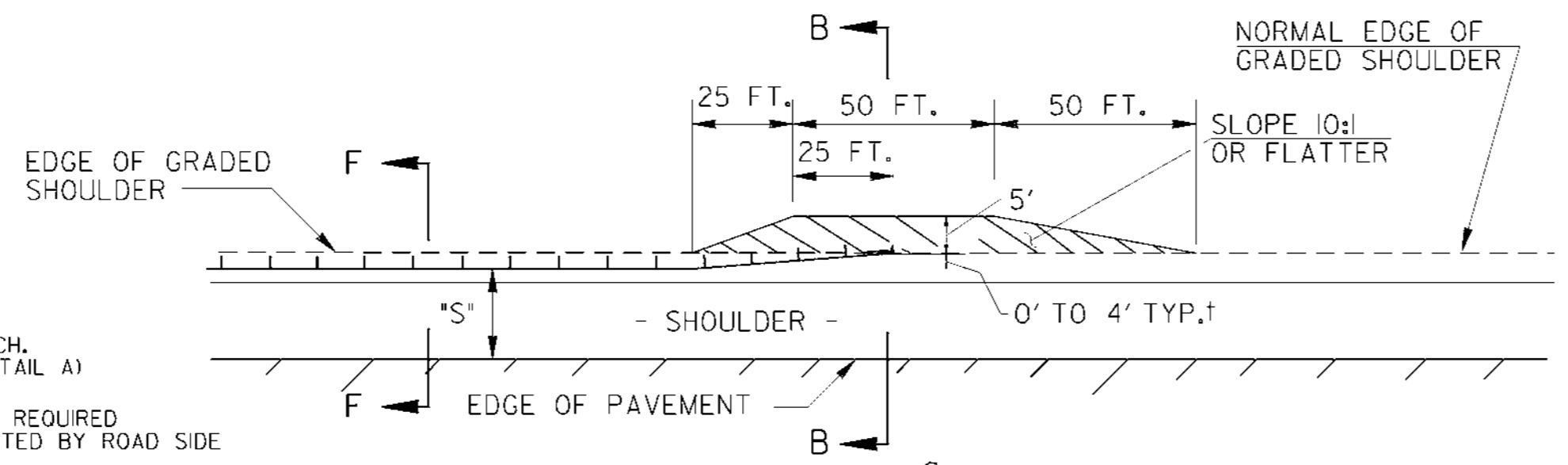
GENERAL NOTES:

- GUARDRAIL, ITS FITTINGS, PARTS, ETC. ARE TO BE IN ACCORDANCE WITH GEORGIA STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS.
- FOR DETAILS OF BEAM TYPE GUARDRAIL, ACCESSORIES, GUARDRAIL POST, OFFSET BLOCKS, GUARDRAIL ANCHORAGE TYPE I, TERMINALS TYPE I2A, I2B, AND I2C, & BRIDGE END CONNECTION DETAILS, SEE APPLICABLE GEORGIA STANDARD PLANS AND/OR CONSTRUCTION DETAILS.
- ALL OFFSET AND LENGTHS HERE SHOWN ARE APPLIED TO FACE OF GUARDRAIL.
- POST SPACING SHALL BE 6'3" C. TO C., UNLESS OTHERWISE NOTED.
- TYPE I2A, I2B, AND I2C TERMINALS SHOULD BE TERMINATED ON SLOPES 10:1 OR FLATTER, WHERE NORMAL SLOPE IS STEEPER, A 10:1 OR FLATTER SLOPE SHOULD BE CONSTRUCTED.
- GUARDRAIL SHALL NOT BE ERECTED ON SLOPES WHICH ARE STEEPER THAN 10:1, EXCEPT FOR THE PORTION OF PRECURVED (SHOP CURVED) SECTION THAT EXTENDS BACK OF THE SHOULDER AS SHOWN IN DETAIL "A" WHICH IS ERECTED ON NORMAL SLOPES OR EXCEPT WHERE SHOWN OTHERWISE IN PLANS.
- PAY LENGTH SHALL BE MEASURED ALONG FACE OF GUARDRAIL.
- W. BEAM GUARDRAIL WILL HAVE A CONSTANT TOP OF RAIL HT. OF 3" THROUGHOUT INSTALLATION EXCEPT WHERE A PORTION OF THE PRECURVED SECTION SHOWN IN DETAIL "A" EXTENDS BACK OF THE GRADED SHOULDER.
- GUARDRAIL WILL EXTEND PAST HAZARD ON BOTH THE APPROACH & TRAILING ENDS TO PREVENT VEHICLE PENETRATION BEHIND THE RAIL INTO THE HAZARDOUS AREA. THE TYPICAL LENGTHS OF ADVANCEMENT SHOWN MAY BE INCREASED OR DECREASED WHEN SHOWN IN THE PLANS, OR WHERE DIRECTED BY THE ENGINEER BECAUSE OF SPEED DESIGN, ROADSIDE GEOMETRY, SIZE OF HAZARD, OR OTHER CONDITIONS. IF FURTHER INFORMATION IS DESIRED; SEE THE AASHTO "ROADSIDE DESIGN GUIDE".

NOTE: THESE MINIMUM LENGTHS ARE FOR STRAIGHT ALIGNMENTS IN ADVANCE OF WARRANTING AREA.



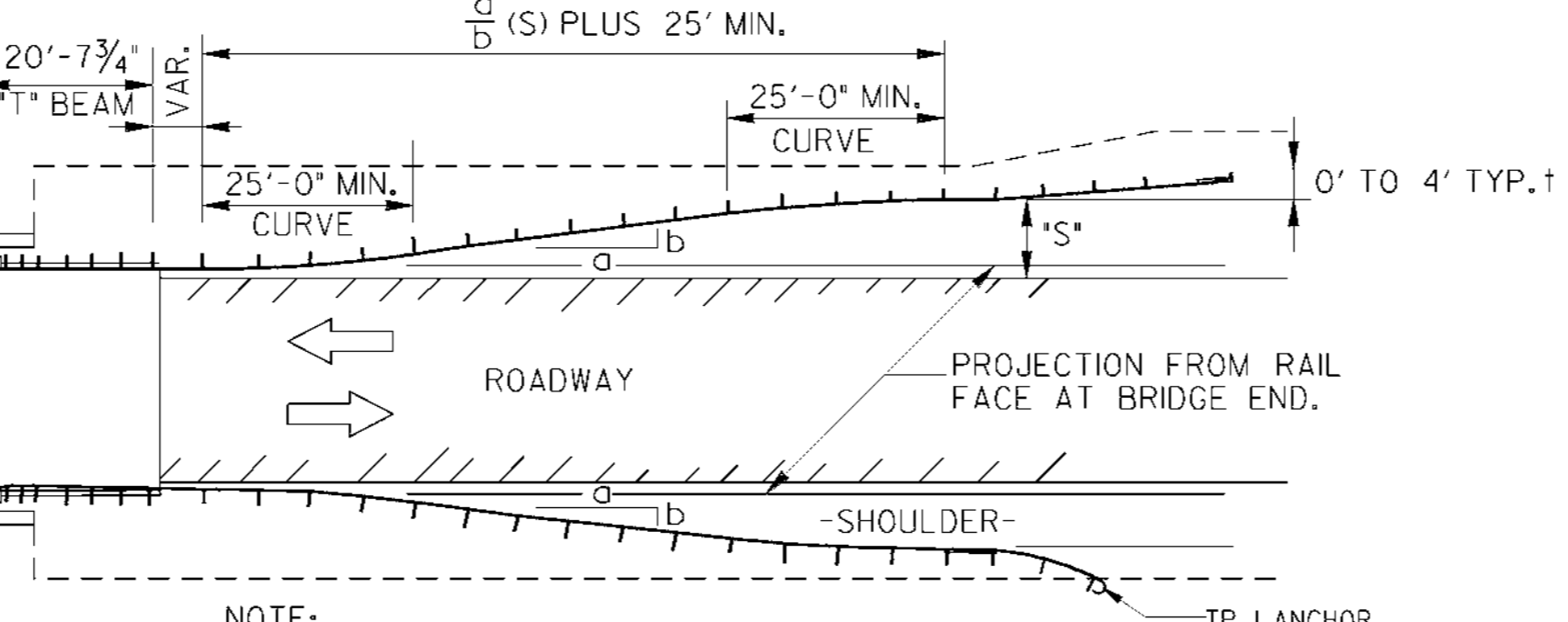
NOTE: DETAIL "A" IS FOR USE ONLY WHERE TYPE I ANCHORAGES ARE PERMITTED AS SHOWN ABOVE OTHERWISE, SEE DETAIL "B" FOR PROPER INSTALLATION OF TYPE I2A, I2B, OR I2C TERMINAL.



NOTE: GUARDRAIL IS NOT REQUIRED ON THIS SIDE UNLESS WARRANTED BY ROAD SIDE CONDITIONS.

GUARDRAIL AT BRIDGE END OF MULTI-LANE UNDIVIDED HIGHWAY

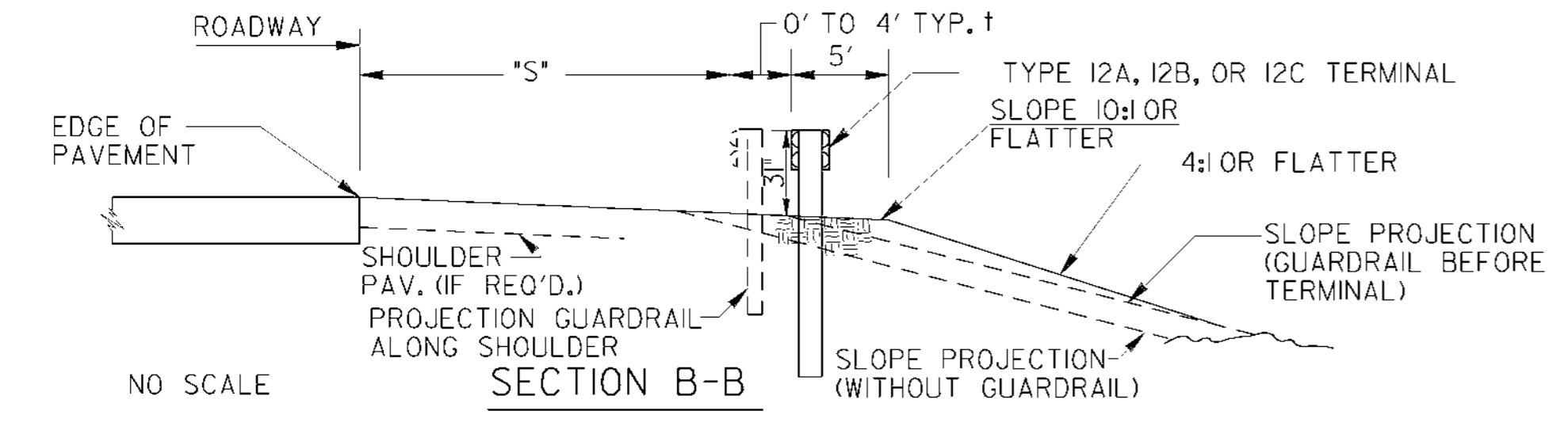
NO SCALE



NOTE: DETAILS ARE SIMILAR FOR BOTH SIDES, BUT LENGTHS AND ANCHORAGE/TERMINAL TYPES MAY DIFFER.

GUARDRAIL LOCATION AT END OF NARROW BRIDGE

(NOTE: DETAILS NOT SHOWN HERE ARE SIMILAR TO THOSE AT TOP LEFT.)



DETAIL "B"

NO SCALE

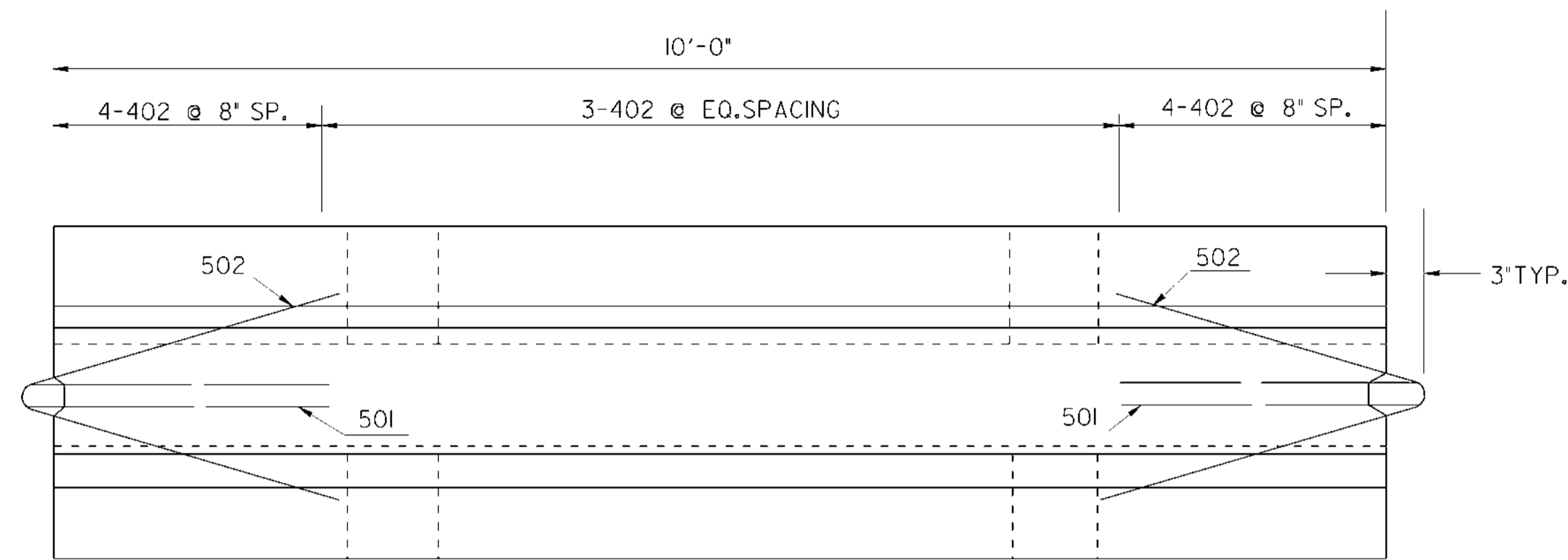
DESIGN SPEED (mph)	SHY-LINE OFFSET (ft)	FLARE RATE (a/b)	
		BARRIER INSIDE SHY-LINE	BARRIER AT OR BEYOND SHY-LINE
70	9	30	15
60	8	26	14
55	7	24	12
50	6.5	21	11
45	6	18	10
40	5	16	8
30	4	13	7

IF THE OFFSET FROM THE EDGE OF THE TRAVEL LANE TO THE FACE OF THE GUARDRAIL AT ANY POINT ALONG THE INSTALLATION IS LESS THAN THE SHY-LINE OFFSET, USE THE FLATTER RATES GIVEN IN THE TABLE.

↑ SEE GA STANDARD 4384 FOR OFFSETS AND FLARE RATES FOR TYPE I2A, I2B, AND I2C TERMINALS.

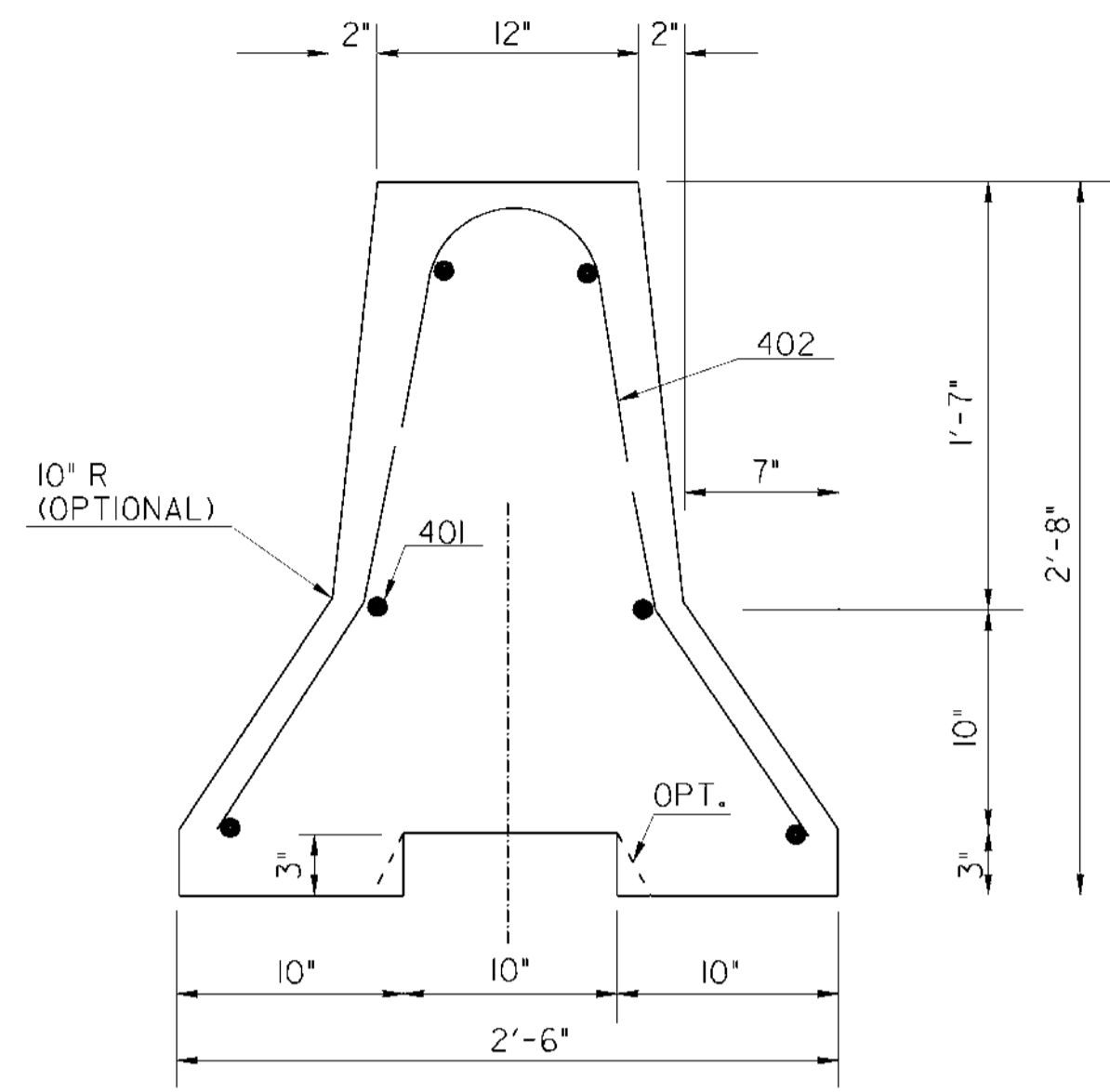
1-29-16		DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
REV TP 12 TO 12A/B/C	REV NOTES AND FLARE TBL	REVISION	STANDARD GUARDRAIL LOCATION DETAILS FOR UNDIVIDED HIGHWAYS AND ROADS (WITH SHOULDERS ADJACENT TO THE ROADWAY) 3 INCH GUARDRAIL HEIGHT	
			SCALE AS SHOWN	
DES. G.L.O.	(SUBMITTED)	BY	STATE DESIGN POLICY ENGINEER	
DRW. G.L.O.	(APPROVED)		MARGARET B. PATEL CHIEF ENGINEER	
CHK. B.R.E.			NUMBER 4388	
REVIEW B.A.S.			AUGUST 2011	

PRECAST CONCRETE BARRIER DETAILS

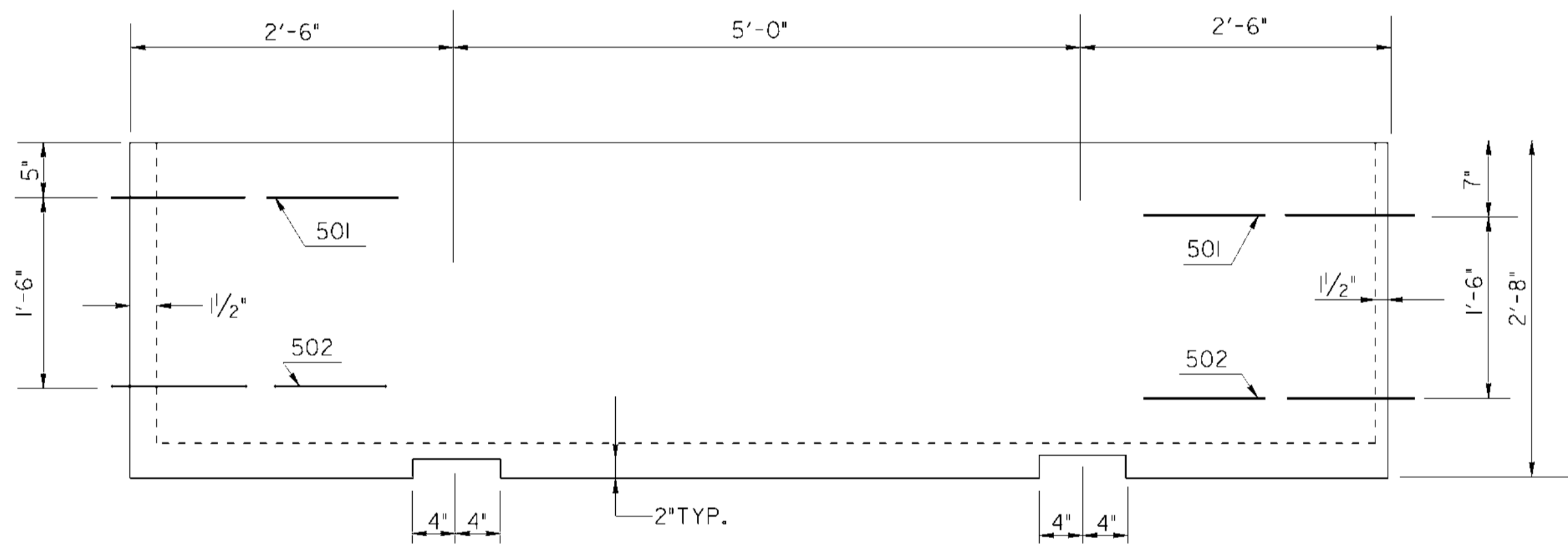


PLAN

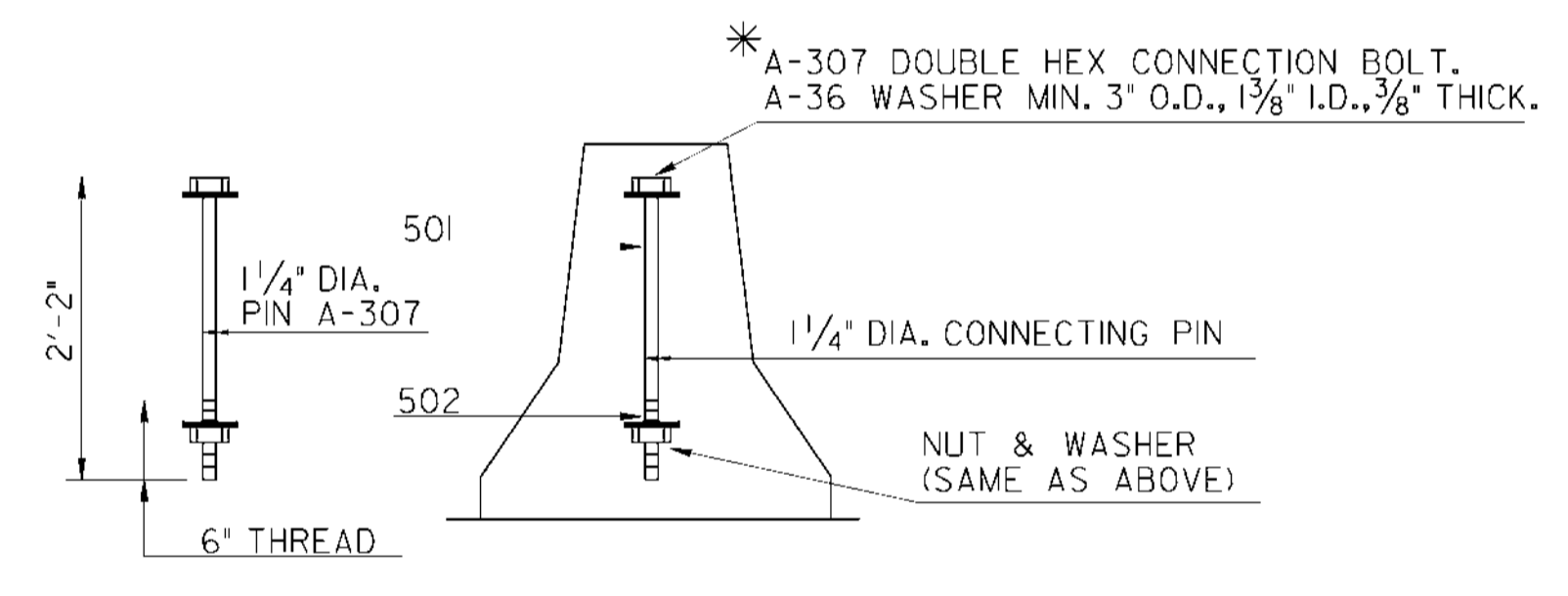
NOTE:
BARRIER SECTIONS SHALL BE CONNECTED TOGETHER WITH THE 1/4" DIA. A-307 DOUBLE HEX CONNECTION BOLT. THE BOTTOM NUT & WASHER SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE BARRIER INSTALLATION.



END ELEVATION



SIDE VIEW

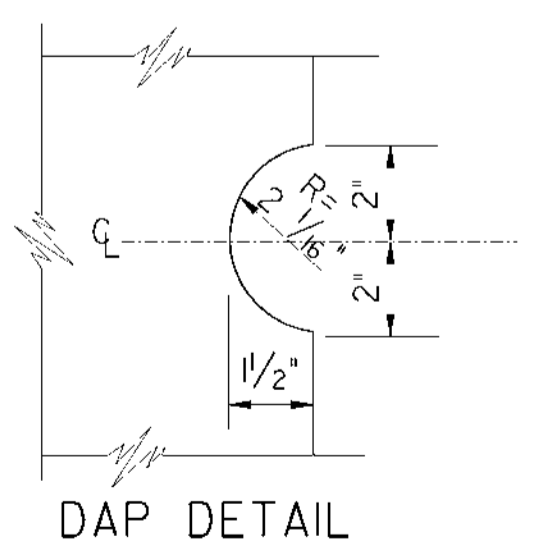
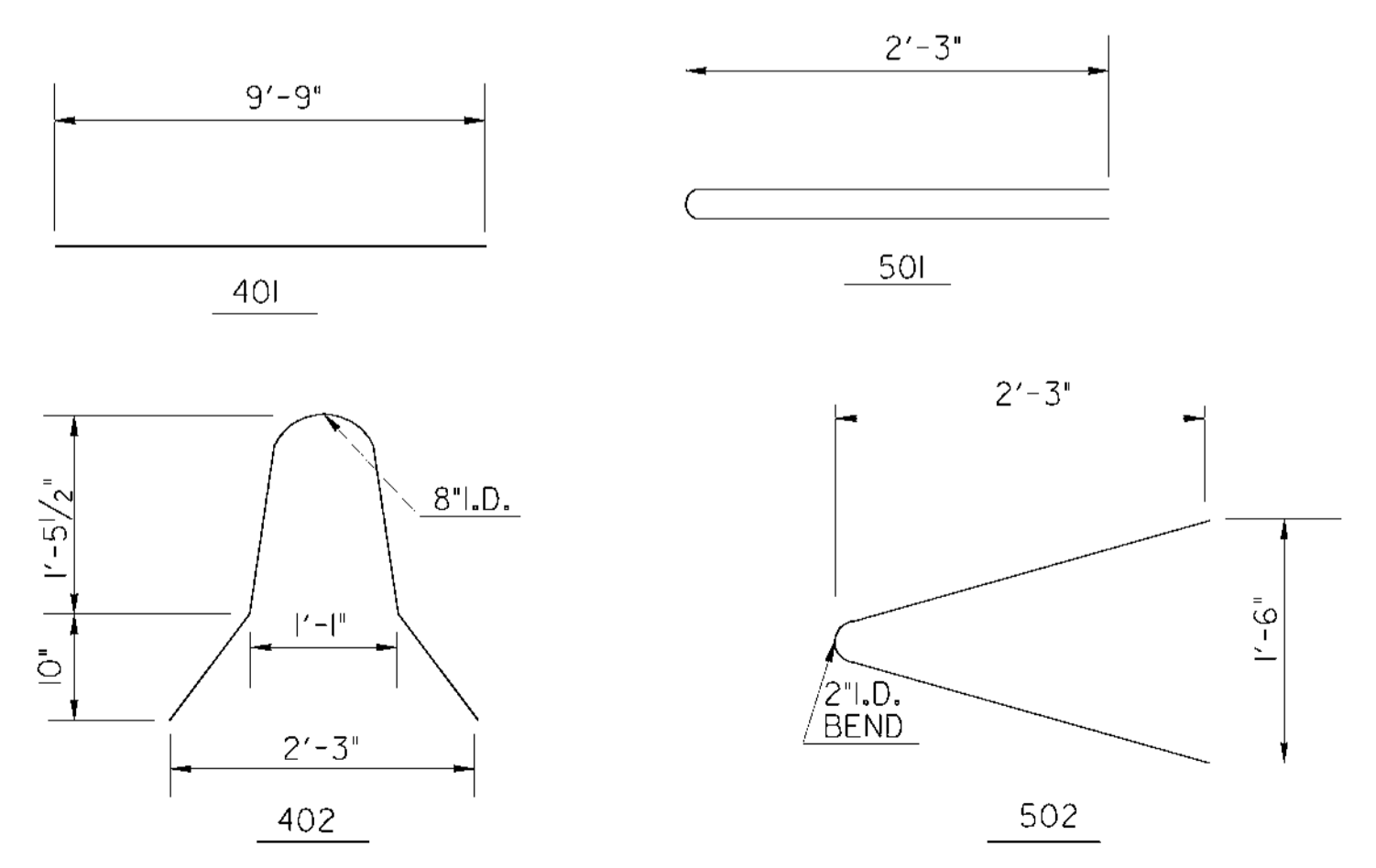


PIN CONNECTION

GENERAL NOTES:

- 1-MATERIALS: CLASS 'A' CONCRETE AND 40 STEEL.
- 2-SEE GA. SPECIFICATIONS FOR BASIS OF PAYMENT AND METHOD NO. 1.
- 3-REINFORCEMENT, HAVING AN AREA AT LEAST EQUAL TO REBARS SHOWN, MAY BE USED AS AN ALTERNATE.
- 4-BARRIERS SHALL BE PLACED SUCH THAT OPENINGS BETWEEN INDIVIDUAL SECTIONS SHALL BE KEPT TO A MAXIMUM.

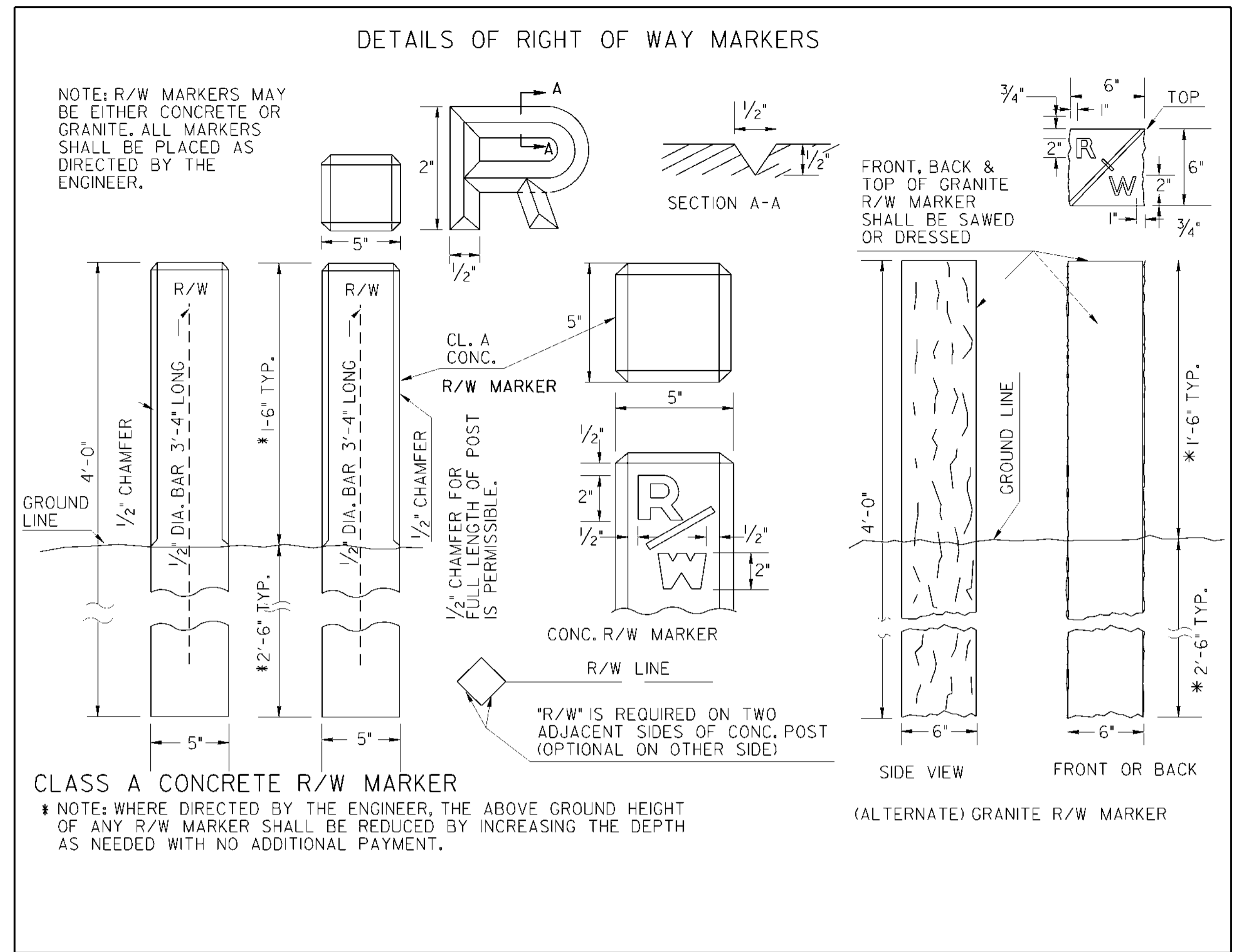
* AN ALTERNATE CONNECTING PIN WITH A FUSED NUT ON THE TOP THREADED PORTION AND NUT AND WASHER AS SPECIFIED ON THE BOTTOM MAY ALSO BE USED.



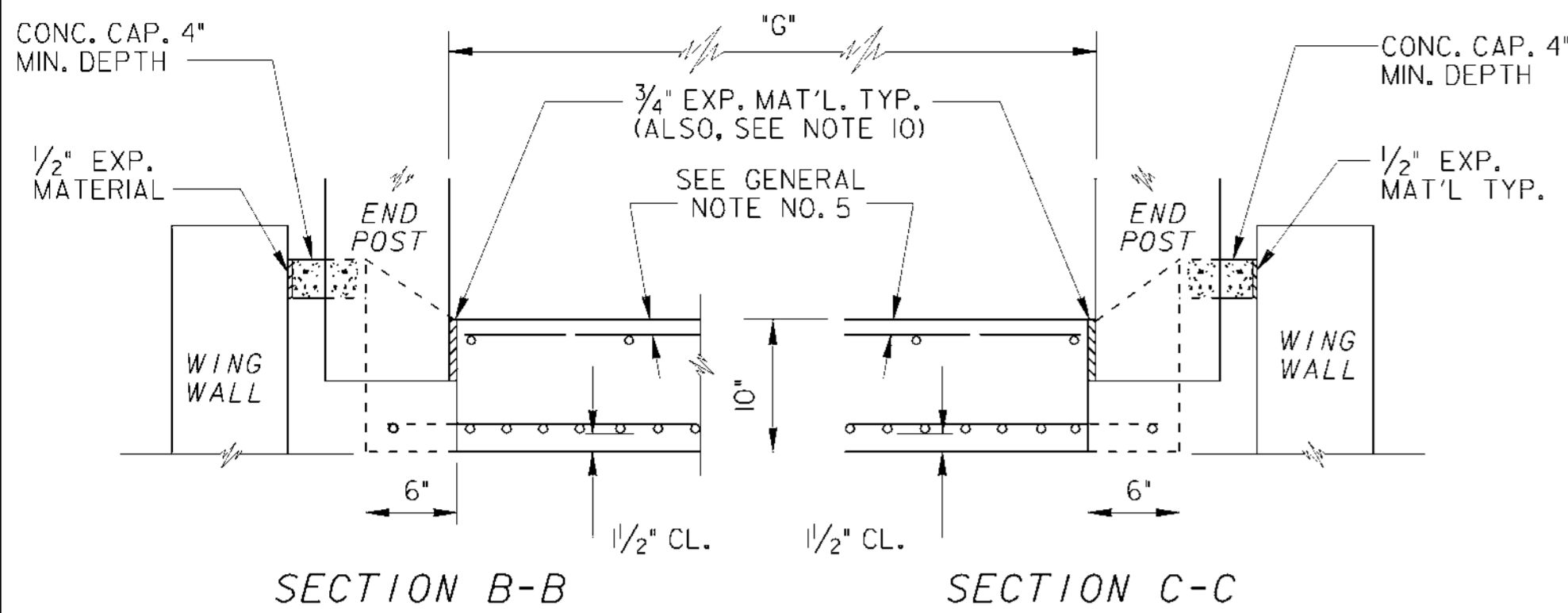
DAP DETAIL

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA			
STANDARD DETAILS OF PRECAST TEMPORARY BARRIERS			
REV. CONNECTION WASHER AND REV. GEN. NOTE NO. 4.	9-8-06	NO SCALE	
REV. REBAR & PIN CONN.	5-2-01		
COTTER PIN REQUIREMENT	5-10-96		
BY	DATE	AUG., 1995	
G.L.C.	DES. _____	(SUBMITTED) <i>[Signature]</i> STATE ROAD & AIRPORT DESIGN ENGR. (APPROVED) <i>[Signature]</i> CHIEF ENGINEER	
R.M.U.	DRW. _____		
BY	CHK. _____		
		NUMBER 4961	

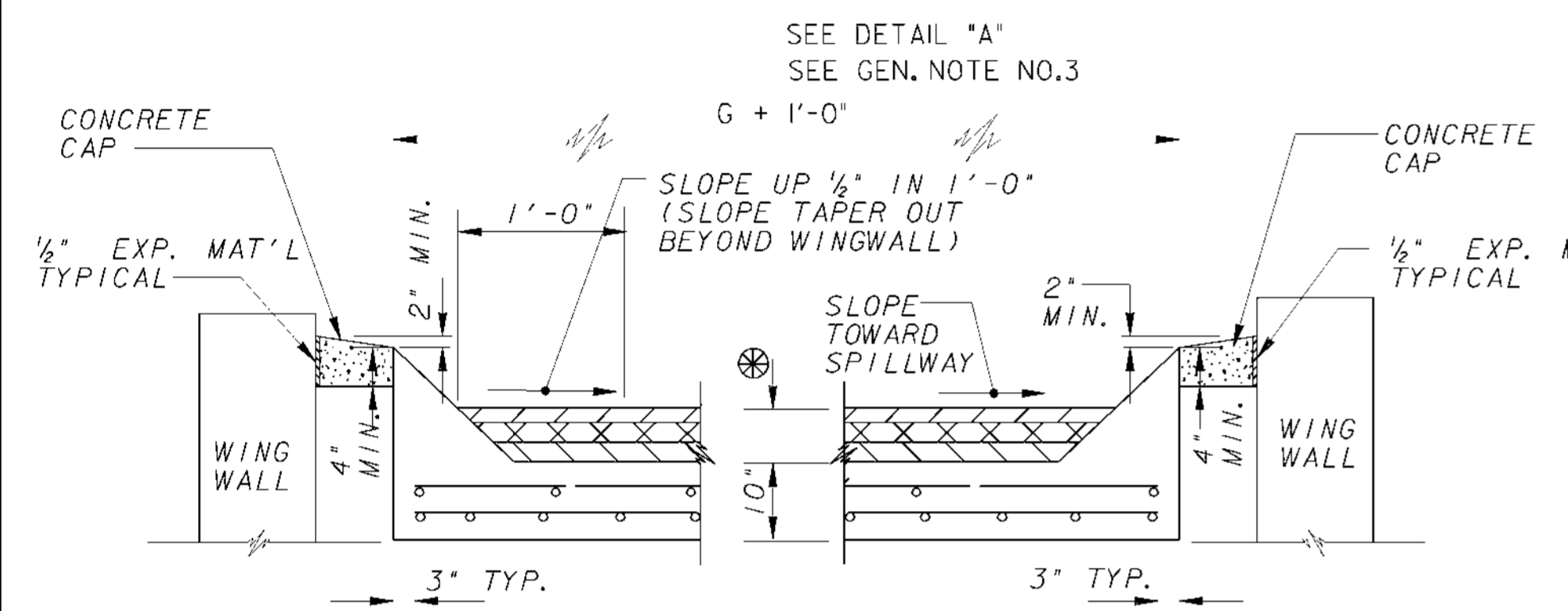
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



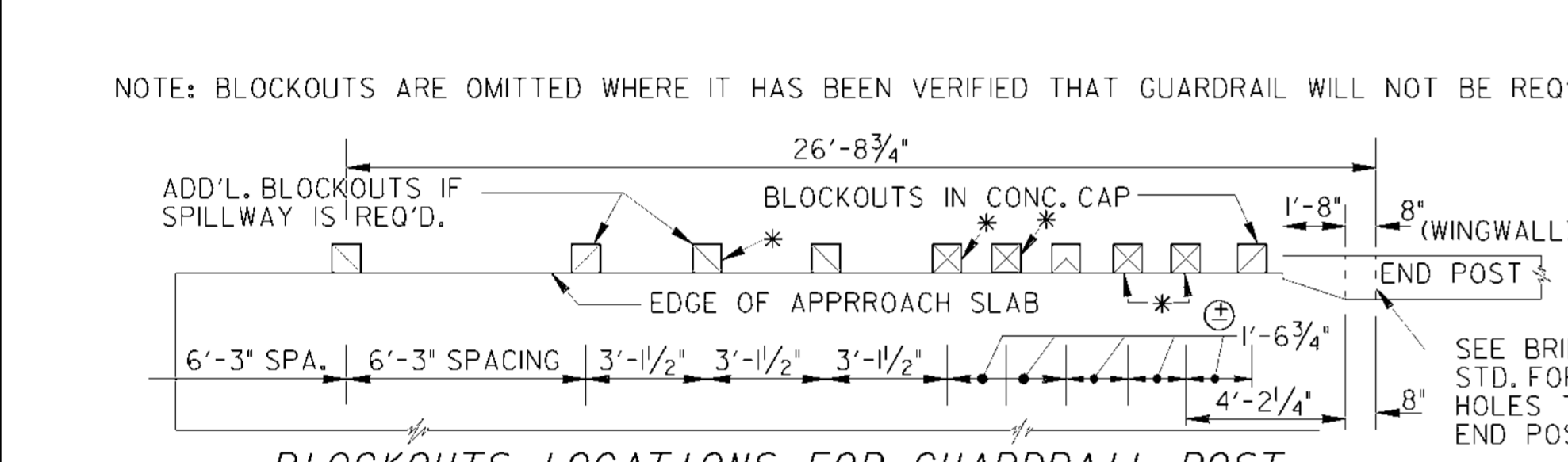
REDRAWN TO MATCH METRIC 4-10-06		GA. STD. 9003		REDRAWN 6-30-98		REV. F.A.P. - SP. POST ALT. 9-28-90		VAR. HT. R/W MARKER 10-11-88		ADD GRANITE R/W M. 5-24-85		REVISION		DATE	
DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA STANDARD DETAILS OF MARKERS FEDERAL AID AND STATE RIGHT OF WAY MARKERS															
NO SCALE															
REV. & REDR. DEC., 1981															
C.I.O.		G.J.P.		R.M.U.		R.M.U.		R.M.U.		R.M.U.		DES. (SUBMITTED)		TRA. (APPROVED)	
												STATE ROAD & AIRPORT DESIGN ENGINEER CHIEF ENGINEER		NUMBER 9003	



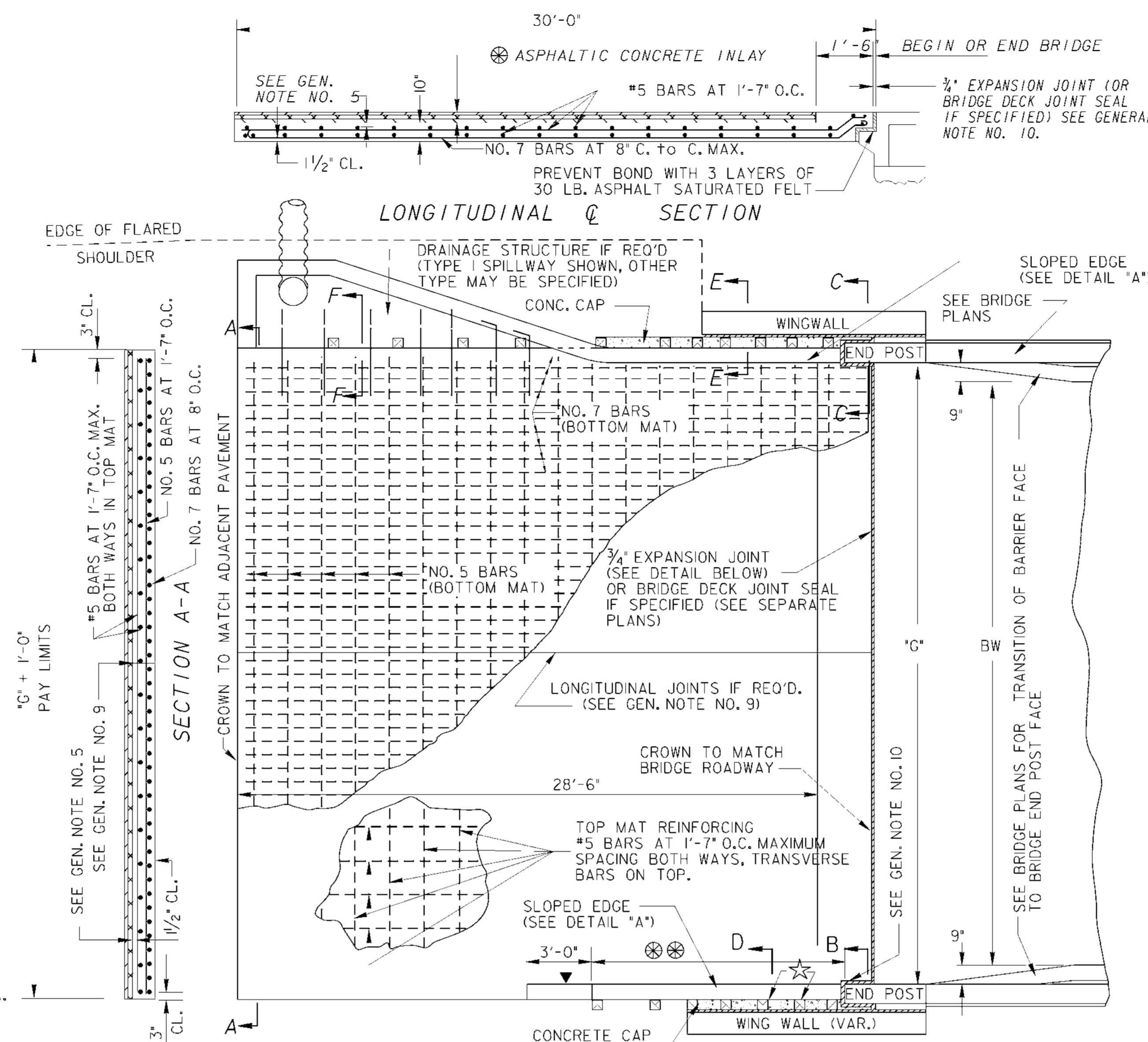
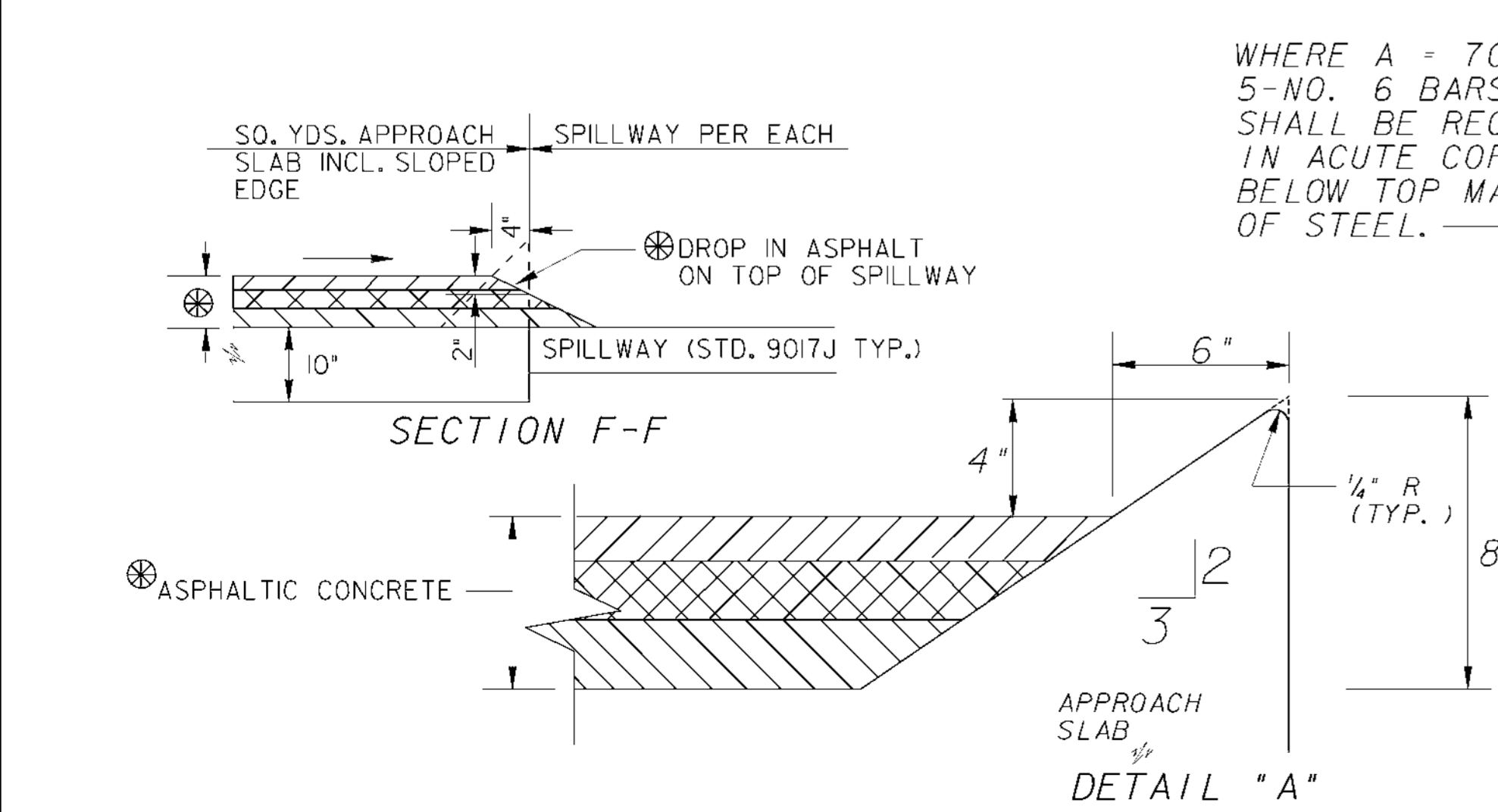
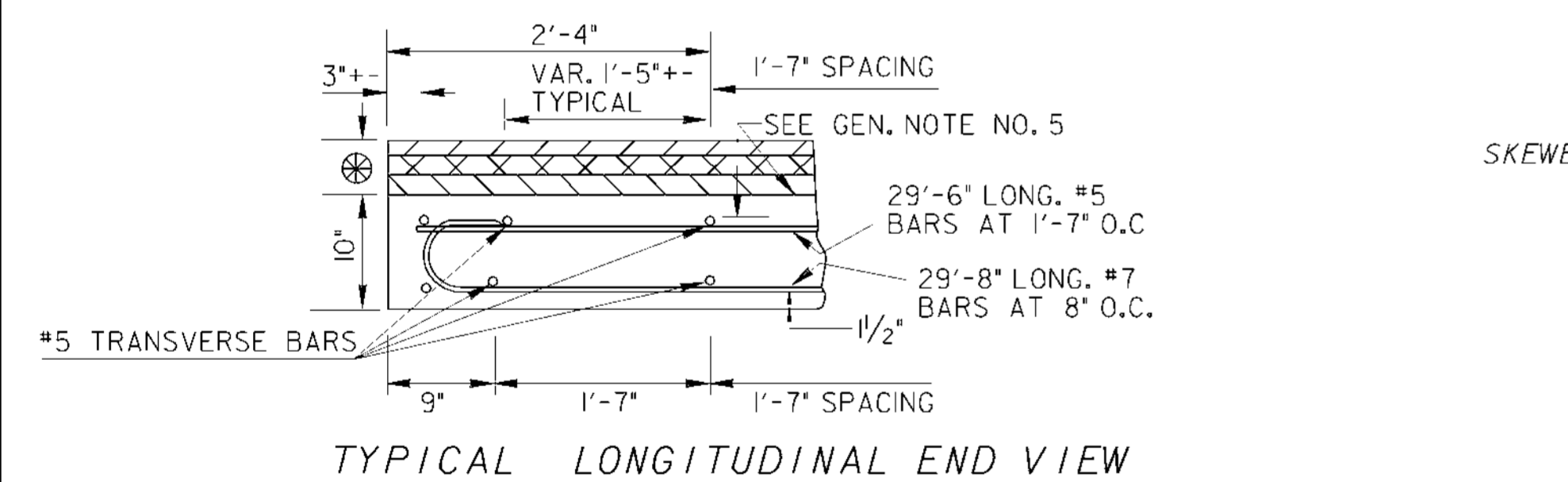
NOTE: WHERE END POST INTERSECTS APPROACH SLAB, THE INTERCEPTED REINFORCING, BOTH LONGITUDINAL & TRAVERSE, SHALL BE SHORTENED AS NEEDED TO GIVE 3" CLEARANCE TO END POST.



NOTE: BLOCKOUTS ARE OMITTED WHERE IT HAS BEEN VERIFIED THAT GUARDRAIL WILL NOT BE REQ'D.

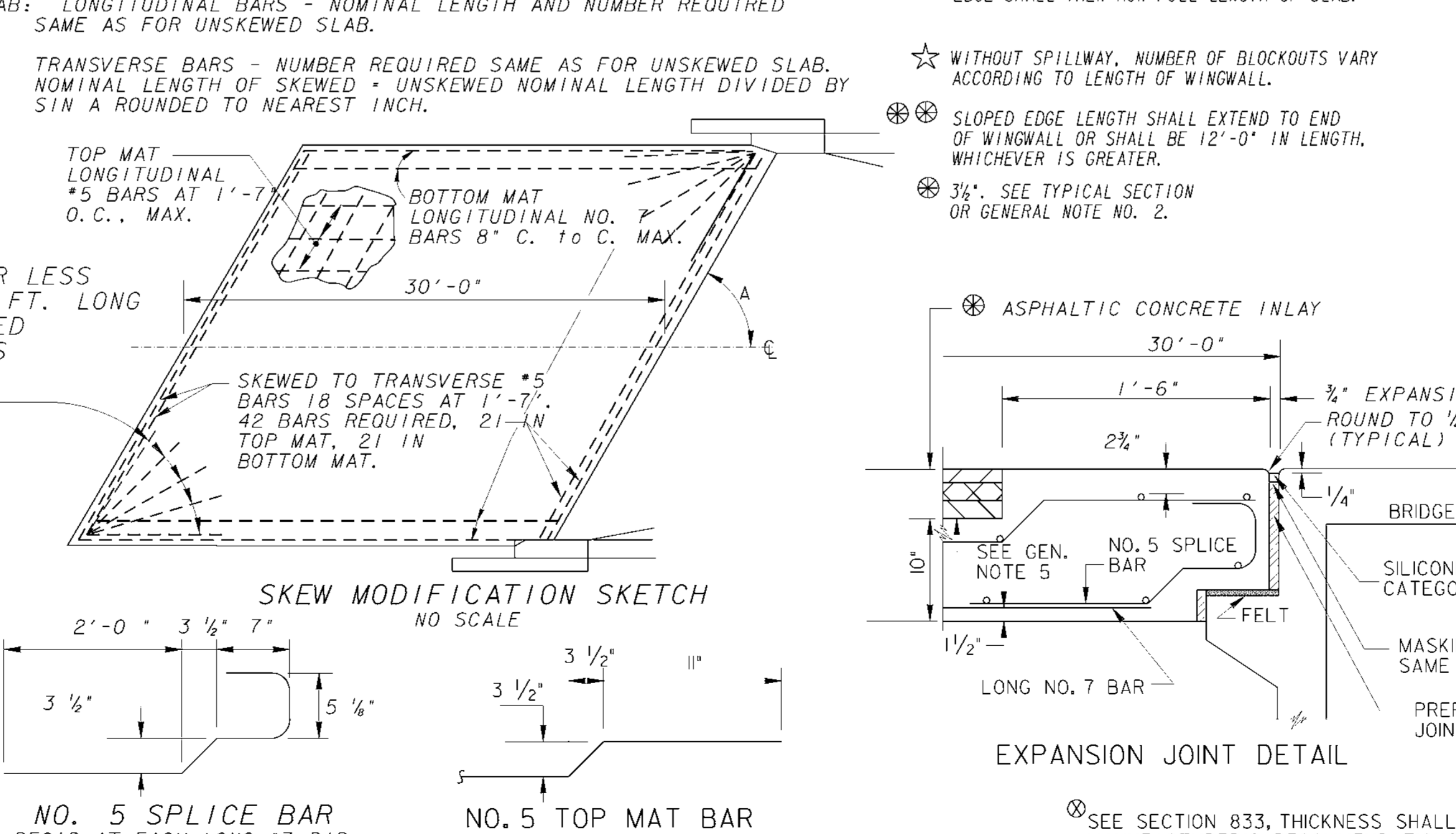


* IF GUARDRAIL IS WARRANTED AT THE TRAILING END OF 4 OR MORE LANES, BLOCKOUTS FLAGGED WITH AN ASTERISK ARE OMITTED.
 ⊕ VARIED TO MISS BRIDGE PAV. REST



NOTE: PLAN VIEW IS PRESENTED WITH A TYPE I SPILLWAY ON ONE SIDE AND NO DRAINAGE STRUCTURE ON THE OTHER SIDE. SPILLWAY, WHERE REQUIRED, MAY BE TYPE 1, 2, 3 OR 4 AND ON BOTH SIDES OF APPROACH SLAB, OR ON JUST ONE SIDE, OR NO SPILLWAY, AS CONDITIONS WARRANT. APPROACH SLAB QUANTITIES AND PAY ITEM WILL NOT BE EFFECTED BY SPILLWAY REQUIREMENTS. SLOPED EDGE IS REQUIRED BOTH WITH AND WITHOUT SPILLWAY.

SKewed SLAB: LONGITUDINAL BARS - NOMINAL LENGTH AND NUMBER REQUIRED SAME AS FOR UNSKEWED SLAB.
 TRANSVERSE BARS - NUMBER REQUIRED SAME AS FOR UNSKEWED SLAB. NOMINAL LENGTH OF SKEWED * UNSKEWED NOMINAL LENGTH DIVIDED BY SIN A ROUNDED TO NEAREST INCH.



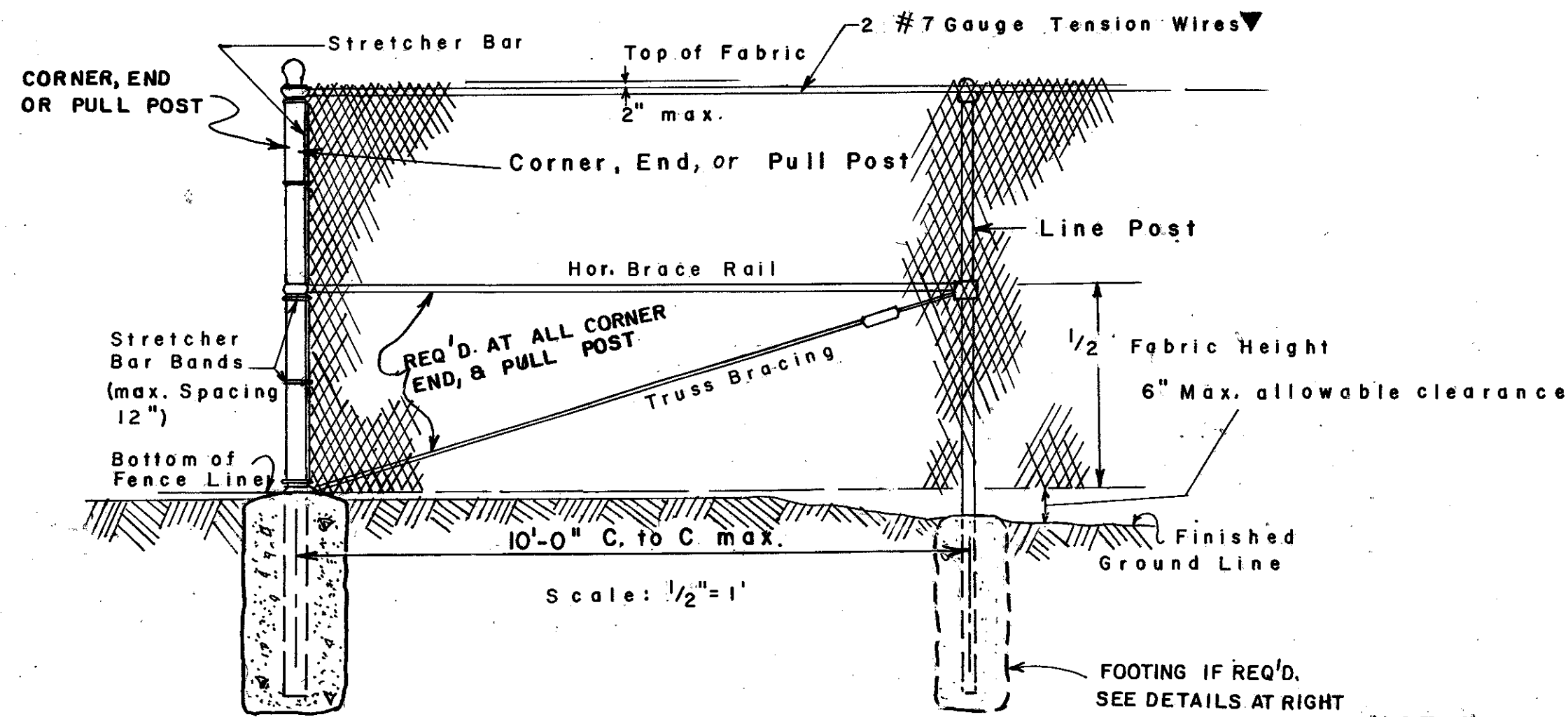
BW	SQ. YDS. OF APPR. SLAB	BOTTOM MAT REINF.		TOP MAT REINF.	
		29'-8" LONG *7 LONGIT. BARS	21 - *5 TRAN. BARS	29'-6" LONG *5 LONGIT. BARS	21 - *5 TRAN. BARS
28'-0"	101.67	46	20	30'-0"	20
29'-6"	108.33	49	22	32'-0"	22
30'-0"	115.00	52	23	34'-0"	23
31'-6"	121.67	55	24	36'-0"	24
33'-0"	128.33	58	25	38'-0"	25
34'-6"	135.00	61	27	40'-0"	27
36'-0"	141.67	64	28	42'-0"	28
37'-6"	148.33	67	29	44'-0"	29
39'-0"	155.00	70	30	46'-0"	30
40'-6"	161.67	73	32	48'-0"	32
42'-0"	168.33	76	33	50'-0"	33
43'-6"	175.00	79	34	52'-0"	34
45'-0"	181.67	82	36	54'-0"	36
46'-6"	188.33	85	37	56'-0"	37
48'-0"	195.00	88	38	58'-0"	38
49'-6"	201.67	91	39	60'-0"	39
51'-0"	208.33	94	40	62'-0"	40

** DATA IN ABOVE TABLE ARE BASED UPON COMMON SLAB / BRIDGE WIDTHS. WHERE OTHER WIDTHS ARE ENCOUNTERED, THE FORMULAE AT COLUMN TOPS MAY BE USED IN DETERMINING ADDITIONAL DATA NEEDED.
 NO. 5 SPLICE BARS NOT INCLUDED. NUMBER REQUIRED IS DOUBLE THAT FOR *7 LONGITUDINAL BARS SHOWN ABOVE. SEE NO. 5 TOP MAT BAR BENDING DETAIL BELOW.

- GENERAL NOTES:
- SPECIFICATIONS: GEORGIA STANDARD, CURRENT EDITION, AND SUPPLEMENTS THERETO.
 - USE THIS STANDARD WHERE THE ROADWAY PAVING IS ASPHALTIC CONCRETE.
 - THE CONCRETE CAPS ADJACENT TO THE APPROACH SLAB WILL HAVE HOLES APPROXIMATELY 9"x9", BLOCKED OUT FOR GUARDRAIL POST INSTALLATIONS (SEE DETAIL). PAYMENT FOR APPROACH SLAB WILL INCLUDE THE 1/2" EXPANSION MATERIAL & CONCRETE CAPS WITH BLOCKED OUT HOLES. (SEE DETAIL AT FAR LEFT).
 - WIDTH OF APPROACH SLAB IS NORMALLY DETERMINED BY DISTANCE BETWEEN FACES OF BRIDGE END POSTS. DETAILS SHOWN ARE BASED UPON THE BRIDGE BARRIER FACE BEING TRANSITIONED 9" TO FACE OF END POST ON EACH SIDE. SEE BRIDGE PLANS IF BARRIER IS CONTINUED ACROSS APPROACH SLAB INSTEAD. SEE STANDARD 9017M.
 - MINIMUM COVER OVER TOP MAT OF REINFORCING SHALL BE 2".
 - WHERE APPROACH SLAB IS INTERCEPTED BY THE BRIDGE END POST, EXTERIOR BARS WILL BE SHORTENED AS NEEDED TO GIVE A 3" CLEARANCE TO STRUCTURE.
 - PAY AREA FOR APPROACH SLAB SHALL BE COMPUTED AS A PRODUCT OF THE OVERALL SLAB WIDTH [(G+1')/3] TIMES THE LENGTH (30/3) WITH NO DEDUCTIONS MADE FOR AREAS OCCUPIED BY THE END POST & EXPANSION JOINTS OR BY DRAINAGE STRUCTURES, AND NO ADDITIONS MADE FOR SIDEWALKS OR OTHER ITEMS WHEN REQUIRED WITH THE APPROACH SLAB.
 - "CS" CONC. OR P.C. CONC. SUBBASE SHALL BE USED. CLEAR POLYETHYLENE SHEETING 8 MILS MIN. THICKNESS, WITH A 6" OVERLAP, UNIFORMLY LAID, SHALL BE REQUIRED UNDER THE APPROACH SLAB TO PREVENT BONDING. POLYETHYLENE SHEETING SHALL BE NEW, UNUSED AND FREE OF HOLES, RIPS AND TEARS. PRICE FOR SUBBASE SHALL BE INCLUDED IN OVERALL PRICE BID FOR APPROACH SLAB.
 - ALL APPROACH SLABS EXCEEDING 42' IN WIDTH WILL CONTAIN A LONGITUDINAL CONSTRUCTION JOINT. SLABS EXCEEDING 60' AND 90' IN WIDTH SHALL CONTAIN 2 AND 3 LONGITUDINAL CONSTRUCTION JOINTS RESPECTIVELY. SECTIONS BETWEEN JOINTS OR BETWEEN A JOINT AND SLAB EDGE SHALL NOT BE LESS THAN 12' OR MORE THAN 30' WIDE. REINFORCEMENT STEEL REMAINS UNCHANGED AND SHALL EXTEND THRU JOINTS. JOINTS SHALL BE LOCATED AT LANE LINES TO PROVIDE OFFSET FROM WHEELPATHS.
 - SEAL JOINT BETWEEN APPROACH SLAB AND END POST WITH LOW MODULUS SILICONE SEALANT. JOINT WIDTH BEHIND ENDPOST SHALL MATCH JOINT WIDTH BETWEEN APPROACH SLAB AND BRIDGE.
 - ASPHALTIC CONCRETE INLAY SHALL BE PAID UNDER ROADWAY PAY ITEM FOR ASPHALTIC CONCRETE.

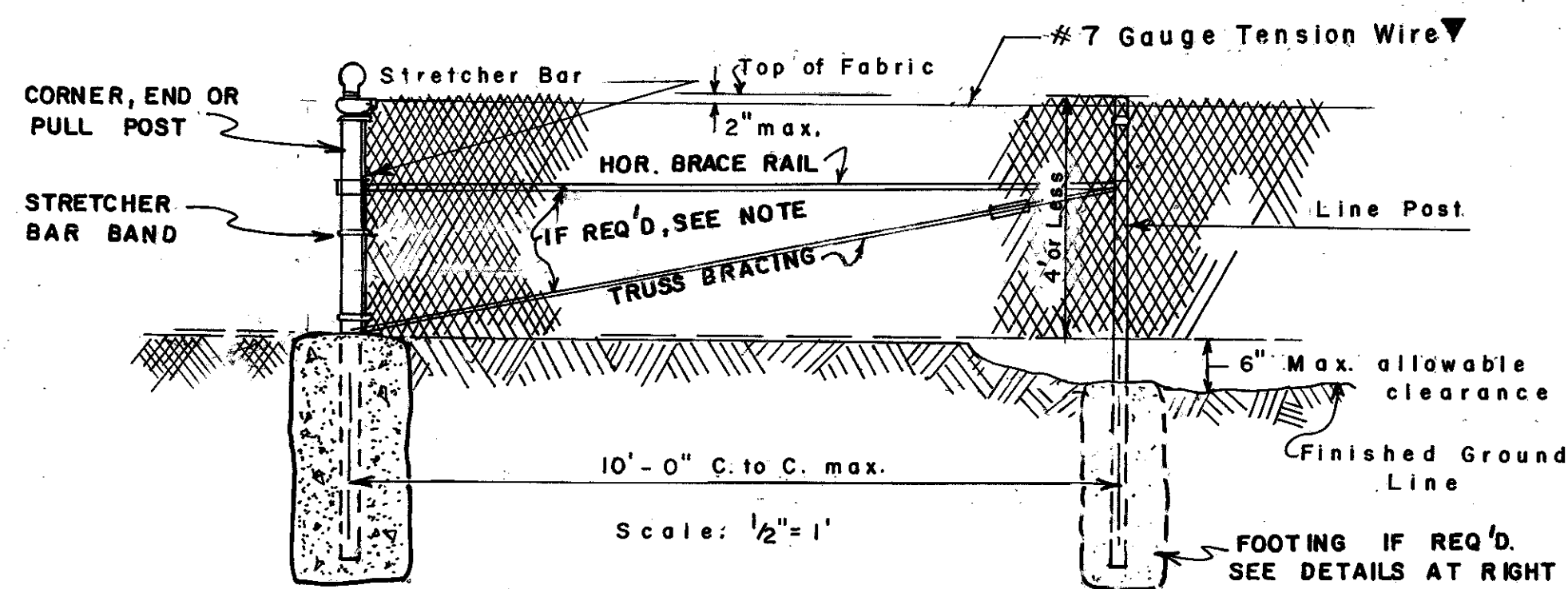
9-20-02	9-18-01	DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA
DIM. SLOPED EDGE	GEN. REV.	REV. ASPH. CONC. INLAY	
REVISION			STANDARD REINFORCED CONCRETE APPROACH SLAB WITH ASPHALT INLAY 30 FT. LENGTH TYPICAL USE : WHERE SHOULDER IS ADJACENT TO ROADWAY AND/OR BRIDGE
S.V.M.	BY	DATE	
SCALE AS SHOWN			AUG. 1999
DES. (SUBMITTED)			NUMBER 9017R
DRW. (APPROVED)			
TR. (APPROVED)			

DETAILS OF CHAIN-LINK WIRE FENCE

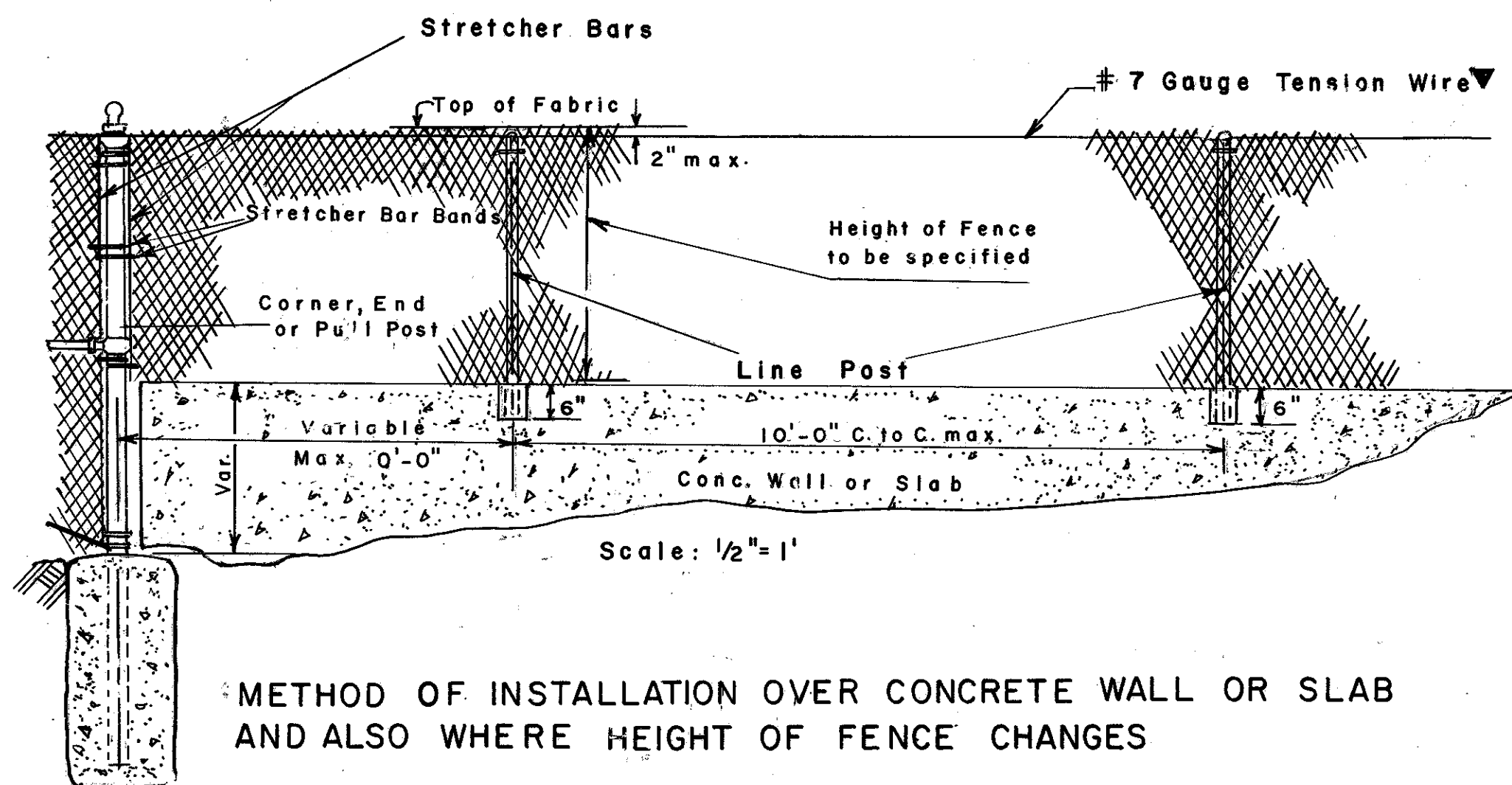


CHAIN LINK WIRE FENCE
(OVER 4 FT HEIGHT)

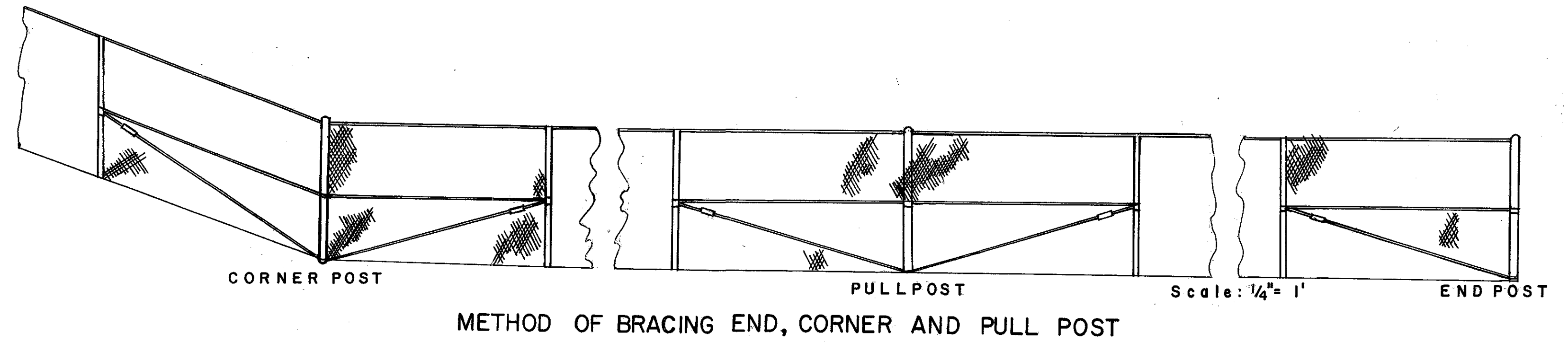
CONCRETE FOOTINGS ARE REQUIRED AT ALL CORNERS, END AND PULL POST



CHAIN LINK WIRE FENCE
(4 FT. OR LESS HEIGHT)



METHOD OF INSTALLATION OVER CONCRETE WALL OR SLAB AND ALSO WHERE HEIGHT OF FENCE CHANGES



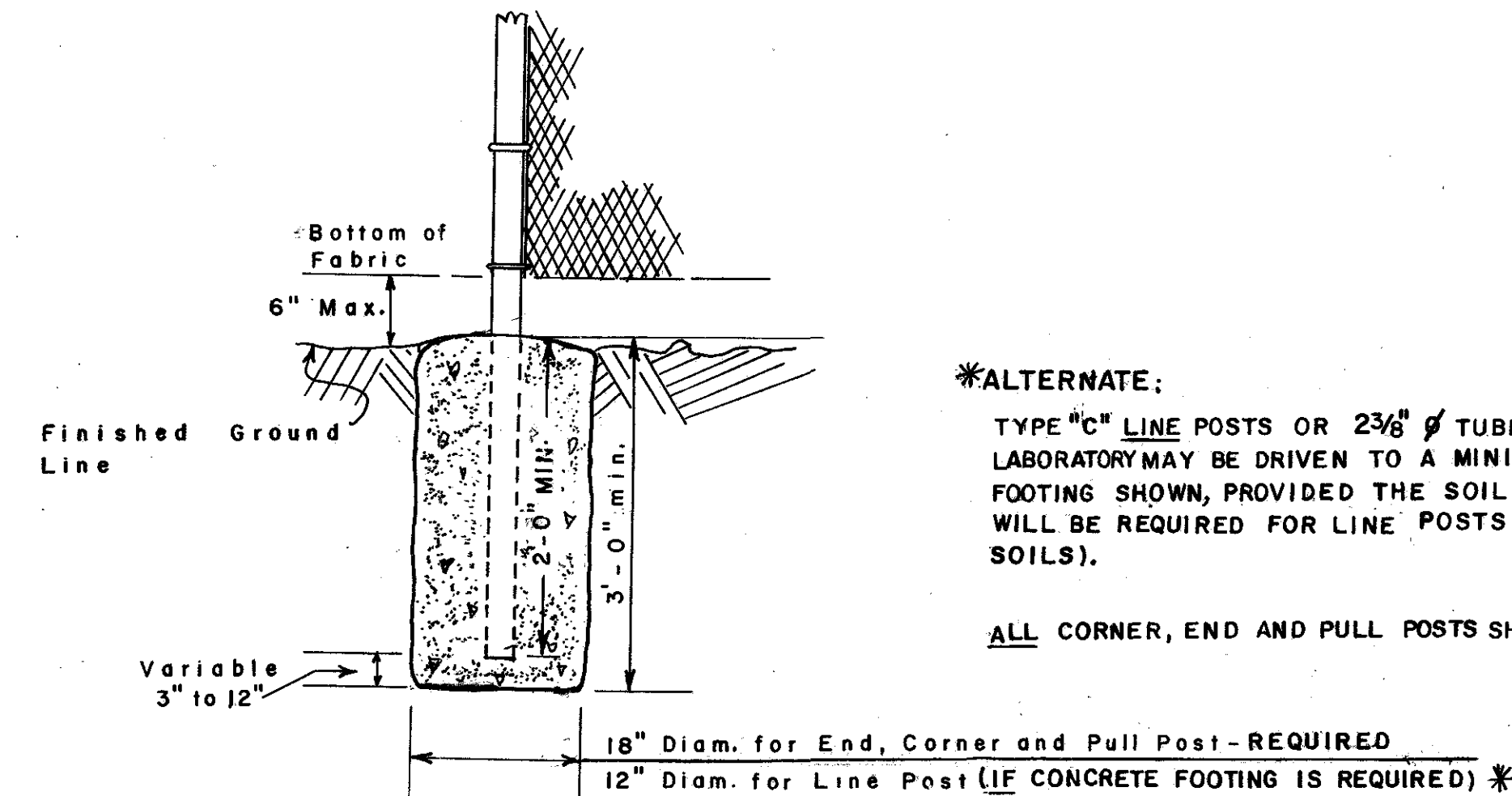
METHOD OF BRACING END, CORNER AND PULL POST

NOTES: FABRIC SHALL BE FASTENED TO LINE POST AT INTERVALS NOT GREATER THAN 14".

TENSION WIRES SHALL BE TIED TO FABRIC WITH 9 GA. WIRE OR 11 GA. HOG RINGS AT 24" C. TO C. MAX. SPACINGS.

WHERE A PROPERTY OWNERS CHAIN LINK WIRE FENCE HAS TO BE REPLACED BY THE DEPARTMENT AS PART OF THE CONSTRUCTION PROJECT, AND THE EXISTING FENCE HADA TOP RAIL, THEN THE NEW REPLACEMENT FENCE SHALL ALSO HAVE A SIMILAR TYPE RAIL INSTEAD OF TENSION WIRES AT THE TOP OF THE FENCE.

HORIZONTAL BRACE RAILS & TRUSS BRACING SHALL BE REQUIRED AT ALL CORNER, END AND PULL POSTS, EXCEPT WHERE A CONTINUOUS TOP RAIL IS SPECIFIED (SEE NOTE ABOVE) WITH A FENCE 4 FT. OR LESS IN HEIGHT.

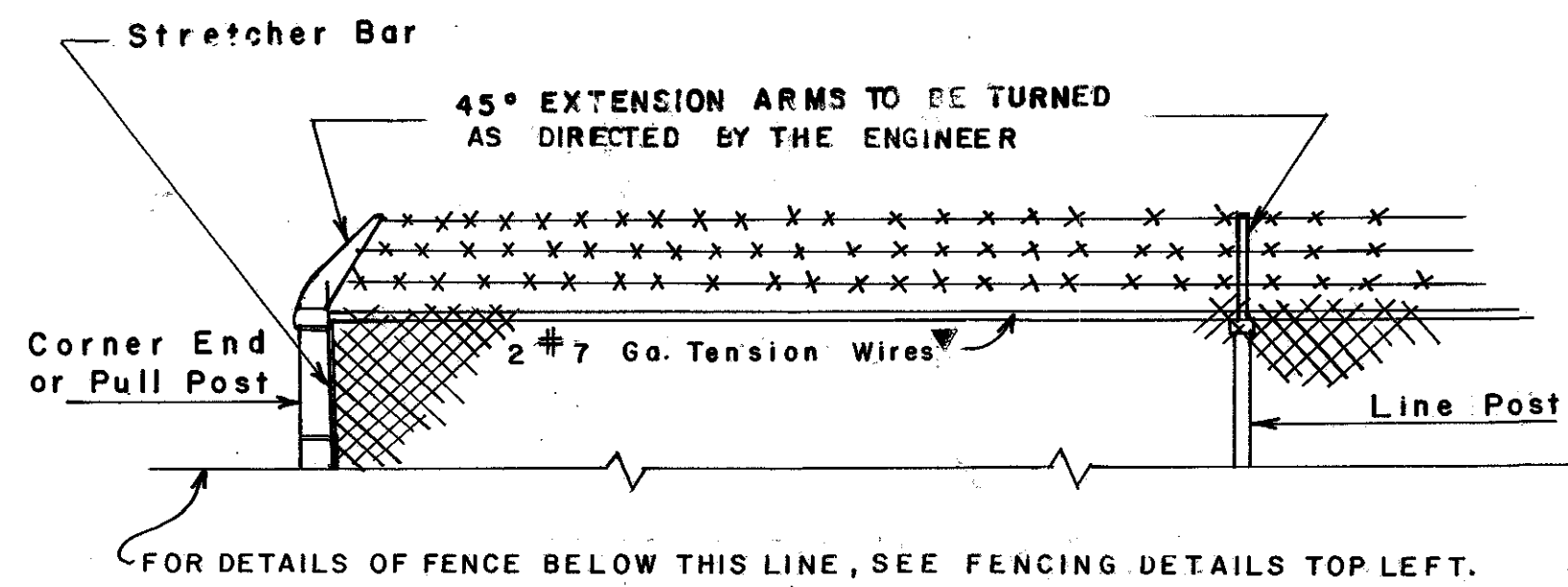


FOOTING DETAIL FOR FENCE POSTS

*ALTERNATE:

TYPE "C" LINE POSTS OR 2 3/8" Ø TUBE LINE POSTS OR OTHER TYPE LINE POSTS APPROVED BY THE D.O.T. LABORATORY MAY BE DRIVEN TO A MINIMUM DEPTH OF THREE (3) FEET INSTEAD OF THE CONCRETE FOOTING SHOWN, PROVIDED THE SOIL IS EITHER CLASS I, II, III, OR V SOIL. CONCRETE FOOTINGS WILL BE REQUIRED FOR LINE POSTS INSTALLED IN MARSHY OR SWAMPY AREAS (CLASS IV SOILS).

ALL CORNER, END AND PULL POSTS SHALL HAVE CONCRETE FOOTINGS AS SHOWN.

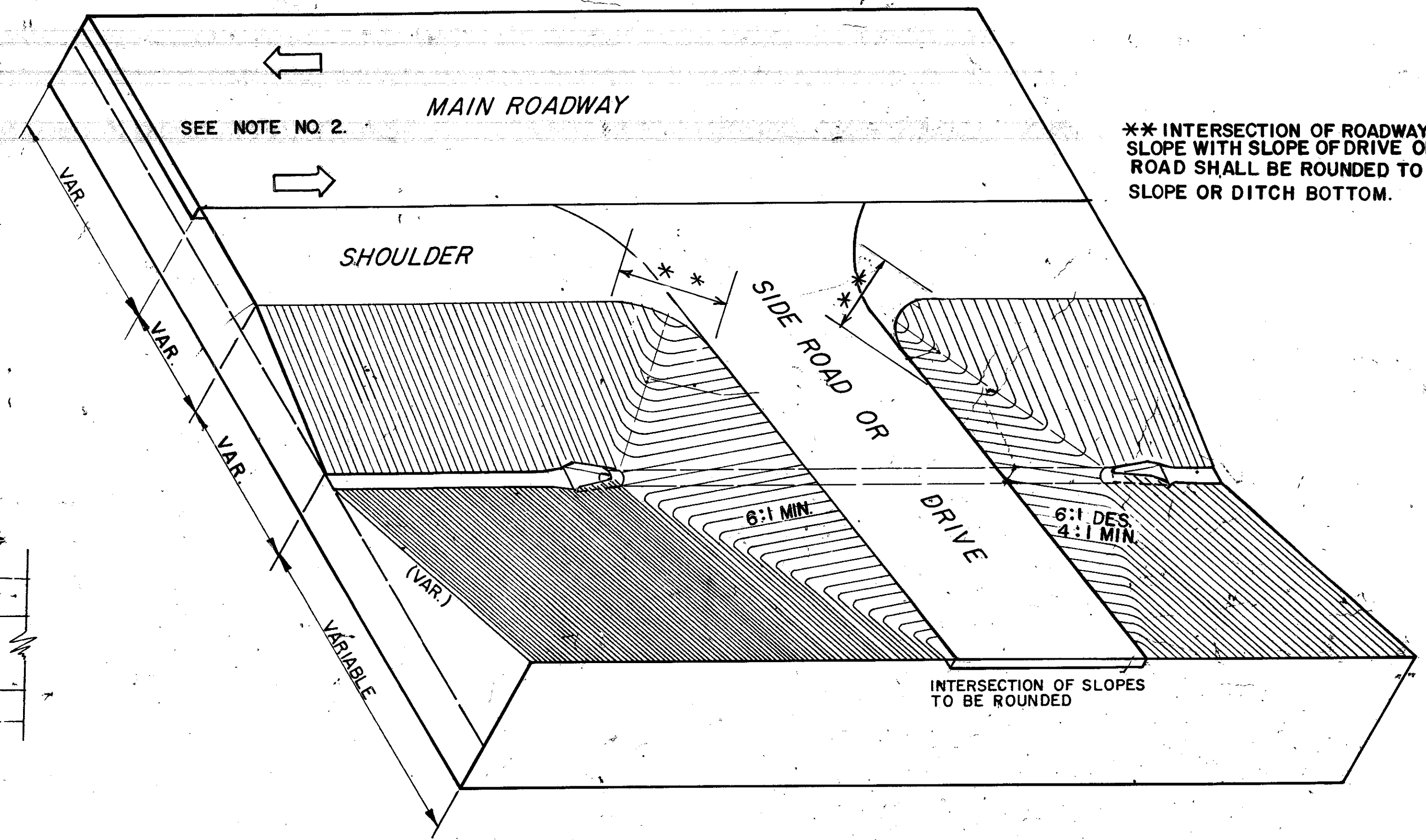
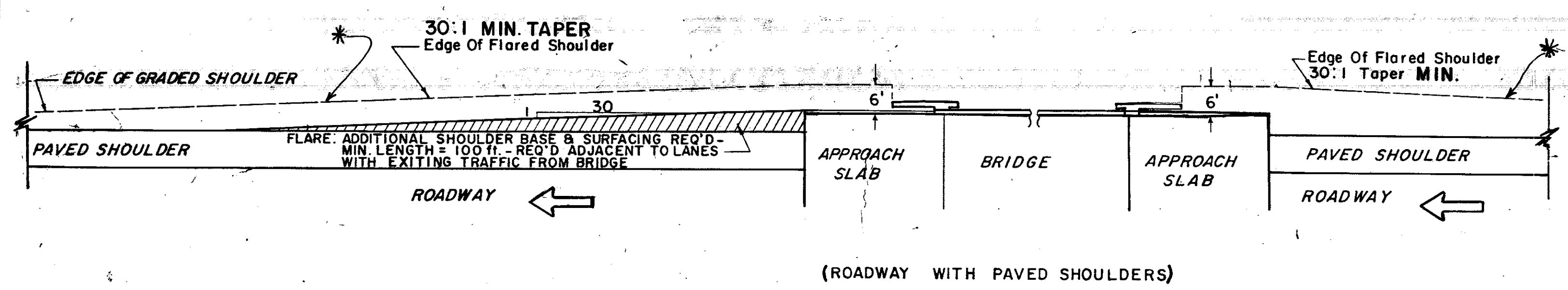


DETAILS OF BARBED WIRE WITH EXTENSION ARMS FOR CHAIN LINK WIRE FENCE

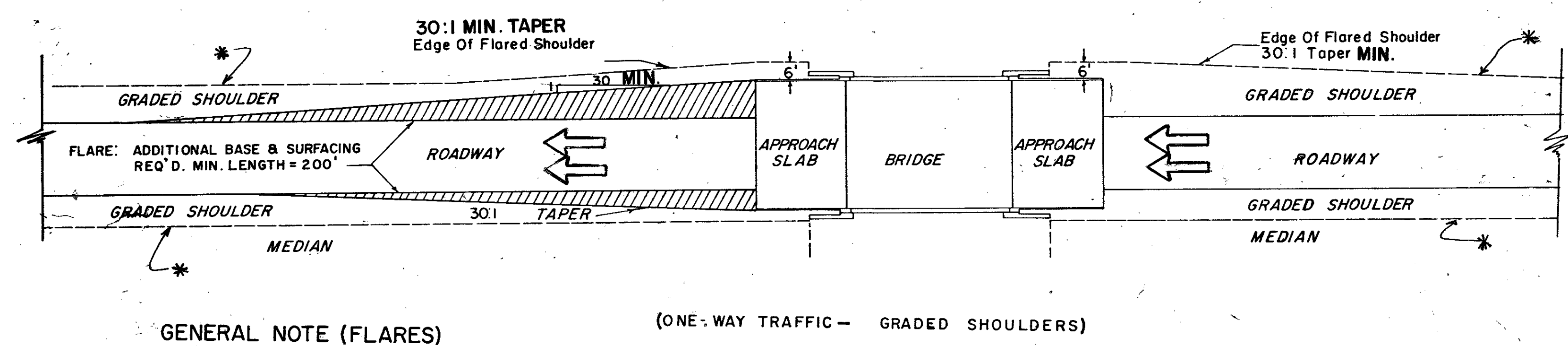
REV. & ADDED NOTES	8-5-85	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA		NUMBER 9031N
		STANDARD		
SCALE AS SHOWN		REV. & REQR. JUNE, 1981		
R.M.U.	DES. 4-62 REV. RMU RETR. GME CHK. RKC	(SUBMITTED) <i>Thomas S. Moreland</i> STATE ROAD & AIRPORT DESIGN ENGR. (APPROVED) <i>Thomas S. Moreland</i> STATE HIGHWAY ENGINEER		

FLARE DETAILS AT BRIDGE ENDS

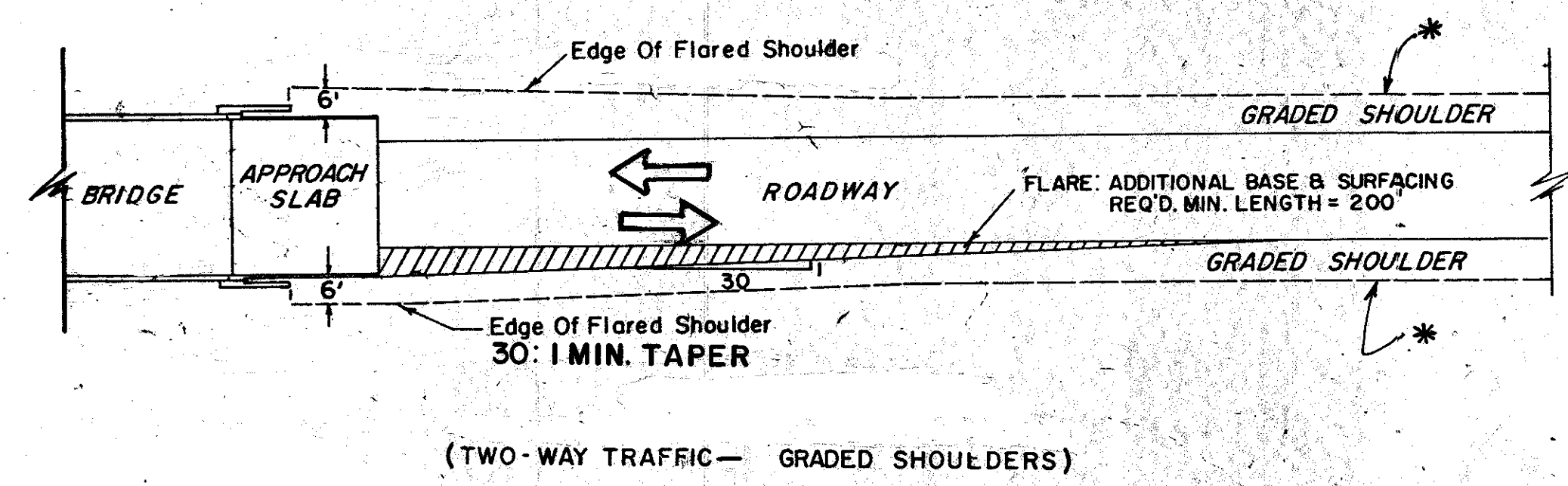
ISOMETRIC VIEW OF SIDE ROAD OR DRIVE



** INTERSECTION OF ROADWAY SLOPE WITH SLOPE OF DRIVE OR SIDE ROAD SHALL BE ROUNDED TO TOE OF SLOPE OR DITCH BOTTOM.



GENERAL NOTE (FLARES)
EARTHWORK QUANTITIES SHALL REFLECT ADDITIONAL MATERIAL REQUIRED FOR CONSTRUCTION OF FLARED SHOULDERS.



- NOTES:**
1. ENDS OF SIDE DRAINS WHICH FALL INSIDE THE CLEAR ZONE WIDTH SHALL REQUIRE SAFETY END SECTIONS FOR SIDE DRAIN PIPE.
 2. SIDE SLOPES ON THE APPROACH SIDE OF TRAFFIC SHALL NOT BE STEEPER THAN 6:1.
 3. SIDE DRAIN END SECTIONS SHOULD FIT THE SIDE SLOPE TERRAIN AND SHOULD NOT PROTRUDE.
 4. SIDE SLOPES FROM SIDE ROAD OR DRIVE ALSO APPLY TO FILL SECTIONS.

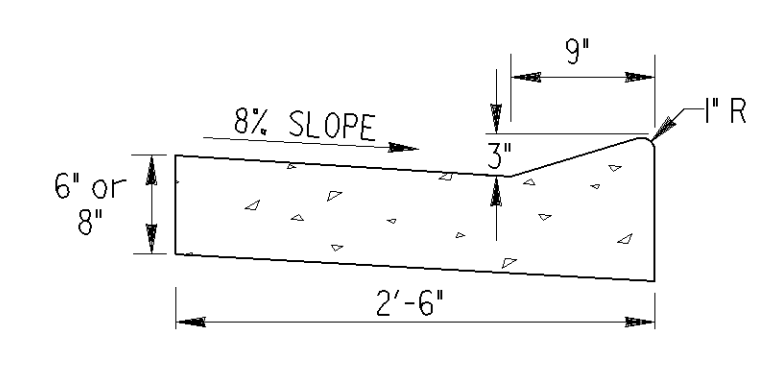
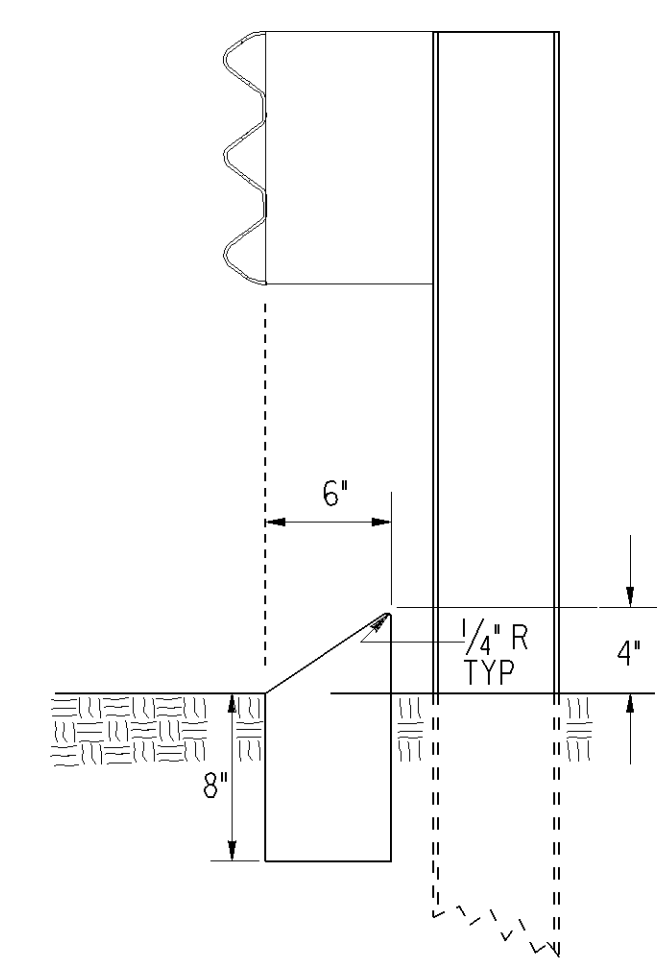
* WHERE THE WIDENED ROADWAY SHOULDER FOR GUARDRAIL GIVES THE SAME OFFSET AS AT THE APPROACH SLAB, THIS LINE REMAINS STRAIGHT TO THE BRIDGE END. (ALSO, SEE GUARDRAIL STANDARDS OR DETAILS FOR ADDITIONAL FLARE AT ANCHORAGES.)

8-18-55		DEPARTMENT OF TRANSPORTATION	
10-2-58		STATE OF GEORGIA	
10-2-58		STANDARD	
5-22-59		ISOMETRIC VIEW OF SIDE ROAD OR DRIVE	
		FLARE DETAILS AT BRIDGE ENDS	
NO SCALE	AUG, 1958		NUMBER
DESIGNED: RBS	SUBMITTED		9031T
DRAWN: AVS	APPROVED		
TRACED: AVS	STATE HIGHWAY ENGINEER		
CHECKED: RBS			

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

RAISED EDGE WITH CONCRETE GUTTER

FACE OF CURB MUST ALIGN WITH BACK EDGE OF GUARDRAIL AND THE FACE OF THE OFFSET BLOCK.

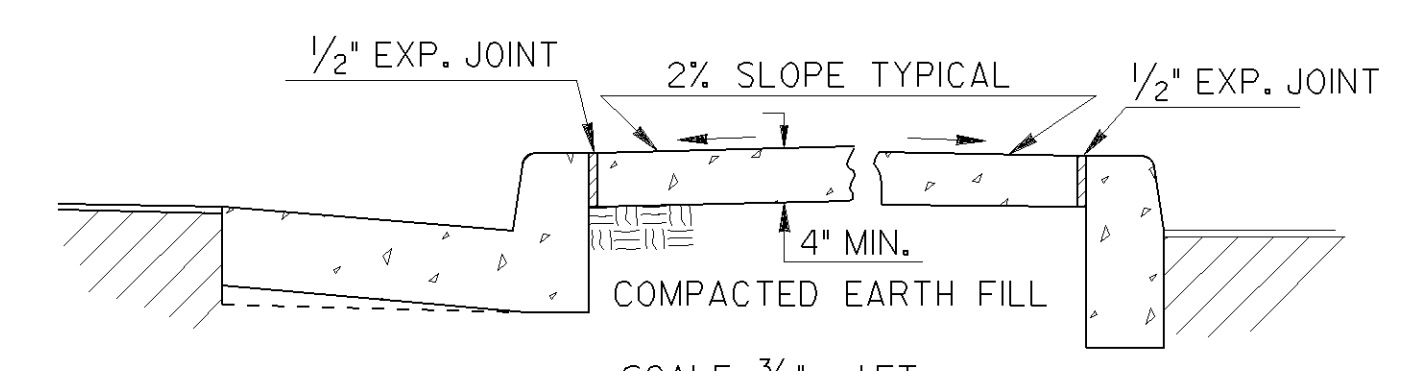


SCALE: 1" = 1 FT.

RAISED EDGE TO BE CONSTRUCTED WITH SAME CONCRETE MIX AS THE GUTTER AND SHALL BE FORMED MONOLITHIC WITH GUTTER. JOINTS IN RAISED EDGE SHALL MATCH THOSE IN THE GUTTER.

CONCRETE MEDIAN (Between Curbs)

NOTE: CURB TYPES SHOWN ARE TYPICAL. OTHER TYPES MAY BE SPECIFIED.



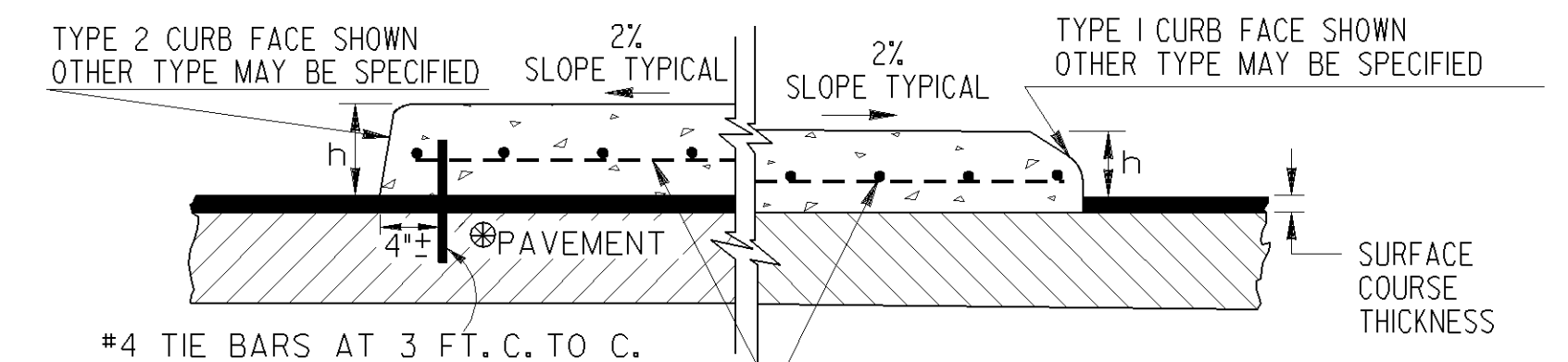
SCALE: 3/4" = 1 FT.

NOTE: WIDTH OF CONCRETE MEDIAN WILL BE AS SHOWN IN PLANS

CONCRETE MEDIANS (Integral)

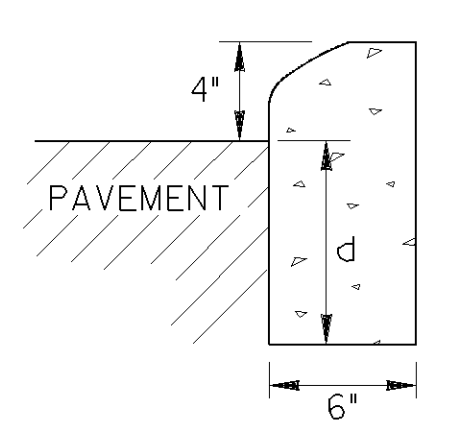
SCALE: 1" = 1 FT.

-WITH TIE BARS- -WITHOUT TIE BARS-



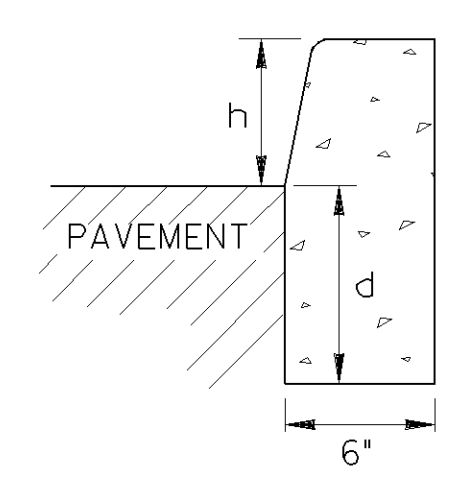
NOTE: IF FINAL SURFACE COURSE IS PRESENT OR MUST BE INSTALLED BEFORE THE CONCRETE MEDIAN CAN BE INSTALLED, THEN DOWELED IN CONCRETE MEDIAN IS REQUIRED.

CONCRETE HEADER CURBS

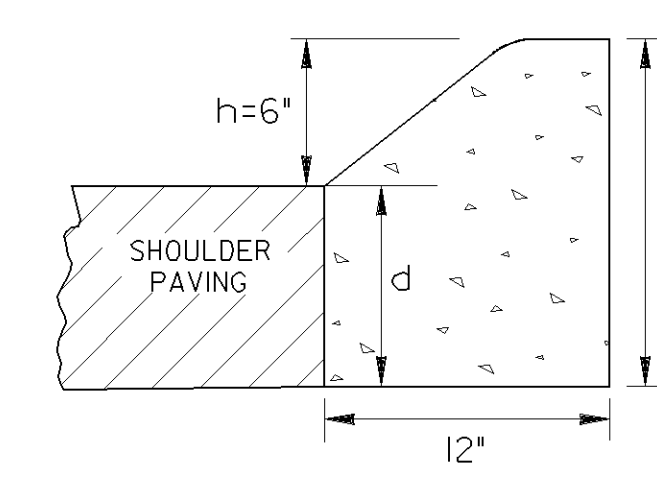


TYPE 1

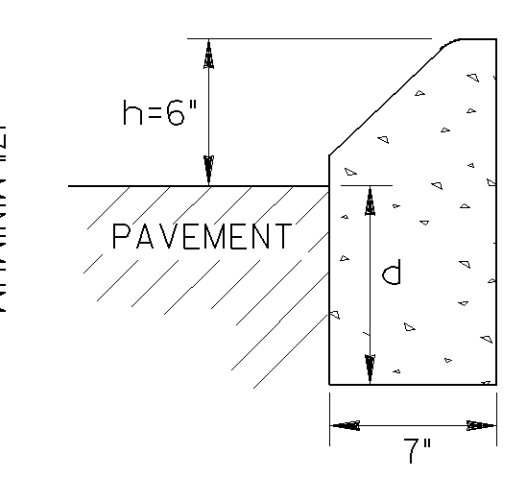
CURB TYPE	h	d
1	4"	6' min.
2	6"	8' min.
3	8"	10' min.
4	10"	12' min.
6	6"	7' min.
7	6"	8' min.
9	4"	8' min.



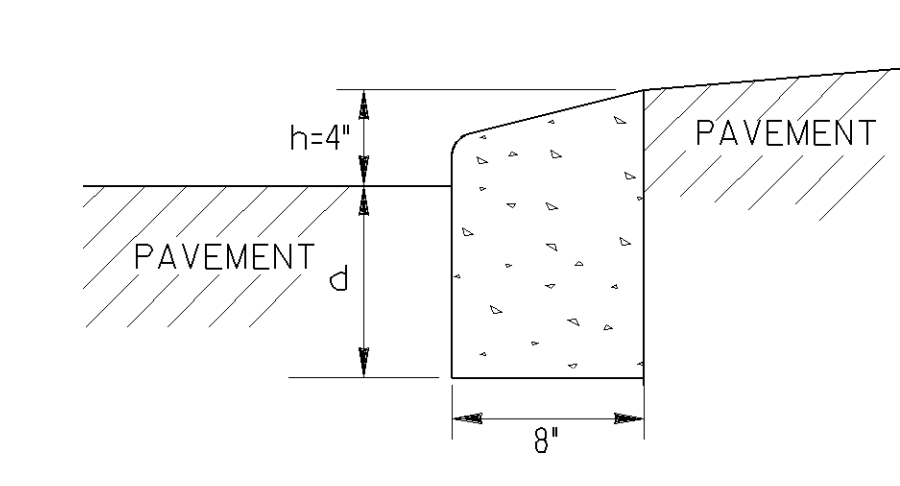
TYPE 2, 3 OR 4



TYPE 6



TYPE 7



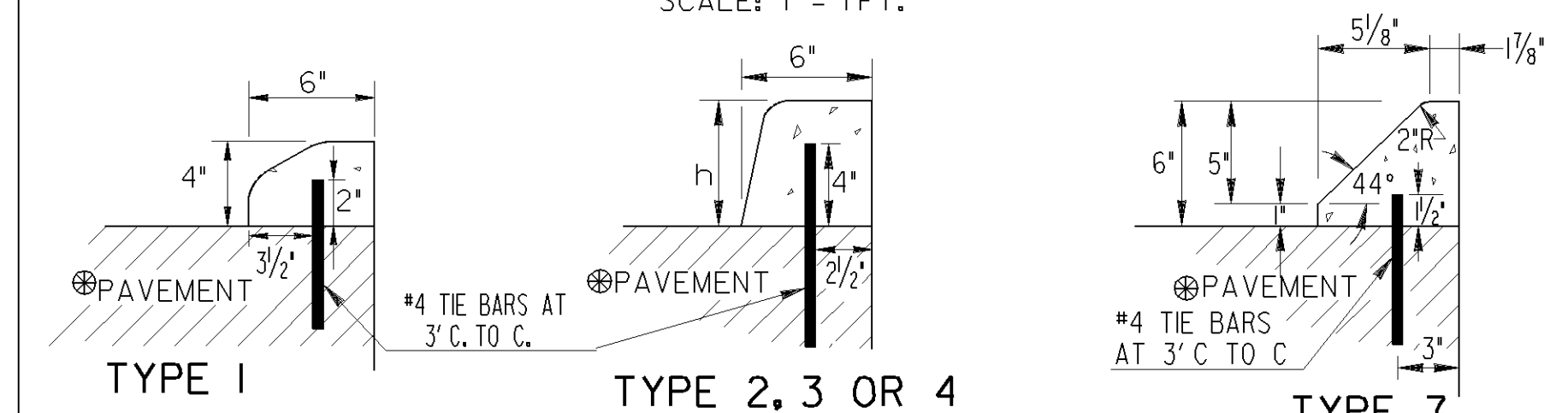
TYPE 9
TRUCK APRON
IN ROUNDABOUTS

SCALE: 1/2" = 1 FT.

THE DIMENSION d MAY BE INCREASED AT CONTRACTOR'S OPTION SO BOTTOM OF HEADER CURB WILL ALIGN WITH BOTTOM OF PAVEMENT TYPICAL SECTION.

CONCRETE DOWELED INTEGRAL CURBS

SCALE: 1" = 1 FT.



TYPE 1

TYPE 2, 3 OR 4

TYPE 7

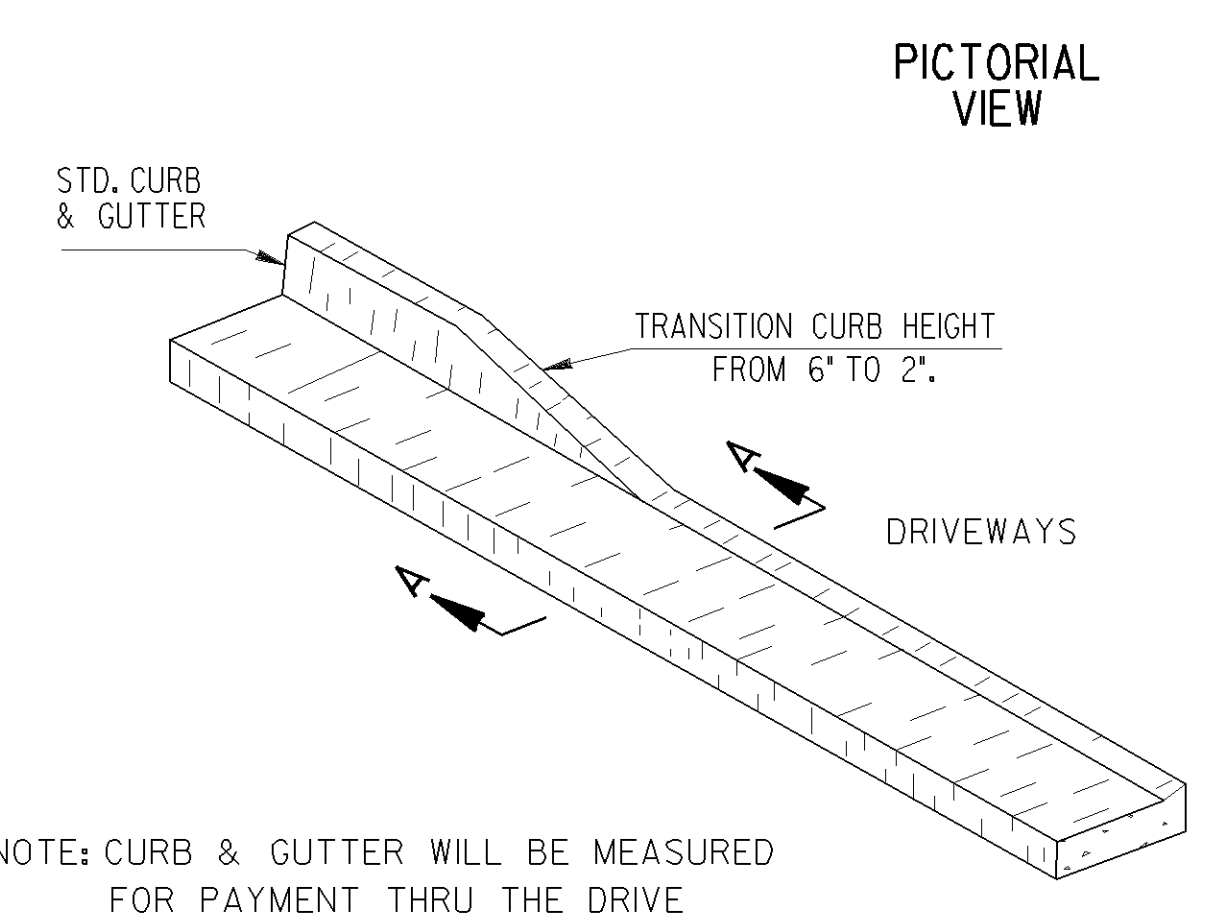
- NOTES:
- CONCRETE CURB CAN BE INSTALLED AFTER INITIAL SET AS LONG AS TIE BARS ARE DRILLED INTO UNDERLYING CONCRETE PAVEMENT.
 - CONCRETE CURB CAN BE INSTALLED BEFORE INITIAL SET WITH DOWELS THAT ARE DRIVEN INTO UNDERLYING CONCRETE PAVEMENT.
 - JOINTS IN CURB AND CONCRETE MEDIAN WILL MATCH THOSE IN THE CONCRETE PAVEMENT.
 - ALL TYPES OF CONCRETE CURB CAN BE PLACED ON ASPHALT PAVEMENTS WHERE TIE BARS MAY BE EITHER DRIVEN OR DRILLED INTO THE UNDERLYING PAVEMENT. CONTRACTION JOINTS SHALL BE CONSTRUCTED IN CURB OR CONCRETE MEDIAN AT 20 FT. SPACING.

CURB TYPE	MINIMUM TIE BAR LENGTHS (FOR CONC. DOWELED CURBS OR CONC. MEDIAN)	
	P.C. CONC. PAV.	ASPHALT PAV.
1	6"	8"
2, 3 or 4	8"	12"
7	6"	8"

NOTE: TIE BARS FOR DOWELED CURBS MAY BE UNCOATED PLAIN OR DEFORMED BILLET-STEEL BARS (GRADE 40) AS USED FOR CONCRETE REINFORCEMENT, (AASHTO M-31)

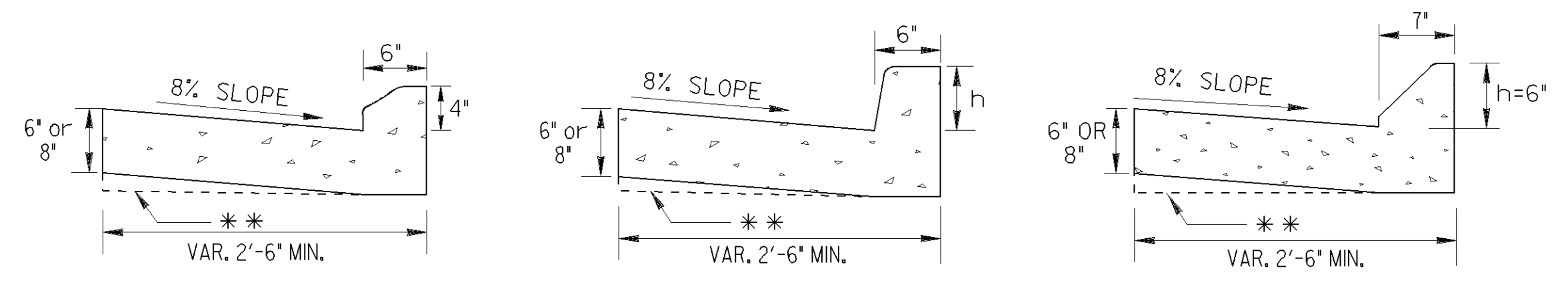
DETAILS OF RECESSED CURB FOR DRIVEWAYS

NO SCALE



NOTE: CURB & GUTTER WILL BE MEASURED FOR PAYMENT THRU THE DRIVE

CONCRETE CURB & GUTTER



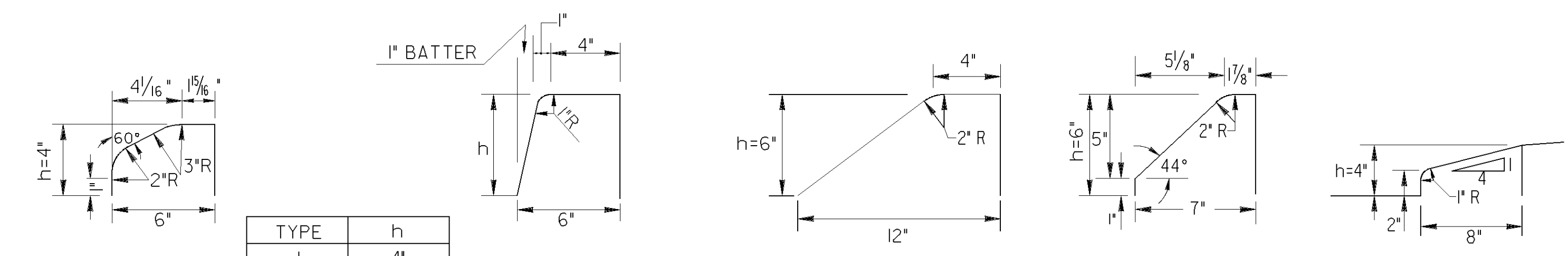
TYPE 1

TYPE 2, 3 OR 4

TYPE 7

** AT CONTRACTOR'S OPTION THE GUTTER THICKNESS MAY BE INCREASED AT EDGE OF PAVEMENT TO MAKE BOTTOM OF GUTTER PARALLEL WITH PAVING OF BASE COURSE, BUT THE GUTTER THICKNESS MUST NOT BE LESS THAN THE SPECIFIED 6" OR 8" AT ANY POINT.

CURB FACE DESIGN



TYPE 1

TYPE 2, 3 OR 4

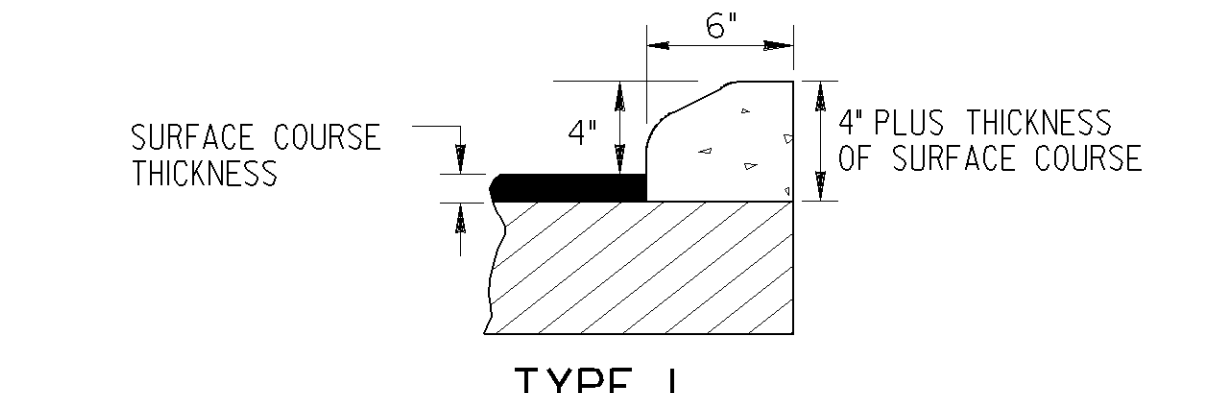
TYPE 6

TYPE 7

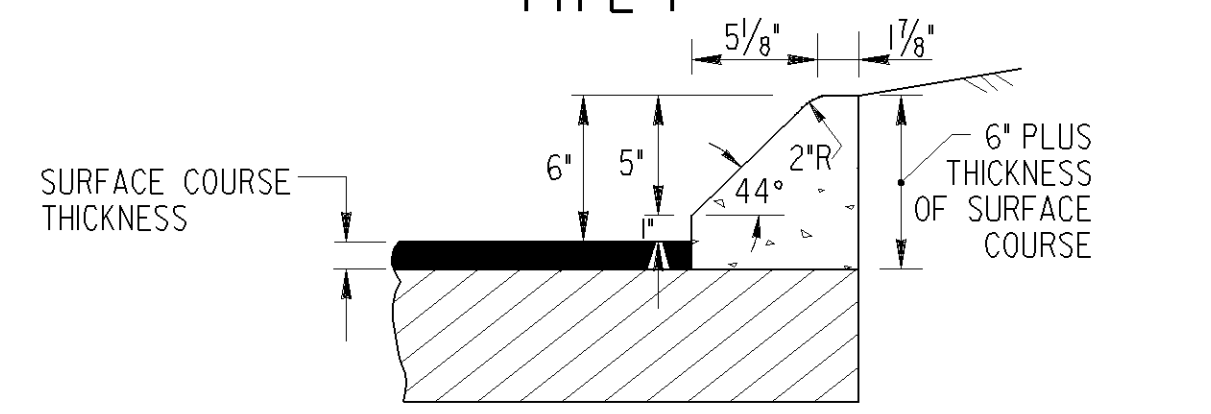
TYPE 9

SCALE: 2" = 1 FT.

CONCRETE INTEGRAL CURB



TYPE 1



TYPE 7

SCALE: 1/2" = 1 FT.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

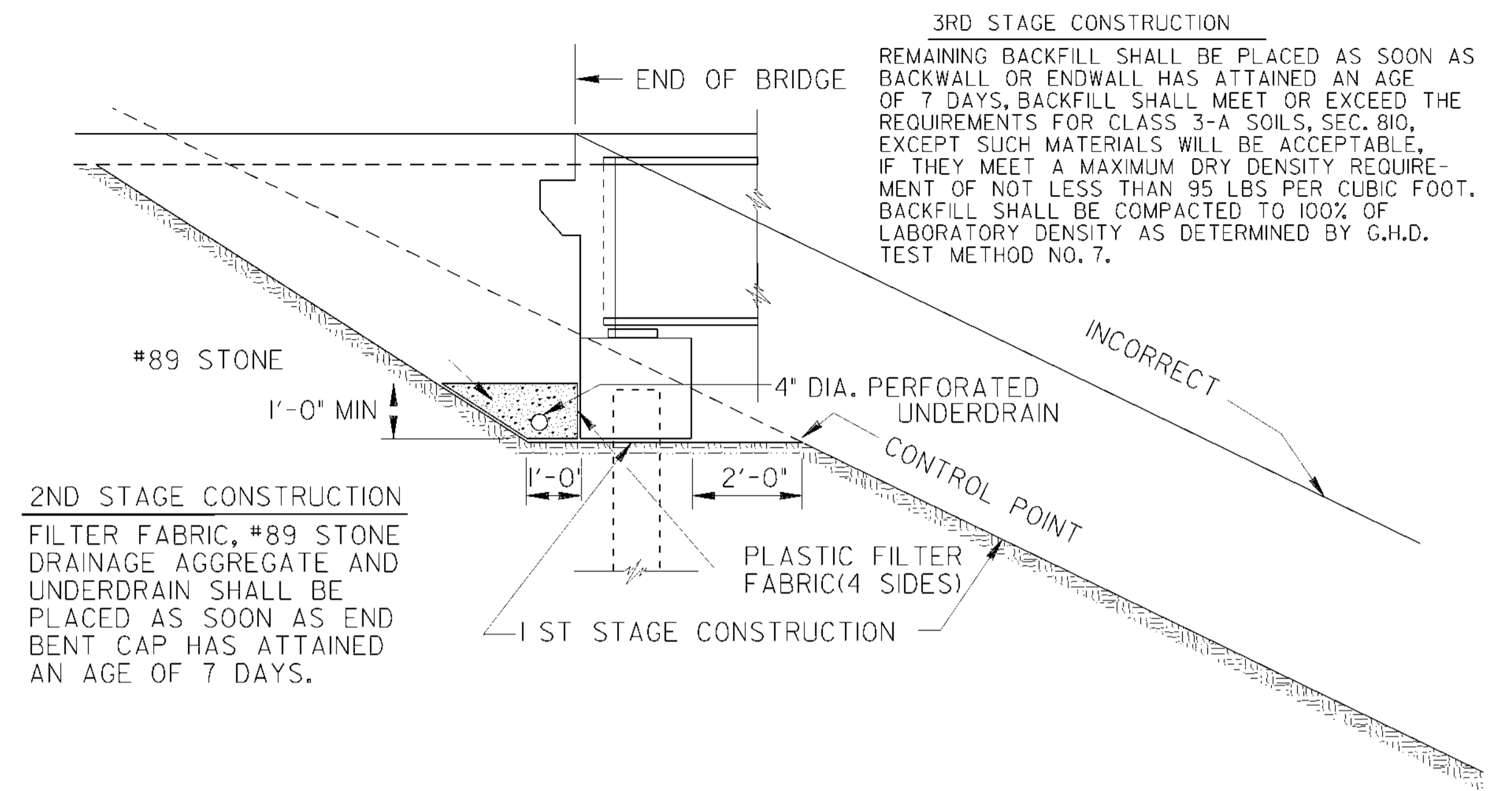
STANDARD
CONCRETE CURB & GUTTER
CONCRETE CURBS, CONCRETE MEDIANS

SCALE: AS SHOWN REVISED AND REDRAWN OCT. 2011

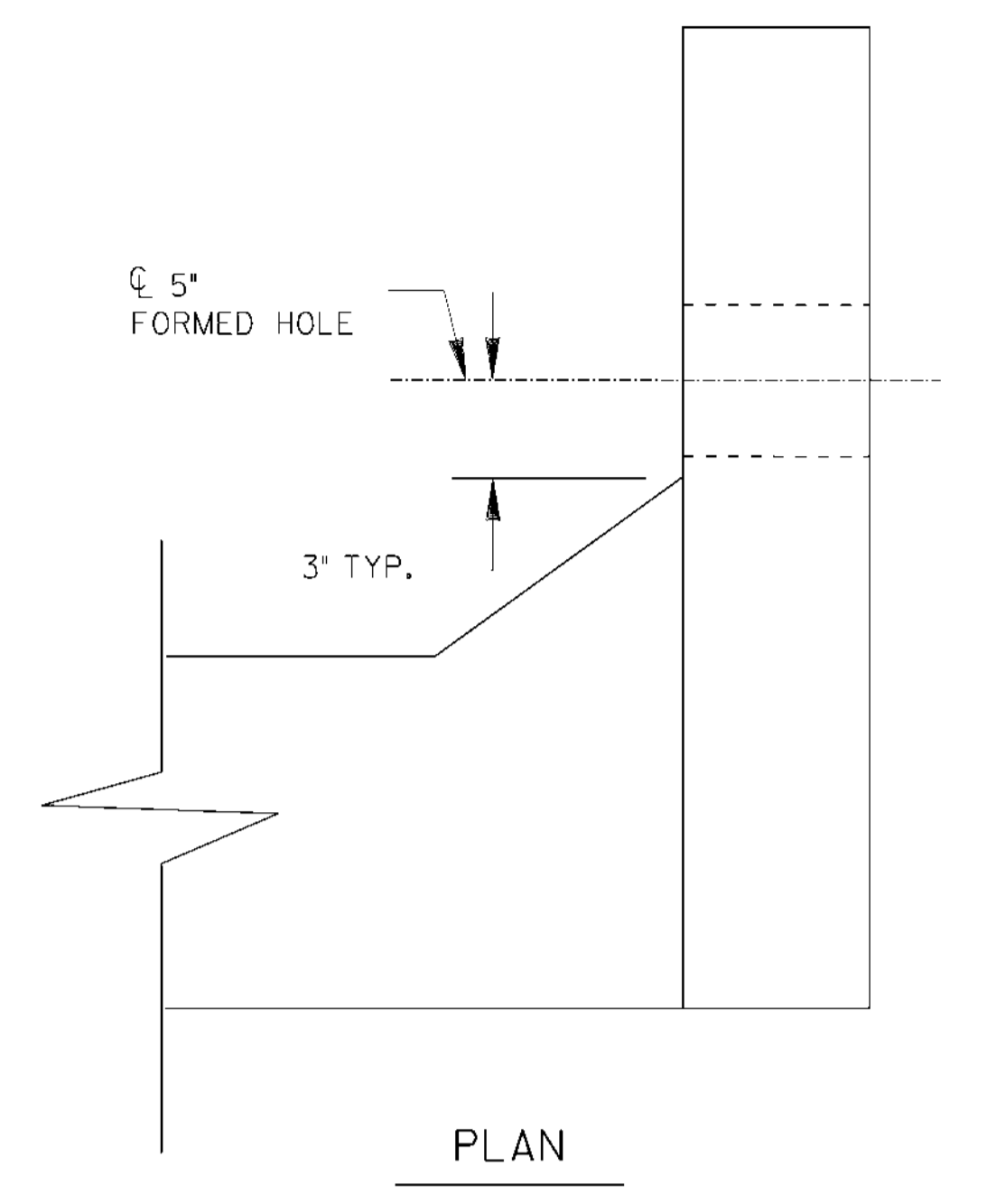
REV.	DATE	BY	REVISION
II-5-II			
I-27-II			
3-03			
REV. TYPE 9 CURB DETAIL & REV. OVERALL LAYOUT			
REV. MEDIAN NOTE AND			
ADDED TYPE 9 CURB DETAIL			
ADDED TYPE 9 DETAIL			
TC			
GLO			
DES. (SUBMITTED)			
DRW. (APPROVED)			
TRA. (APPROVED)			
CHK. (APPROVED)			

NUMBER
9032B

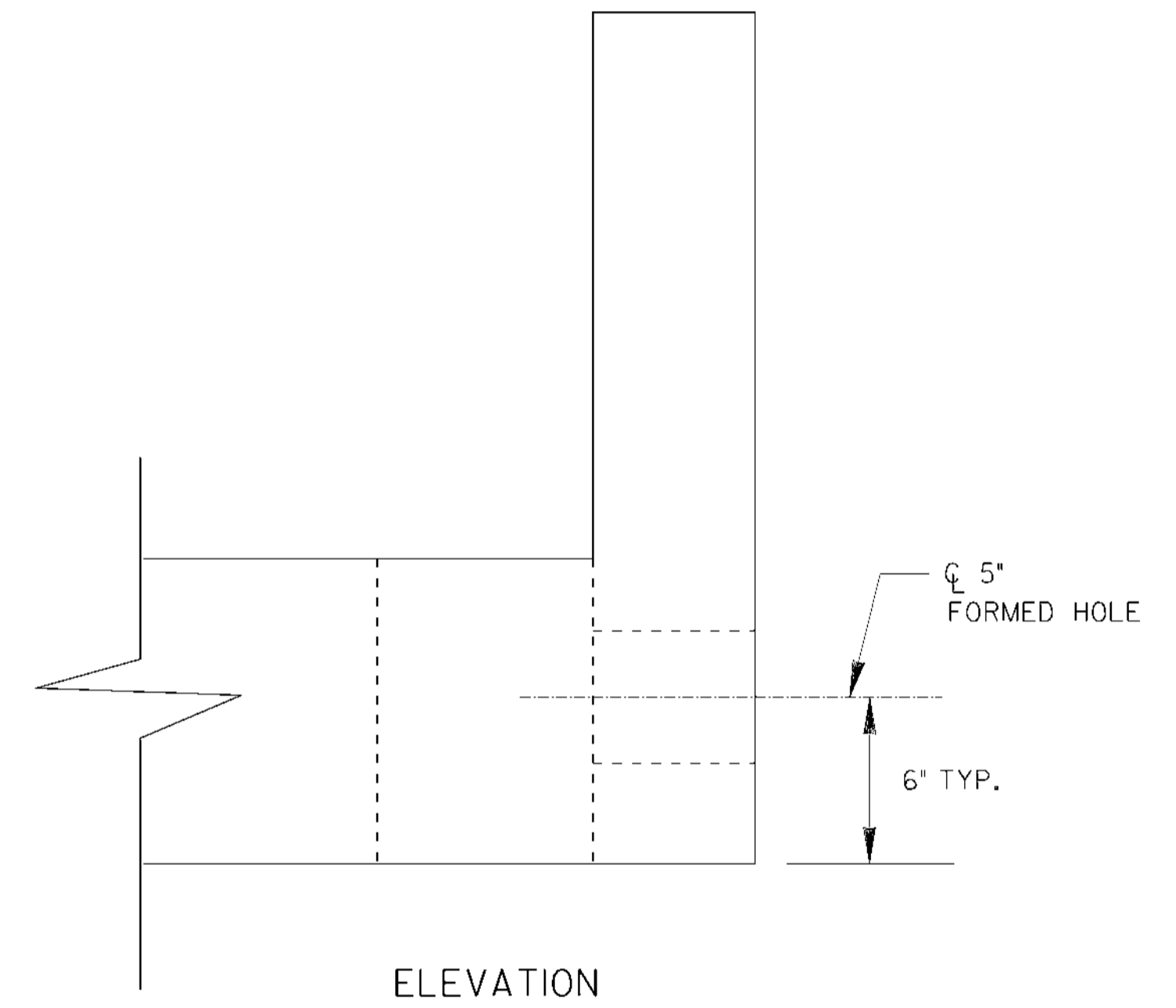
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			



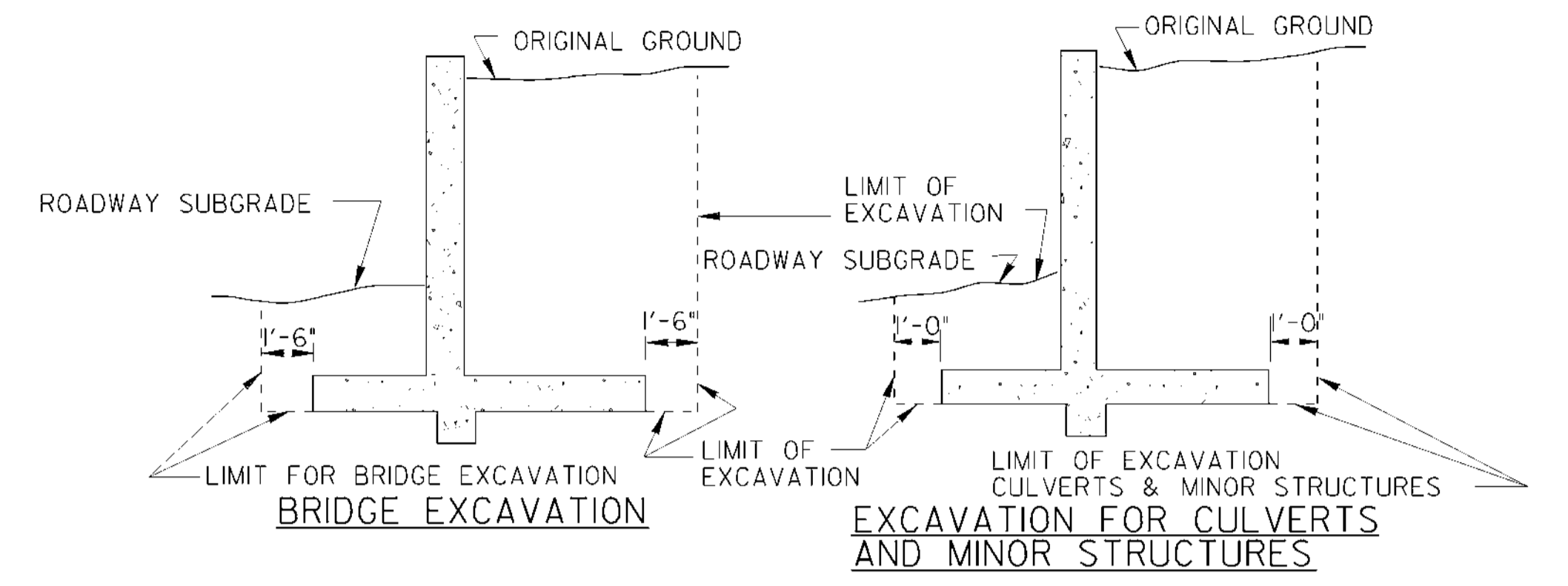
SKETCH SHOWING CONSTRUCTION OF FILLS AT ENDS OF BRIDGES
NO SCALE



PLAN



ELEVATION
WINGWALL DETAIL



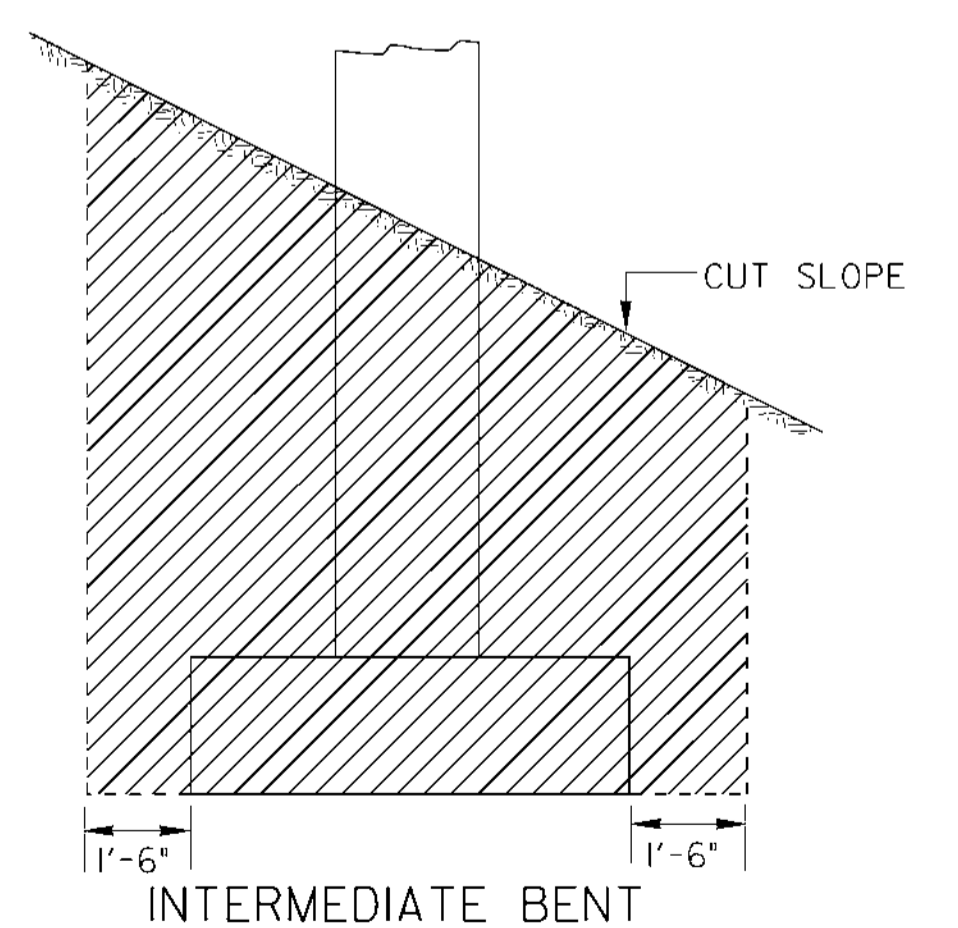
TYPICAL DETAILS OF EXCAVATION AT STRUCTURES

NOTE: WHERE FILL IS PLACED BEFORE CONSTRUCTION OF STRUCTURES THE COST OF EXCAVATION AND BACKFILL WILL BE INCLUDED IN THE COST OF OTHER ITEMS. THERE WILL BE NO PAYMENT FOR EXCAVATION UNDER THIS CONDITION.

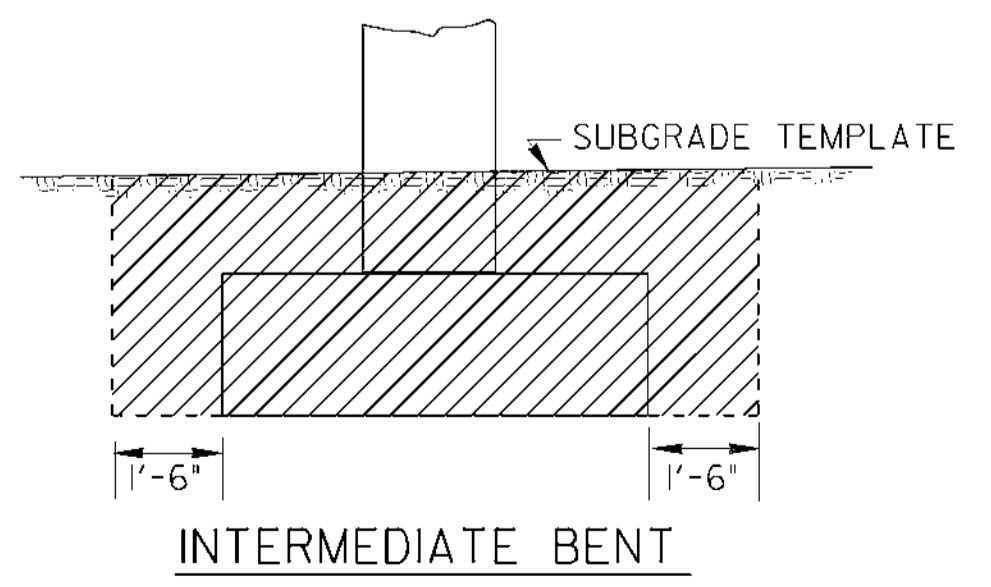
NOTES:

1. PERFORATED UNDERDRAIN SHALL EXTEND TO THE INSIDE FACE OF WING AT THE HIGH END OF THE CAP.
2. AT THE LOW END OF THE CAP, CONNECT PERFORATED UNDERDRAIN TO A COMPATIBLE SOLID PIPE FROM THE INSIDE FACE OF WING UNTIL IT EXITS THE SLOPE. SOLID PIPE SHALL HAVE A MINIMUM SLOPE OF 2%.
3. SOLID PIPE MAY BE PLACED AT EITHER END OF CAPS WITH LEVEL BOTTOM.
4. PERFORATED UNDERDRAIN SHALL BE INSTALLED PARALLEL TO BOTTOM OF CAP. LOW POINTS OR SAGS THAT MAY TRAP WATER WILL NOT BE ALLOWED.
5. FILTER FABRIC SHALL NOT BE ATTACHED TO THE END BENT CAP.
6. COST FOR PROVIDING AND INSTALLING FILTER FABRIC, UNDERDRAIN, AND STONE SHALL BE INCLUDED IN THE PRICE BID FOR CONTRACT ITEMS.

SHADED AREA IS BRIDGE EXCAVATION.



TYPICAL EXCAVATION DETAILS AT BRIDGE BENTS IN CUT SECTIONS
NO SCALE



INTERMEDIATE BENT

		DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
		STANDARD TYPICAL FILL DETAIL AT END OF BRIDGE	
		NO SCALE	REDRAWN SEPT., 1999
BY	DES. (SUBMITTED) <i>James A. Kennel</i>	NUMBER 9037	
TRA.	DRW. (APPROVED) <i>Paul L. Paddy</i>	CHIEF ENGINEER	
CHK.			