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102-602	TWO-LANE AND MULTILANE, WORK ON SHOULDER
536-001	GUARDRAIL

CHARLOTTE COUNTY, FLORIDA

CONTRACT PLANS

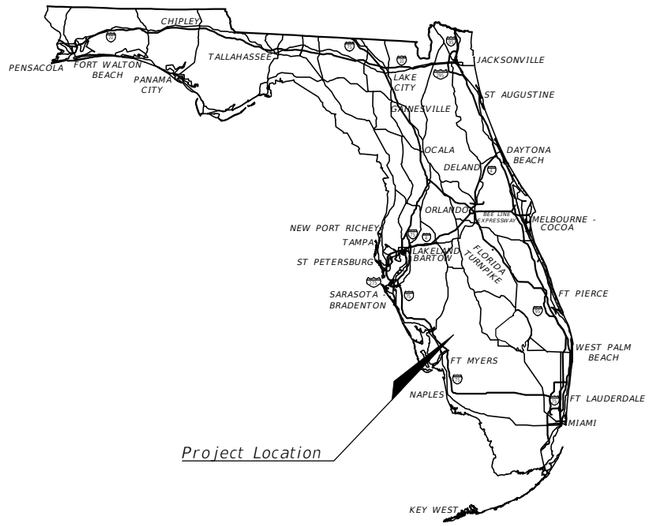
CHARLOTTE COUNTY PUBLIC WORKS

DESIGN-REHABILITATION & REPAIRS
BERMONT ROAD over MYRTLE SLOUGH
BRIDGE No. 010020

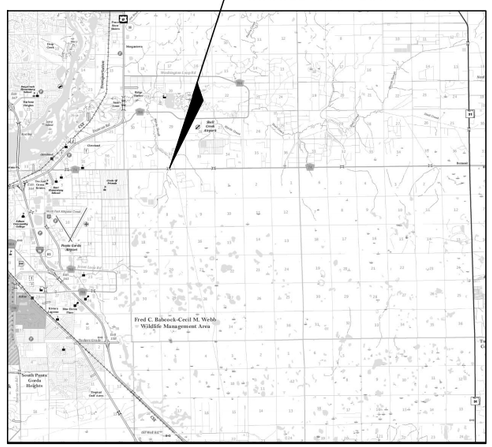
WO #303 FILE #2024000227

STRUCTURE PLANS

FINAL PLANS
FOR CONSTRUCTION



BRIDGE NO. 010020
CLICK HERE FOR
GOOGLE MAP LOCATION



COUNTY PROJECT MANAGER: KELLY SLAUGHTER

GOVERNING DESIGN STANDARDS:

Florida Department of Transportation, FY 2024-25 Standard plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website:
http://www.fdot.gov/design/Standardplans

Standard Plans for Bridge Construction are included in the Structures Plans Component.

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, FY 2024-25 Standard Specifications for Road and Bridge Construction (as amended by the contract documents) at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

STRUCTURE SHOP DRAWINGS TO BE SUBMITTED TO:

ROLANDO CORSA, PE, CBI
ARCOS BRIDGE, INC.
8112 CHAMPIONS FOREST WAY
TAMPA, FL 33635
rcorsa@arcosbridge.com

PLANS PREPARED BY:

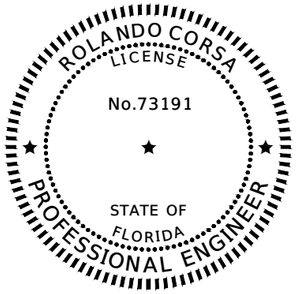
ARCOS BRIDGE, INC.
8112 CHAMPIONS FOREST WAY
TAMPA, FL 33635
(813) 767-0538

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

STRUCTURE PLANS ENGINEER OF RECORD:

ROLANDO CORSA, PE, CBI
NO.: 73191

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
N/A	24	B-01



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ARCOS BRIDGE, INC.
ROLANDO CORSA, PE, CBI
PE LICENSE NUMBER 73191
8112 CHAMPIONS FOREST WAY
TAMPA, FL 33635

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

STRUCTURE PLANS

SHEET NO.	*SHEET DESCRIPTION*
B-01	*KEY SHEET*
B-02	*SIGNATURE SHEET*
B-03	*GENERAL NOTES (1 OF 2)*
B-04	*GENERAL NOTES (2 OF 2)*
B-05	*SUMMARY OF QUANTITIES*
B-06	*STANDARD CONCRETE SPALL REPAIR DETAILS*
B-07	*PLAN AND ELEVATION*
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B-13	*DEFICIENCY PHOTOGRAPHS (4 OF 5)*
B-14	*DEFICIENCY PHOTOGRAPHS (5 OF 5)*

BRIDGE NO. 010020

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

arcos
ARCOS BRIDGE, INC. • ROLANDO CORSA, PE, CBI (No. 73191)
8112 CHAMPIONS FOREST WAY • TAMPA, FL 33635
(813) 767-0538 • rcorsa@arcosbridge.com

DRAWN BY: DB 10-24	**CHARLOTTE COUNTY PUBLIC WORKS**		
CHECKED BY: JMV 10-24			
DESIGNED BY: JMV 10-24	*ROAD NO.*	*COUNTY*	*FINANCIAL PROJECT ID.*
CHECKED BY: RC 10-24	N/A	CHARLOTTE	N/A

SHEET TITLE: SIGNATURE SHEET

REF. DWG. NO.

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO. B-02

GENERAL NOTES

DESIGN SPECIFICATIONS:

AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 9TH EDITION, INCLUDING ALL INTERIMS THERETO. FLORIDA DEPARTMENT OF TRANSPORTATION "STRUCTURES MANUAL", DATED 2024.

DESIGN LOADS:

1. ORIGINAL LIVE LOAD: HS20-44
2. DEAD LOADS: REINFORCED CONCRETE 150 PCF

DRAWINGS AND DIMENSIONS:

1. DO NOT SCALE DRAWINGS FOR DIMENSIONS NOT GIVEN.
2. VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING REPAIRS OR ORDERING ANY MATERIALS. NOTIFY ENGINEER OF ANY DISCREPANCIES FOUND.
3. ALL DIMENSIONS ARE IN FEET AND INCHES.
4. ALL DIMENSIONS IN THESE PLANS ARE GIVEN EITHER HORIZONTALLY OR VERTICALLY, UNLESS OTHERWISE NOTED. DECK JOINT OPENINGS ARE GIVEN FOR A MEAN TEMPERATURE OF 70°F.
5. THE DIMENSIONS, ELEVATIONS, AND INTERSECTION ANGLES SHOWN ARE BASED ON INFORMATION AS DETAILED IN THE LATEST FDOT BRIDGE INSPECTION REPORT (UNLESS OTHERWISE NOTED) AND A TAPE MEASURE SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE DATA BEFORE CONSTRUCTION OR ORDERING MATERIALS.

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL BE ASTM A615-96, GRADE 60.
2. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.
3. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

ENVIRONMENT CLASSIFICATION:

LOCATION = MARINE STRUCTURE
SUPERSTRUCTURE: EXTREMELY AGGRESSIVE
SUBSTRUCTURE: EXTREMELY AGGRESSIVE

CONCRETE:

CONCRETE AND CONSTITUENT MATERIALS SHALL MEET THE REQUIREMENTS OF SECTION 346 AND 400 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".

CAST-IN-PLACE:

FINAL MIX DESIGN SHALL BE SUBMITTED TO ARCOS BRIDGE, INC. FOR APPROVAL PRIOR TO POURING CAST-IN-PLACE CONCRETE.

CONCRETE STRESSES:

CONCRETE INFORMATION TABLE		
CLASS	APPLICATION	MIN. 28 DAY COMPRESSIVE STRESS
IV	CULVERT, HEADWALL, WINGWALL	5,500 PSI

CONCRETE COVER:

BOX CULVERT, HEADWALL AND WINGWALL: 3"

JOINTS IN CONCRETE:

CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT LOCATIONS INDICATED ON THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN SHALL REQUIRE APPROVAL OF THE ENGINEER.

EXISTING PLANS:

EXISTING PLANS ARE NOT AVAILABLE.

DATUM:

NO DESIGN SURVEY PERFORMED.

UTILITIES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES (INCLUDING SUBAQUEOUS CHANNEL CROSSINGS) PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL CONTACT SUNSHINE AT (800) 432-4770 AND ANY OTHER LOCAL UTILITIES TO VERIFY EXISTING UTILITIES AT SITE OF CONSTRUCTION IF ANY EXISTING UTILITIES CONFLICT WITH PROPOSED CONSTRUCTION METHODS, MATERIALS, OR EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

CHARLOTTE COUNTY UTILITIES - SW (941) 764-4309
FLORIDA POWER & LIGHT - CHARLOTTE (386) 586-6403
FLORIDA POWER & LIGHT - SUBAQUEOUS (386) 586-6403
COMCAST (239) 253-7642
CENTURYLINK (850) 599-1444

INCIDENTAL ITEMS:

PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL PAY ITEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR BID ITEMS CONTAINED IN THIS CONTRACT.

ANY DISTURBED AREAS SHALL BE RESTORED & TOPPED WITH SOD AT THE ENGINEER'S DIRECTION AND TO THE ENGINEER'S SATISFACTION. THE SOD SHALL BE MAINTAINED BY THE CONTRACTOR THROUGH FINAL ACCEPTANCE. THE SOD SHALL BE INCIDENTAL TO THE PAY ITEM FOR WHICH THE DISTURBED AREA WAS CREATED.

MATERIAL PRODUCTS:

MATERIAL MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS SHALL BE INSTALLED IN ACCORDANCE WITH APPROVED MANUFACTURER'S RECOMMENDATIONS.

TRAFFIC CONTROL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE EDITION OF THE FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS (102-600 SERIES). MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION.

2. THE CONTRACTOR SHALL NOTIFY LOCAL EMERGENCY AND RESCUE AGENCIES LOCATED IN THE PROJECT VICINITY INCLUDING BUT NOT LIMITED TO THOSE AGENCIES LISTED BELOW AS WELL AS THE ENGINEER 14 DAYS IN ADVANCE OF ANY TEMPORARY LANE CLOSURES OR RESTRICTIONS, AND AGAIN 24 HOURS IN ADVANCE OF EACH SERIES OF TEMPORARY LANE CLOSURES.

CHARLOTTE COUNTY FIRE/EMS STATION 7: (941) 575-0034
CHARLOTTE COUNTY SHERIFF'S OFFICE: (941) 639-2101

BRIDGE NO. 010020

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

arcos
ARCOS BRIDGE, INC. • ROLANDO CORSA, PE, CBI (No. 73191)
8112 CHAMPIONS FOREST WAY • TAMPA, FL 33635
(813) 767-0538 • rcorsa@arcosbridge.com

DRAWN BY: DB 10-24
CHECKED BY: JMV 10-24
DESIGNED BY: JMV 10-24
CHECKED BY: RC 10-24

CHARLOTTE COUNTY PUBLIC WORKS

ROAD NO.	COUNTY	FINANCIAL PROJECT ID.
N/A	CHARLOTTE	N/A

SHEET TITLE: GENERAL NOTES (1 OF 2)
REF. DWG. NO.
PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH
SHEET NO. B-03

GENERAL NOTES (CONTINUED)

PROTECTION OF WATER RESOURCES:

THE CONTRACTOR SHALL CONDUCT HIS ACTIVITIES IN A MANNER TO AVOID POLLUTION OF SURFACE AND GROUND WATER AND WETLANDS. THE CONTRACTOR'S CONSTRUCTION METHODS SHALL PROTECT WETLAND AND SURFACE WATER AREAS FROM DAMAGE DUE TO MECHANICAL GRADING, EROSION, SEDIMENTATION VEHICULAR TRAFFIC, AND TURBID DISCHARGES. NO STORAGE OR STOCKPILING OF EQUIPMENT SHALL BE ALLOWED WITHIN ANY WETLAND AREA UNLESS SPECIFICALLY AUTHORIZED UNDER PERMIT. WATER DIRECTLY DERIVED FROM CONSTRUCTION ACTIVITIES SHALL BE COLLECTED IN RETENTION AREAS TO ALLOW SETTLING OF SUSPENDED MATERIALS. ALL MONITORING OF ANY WATER AREAS THAT ARE AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

OIL, FUEL AND HAZARDOUS SUBSTANCE SPILL PREVENTION:

THE CONTRACTOR SHALL PREPARE A SPILL CONTINGENCY PLAN IN ACCORDANCE WITH 40CFR, PART 109. THE CONTRACTOR SHALL PREVENT OIL, FUEL OR OTHER HAZARDOUS SUBSTANCES FROM ENTERING THE AIR, GROUND, DRAINAGE, AND LOCAL BODIES OF WATER OR WETLANDS. IN THE EVENT THAT A SPILL OCCURS, DESPITE DESIGN AND PROCEDURAL CONTROLS, THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION TO CONTAIN AND CLEANUP THE SPILL AND REPORT THE SPILL IMMEDIATELY TO THE COUNTY'S REPRESENTATIVE. A WRITTEN REPORT PROVIDING CERTIFICATION OF COMMITMENT OF MANPOWER, EQUIPMENT AND MATERIALS NECESSARY TO PREVENT THE SPREAD AND EFFECT EXPEDITIOUS CLEANUP AND DISPOSAL SHALL BE SUBMITTED.

FISH AND WILDLIFE RESOURCE PROTECTION:

THE CONTRACTOR SHALL CONTROL AND MINIMIZE INTERFERENCE WITH, DISTURBANCE TO, AND DAMAGE OF FISH AND WILDLIFE RESOURCES. IF APPROPRIATE, THREATENED AND ENDANGERED SPECIES THAT REQUIRE SPECIFIC PROTECTION MEASURES SHALL BE LISTED IN THE ENVIRONMENTAL PROTECTION PLAN. THE PERSON DESIGNATED AS RESPONSIBLE FOR THE ENVIRONMENTAL PROTECTION PLAN SHALL BE ABLE TO IDENTIFY THE THREATENED AND ENDANGERED SPECIES LISTED IN THE ENVIRONMENTAL PROTECTION PLAN. ANY ACTIVITY OBSERVED BY THE CONTRACTOR THAT MAY RESULT IN ADVERSE IMPACT TO THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE COUNTY AND THE COUNTY'S REPRESENTATIVE, WHO SHALL HAVE SOLE AUTHORITY FOR ANY WORK STOPPAGES, CREATION OF A BUFFER AREA, OR RESTART OF CONSTRUCTION ACTIVITIES. IN THE EVENT THAT THE COUNTY'S REPRESENTATIVE DETERMINES THAT AN ADVERSE IMPACT TO THREATENED OR ENDANGERED SPECIES MAY OCCUR AS A RESULT OF THE CONSTRUCTION ACTIVITIES, THE COUNTY SHALL NOTIFY THE CORPS OF ENGINEERS AND THE FISH AND WILDLIFE SERVICE. ADVERSE IMPACT IS DEFINED AS TO HARASS, HARM, PURSUE, HUNT, SHOOT, WOUND, KILL, TRAP, CAPTURE, COLLECT, OR TO ATTEMPT TO ENGAGE IN ANY SUCH CONDUCT.

BRIDGE NO. 010020

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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DRAWN BY: DB 10-24
CHECKED BY: JMV 10-24
DESIGNED BY: JMV 10-24
CHECKED BY: RC 10-24

CHARLOTTE COUNTY PUBLIC WORKS

ROAD NO.	COUNTY	FINANCIAL PROJECT ID.
N/A	CHARLOTTE	N/A

SHEET TITLE: GENERAL NOTES (2 OF 2)

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-04

PAY ITEMS FOR BRIDGE NO. 010020			
ITEM NO. (NOTE NO.)	DESCRIPTION	UNIT	QUANTITY
101-1 (1)*	MOBILIZATION	LS	1
102-1 (2)*	MAINTENANCE OF TRAFFIC	LS	1
104-11 (3)*	FLOATING TURBIDITY BARRIER	LF	150
110-1-1 (4)*	CLEARING AND GRUBBING	LS	1
401-70-4 (5)*	RESTORE SPALLED AREAS	CF	5
401-70-5 (6)*	RELINE CULVERT SCALE DAMAGE	CF	158
411-2 (7)*	CRACKS INJECT & SEAL	LF	4
430-950 (8)	DESILTING CONCRETE BOX CULVERT	CY	236
530-3-4 (9)*	RIPRAP, RUBBLE, F&I, DITCH LINING	TN	155
536-85-20 (10)*	GUARDRAIL -TRAILING END TREATMENT	EA	1

* NOTE: TECHNICAL SPECIAL PROVISION PROVIDED.

PAY ITEM NOTES:

1. MOBILIZATION - THIS PAY ITEM IS LIMITED TO 5% OF THE TOTAL BID AMOUNT. ANY ADDITIONAL MOBILIZATION COSTS BEYOND THE 5% LIMIT SHALL BE INCLUDED IN OTHER PAY ITEMS THAT REQUIRE THE MOBILIZATION OF EQUIPMENT AND/OR LABOR.

2. MAINTENANCE OF TRAFFIC - CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT, ALL TRAFFIC MAINTENANCE CONTROL SHALL BE IN ACCORDANCE WITH THE FLORIDA MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS AND APPROVED BY CHARLOTTE COUNTY. THE CONTRACTOR SHALL MAINTAIN BERMONT ROAD OPEN AT ALL TIMES. LANE CLOSURES ARE NOT PERMITTED FOR THIS PROJECT. THE CONTRACTOR MAY, AT THE CONTRACTOR'S OPTION, PROPOSE TO INSTITUTE TEMPORARY SHOULDER CLOSURE PER FDOT INDEX 102-602, FOR APPROVAL BY THE COUNTY ENGINEER.

3. FLOATING TURBIDITY BARRIER - INSTALL AND MAINTAIN TURBIDITY BARRIERS TO AVOID OR MINIMIZE THE DEGRADATION OF THE WATER QUALITY OF THE SURROUNDING WATERS AND MINIMIZE DAMAGE TO AREAS WHERE THE FLOATING BARRIERS ARE INSTALLED.

4. CLEARING AND GRUBBING - REMOVE AND DISPOSE OF VEGETATION, OBSTRUCTIONS, ETC., UP TO 10 FT BEYOND THE CULVERT/WINGWALL FASCIAS (BOTH), AND WITHIN THE LONGITUDINAL LIMITS OF THE NORTH (LEFT) GUARDRAIL. PERFORM ALL CLEARING AND GRUBBING IN ACCORDANCE WITH FDOT SPECIFICATION ITEM NO. 110.

5. RESTORE SPALLED AREAS - CONSISTS OF RESTORING SPALLED AREAS IN CULVERT, HEAD WALLS, AND WING WALLS AS NECESSARY PER THE STANDARD CONCRETE SPALL REPAIR DETAILS ON SHEET B-06. TOTAL REPAIR QUANTITY ASSUMES 50% ADDITIONAL MATERIAL TO ACCOUNT FOR UNKNOWN DEFICIENCY EXTENTS:
   - 5.1 SOUTHWEST WINGWALL HAS A 6FT. X 5IN. X 3/4IN. SPALL ALONG THE TOP EDGE NEAR THE MIDPOINT.
   - 5.2 SOUTHWEST WINGWALL HAS TWO DELAMINATIONS UP TO 4IN. X 2IN. AT WALL 1.
   - 5.3 SOUTH HEADWALL, TOP EDGE OVER CELL 3, HAS TWO SPALLS UP TO 24IN. X 12IN. X 3IN.
   - 5.4 NORTHEAST WINGWALL, EAST END HAS A 14IN. X 9IN. X 2IN. SPALL WITH EXPOSED REBAR.
   - 5.5 THE SIDEWALLS HAVE AREAS OF HONEYCOMBING AND VOIDS UP TO 2FT. X 4IN. X UP TO 3IN. IN THE ORIGINAL PORTION, SOME WITH EXPOSED AND CORRODED REBAR.
   - 5.6 CELL 1, WALL 2, NEAR THE NORTH END, HAS A 24IN. X 5IN. X 8IN. THROUGH VOID/WASHOUT WITH EXPOSED REBAR HAVING 0% SECTION REMAINING.
   - 5.7 WALL 2, NORTH END, HAS AN 8IN. X 24IN. X 2-1/2IN. HONEYCOMBING AREA WITH EXPOSED REBAR HAVING 0% SECTION REMAINING.
   - 5.8 CELL 2 CEILING, AT THE SOUTH WIDENING JOINT, HAS TWO LACK OF COVER SPALLS WITH EXPOSED REBAR UP TO 6IN. DIAMETER X 1/2IN.
   - 5.9 CELL 2 CEILING, AT THE NORTH WIDENING JOINT, HAS THREE SPALLS UP TO 7IN. X 6IN. X 3/4IN. WITH EXPOSED REBAR.
   - 5.10 CELL 2, WALL 3, AT THE NORTH WIDENING JOINT, HAS THREE PIECES OF EXPOSED REBAR DUE TO LACK OF COVER SPALL, UP TO 29IN. LONG.
   - 5.11 CELL 3 CEILING, AT THE SOUTH WIDENING JOINT, HAS TWO SPALLS UP TO 10IN. X 5IN. X 3/4IN. WITH EXPOSED REBAR WITH 50% SECTION REMAINING.
   - 5.12 CELL 3, WALL 4, AT THE NORTH WIDENING JOINT, HAS AN 8IN. X 5IN. X 1/2IN. SPALL WITH EXPOSED REBAR NEAR THE CEILING.
   - 5.13 THE GROUT AT THE WIDENING JOINTS HAS DELAMINATIONS UP TO 7IN. X 3IN.

6. RELINE CULVERT SCALE DAMAGE - THERE IS SCALE DAMAGE (LOSS OF AGGREGATE) UP TO 1/2IN. IN THE LOWER 5FT. OF THE CULVERT SIDEWALLS. RESTORE CONCRETE SURFACES PER FDOT SPECIFICATION 450-12.3.1.4 AND 450-13.3. CONTRACTOR SHALL USE A HIGH-QUALITY POLYMER-MODIFIED REPAIR MORTAR THAT CAN BE HAND TROWELED, ENSURING PROPER COMPACTION AND BONDING. THE SELECTED REPAIR MORTAR SHALL BE LISTED ON FDOT'S APPROVED PRODUCTS LIST (APL). BOTH PLANITOP XS AND EUCOREPAIR V100 ARE REPAIR MORTARS LISTED ON THE APL THAT MAY BE USED FOR THIS PURPOSE.

7. CRACKS INJECT & SEAL - INJECT AND SEAL CRACKS AT THE FOLLOWING LOCATIONS PER FDOT SPECIFICATION 411. PAYMENT SHALL BE PER LINEAR FOOT OF CRACKS REPAIRED AND MATERIALS SHALL BE INCIDENTAL. TOTAL REPAIR QUANTITY ASSUMES 50% ADDITIONAL MATERIAL TO ACCOUNT FOR UNKNOWN DEFICIENCY EXTENTS. CONTRACTOR SHALL SUBMIT A REPAIR PROCEDURE FOR APPROVAL:
   - 7.1 THE WINGWALLS AND HEADWALLS HAVE VERTICAL CRACKS UP TO 1/64IN. THROUGHOUT.
   - 7.2 NORTHWEST WINGWALL HAS A 14IN. X 1/16IN. VERTICAL CRACK, ADJACENT TO WALL 1 TRANSITION.
   - 7.3 THE CULVERT CEILING AND SIDEWALLS HAVE TRANSVERSE AND VERTICAL CRACKS LESS THAN 1/64IN. THROUGHOUT.
   - 7.4 CELL 2, WALL 2, NEAR THE SOUTH END, HAS A VERTICAL CRACK 20IN. X 1/16IN., EXTENDING UP FROM FLOOR SLAB.
   - 7.5 THE GROUT AT THE WIDENING JOINTS HAS CRACKS UP TO 1/8IN.

8. DESILTING CONCRETE BOX CULVERT - THERE IS UP TO 2FT. 6IN. OF SEDIMENT BUILDUP IN THE CELLS, AND THERE IS 4FT. OF BUILDUP IN FRONT OF BOTH ENDS OF CELLS 2 AND 3. DESILT BOX CULVERT CELLS OF SEDIMENT BUILDUP PER FDOT SPECIFICATION 430-10, INCLUDING 10 FT BEYOND THE CULVERT FASCIAS, RESTORING THE ORIGINALLY DESIGNED HYDRAULIC OPENING.

9. RIPRAP, RUBBLE, F&I, DITCH LINING - PLACE RIPRAP UP TO 10 FT BEYOND THE CULVERT/WINGWALL FASCIAS UP TO THE WINGWALL ENDS, IN ACCORDANCE WITH FDOT SPECIFICATION ITEM NO. 530.

10. GUARDRAIL -TRAILING END TREATMENT - THE NORTHWEST END TERMINAL HAS HEAVY DAMAGE 8FT. LONG WITH THE FIRST POST FRACTURED. SEE PHOTO 19, SHEET B-14. REPLACE AND INSTALL THE IMPACT HEAD AND FIRST POST OF THE BEGIN, LEFT GUARDRAIL END TREATMENT ASSEMBLY PER FDOT SPECIFICATION 536.

BRIDGE NO. 010020

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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DRAWN BY: DB 10-24
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DESIGNED BY: JMV 10-24
CHECKED BY: RC 10-24

CHARLOTTE COUNTY PUBLIC WORKS

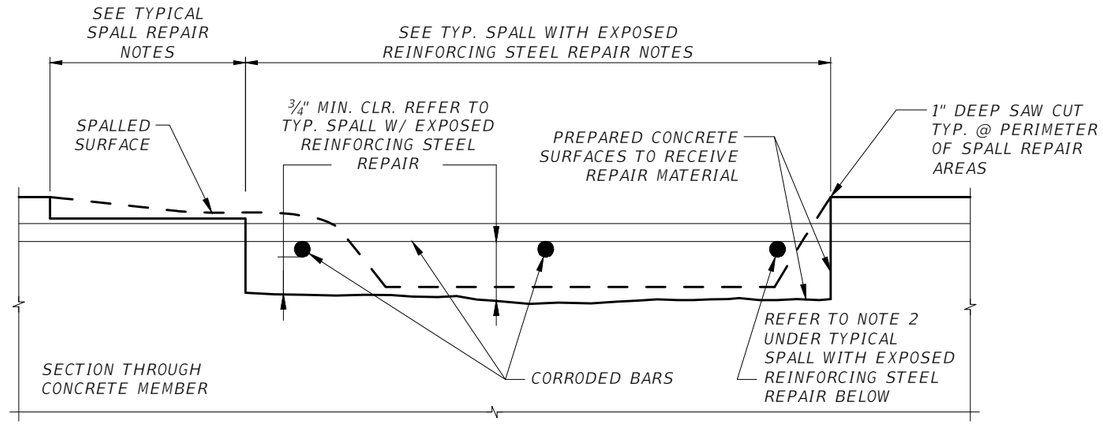
ROAD NO.	COUNTY	FINANCIAL PROJECT ID.
N/A	CHARLOTTE	N/A

SHEET TITLE: SUMMARY OF QUANTITIES

REF. DWG. NO.:

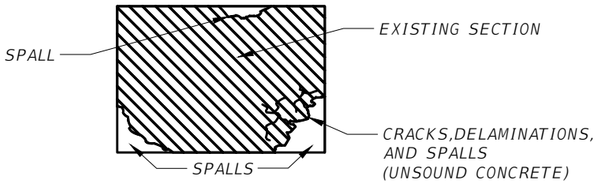
PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-05

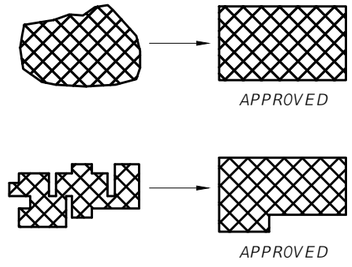


CONCRETE SPALL REPAIR DETAIL

APPLICABLE TO HORIZONTAL, VERTICAL AND OVERHEARD LOCATIONS

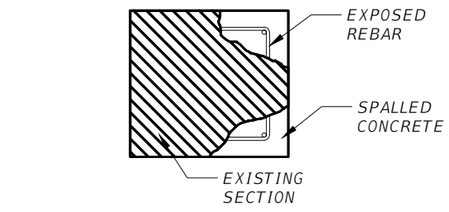


TYPICAL DELAMINATION AND SPALLS



SIMPLE PATCH CONFIGURATION

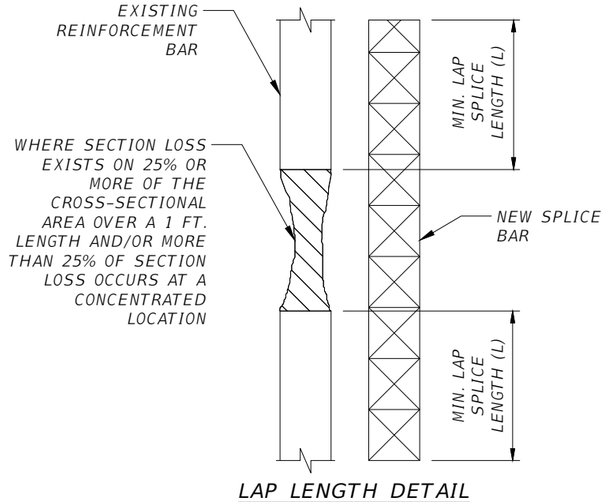
AT CORNER LOCATIONS PROVIDE RIGHT ANGLE CUTS. PATCH CONFIGURATIONS SHALL BE KEPT AS SIMPLE AS POSSIBLE. INDIVIDUAL REPAIR AREAS WITHIN 2 FEET SHALL BE JOINED AT THE DIRECTION OF THE ENGINEER.



TYPICAL SPALL WITH EXPOSED REBARS

LAP SPLICE TABLE	
REBAR SIZE	LAP SPLICE LENGTH
3	12 INCHES
4	16 INCHES
5	20 INCHES
6	24 INCHES
7	33 INCHES
8	43 INCHES
9	54 INCHES
10	68 INCHES
11	84 INCHES

MIN. SPLICE LENGTHS (L)



LAP LENGTH DETAIL

GENERAL NOTES

1. IN THE PRESENCE OF THE ENGINEER, CLEARLY OUTLINE ALL AREAS IN NEED OF REPAIR WITH AN APPROVED PAINT OR MARKER PRIOR TO DEMOLITION. NO DEMOLITION OF ANY AREA OR MEMBER OF THE BRIDGE SHALL BE PERFORMED UNTIL APPROVAL FROM THE ENGINEER. INFORM THE ENGINEER IF A REMOVAL AREA EXCEEDS HALF THE THICKNESS OF THE SECTION.
2. THE ESTIMATED CONCRETE REPAIR QUANTITIES INCLUDED IN THE BID FORM WERE DETERMINED BY INCREASING THE REPAIR AREAS DOCUMENTED IN THE FDOT BRIDGE INSPECTION REPORT BY APPROXIMATELY 50% TO PROVIDE FOR CONTINGENCIES. THE ACTUAL REPAIR AREAS WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND AS APPROVED BY THE ENGINEER. THE INTENT IS TO REMOVE THE DELAMINATED CONCRETE AND OLD PATCHES AND INSTALL NEW PATCHING REPAIRS USING SAW CUTS AT THE PERIMETER OF THE REPAIR AREAS AS SHOWN ON THIS SHEET.
3. PROVIDE AND INSTALL STAINLESS STEEL TAPCONS ON A 6" BY 6" GRID WITH STAINLESS STEEL WIRE IN BETWEEN EACH ADJACENT TAPCON WITHIN THE PATCHES AT ALL REPAIR AREAS THAT ARE NOT MECHANICALLY BONDED TO EXISTING REBAR.
4. USE A METAL DETECTOR TO AVOID IMPACTING THE PRESTRESS WIRES WHEN INSTALLING THE TAPCONS ON THE BEAM UNDERSIDE DURING THE CONCRETE REMOVAL OPERATIONS.
5. APPLY SIKA MASTEREMACO P 124 BONDING AGENT, OR APPROVED EQUAL, TO EXISTING CONCRETE SURFACES PRIOR TO PLACING THE FRESH REPAIR MATERIAL.
6. USE SIKA MASTEREMACO N 425 REPAIR MORTAR, OR APPROVED EQUAL, FOR ALL HORIZONTAL, VERTICAL AND OVERHEAD SPALLS.
7. ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.

EXPOSED REINFORCING STEEL NOTES

1. REMOVE RUST FROM EXPOSED REINFORCING STEEL BY ABRADING TO "WHITE METAL CONDITION" AND PREPARE SURFACES IN ACCORDANCE WITH ICRI TECHNICAL GUIDE 03730 "GUIDE FOR SURFACE PREPARATION" OF DETERIORATED CONCRETE RESULTING FROM REINFORCING STEEL CORROSION".
2. WHERE EXISTING REINFORCING STEEL HAS GREATER THAN 25% LOSS IN CROSS-SECTIONAL AREA DUE TO CORROSIVE DETERIORATION OR DAMAGE, SUPPLEMENT REINFORCING WITH ADDITIONAL REINFORCING AS SHOWN IN THE LAP LENGTH DETAIL AND MIN. SPLICE LENGTHS.

CONCRETE REMOVAL AND SURFACE PREPARATION NOTES

1. REMOVE ALL UNSOUND CONCRETE AND PREPARE SURFACES FOR REPAIR IN ACCORDANCE WITH ICRI TECHNICAL GUIDELINES 03730 "GUIDE FOR SURFACE PREPARATION" OF DETERIORATED CONCRETE RESULTING FROM REINFORCING STEEL CORROSION".
2. ALL REPAIR AREAS SHALL HAVE SQUARE EDGES AROUND THE PERIMETER OF THE SPALL DEFINED BY 3/4" DEEP SAW CUT LINES. CHIP THE REPAIR EDGES CLEAN TO FORM 45 TO 90 DEGREE CORNERS ALONG THE EDGES AND CORNERS OF THE REPAIR AREA. THE DEPTH OF THE CHIPPED EDGE SHALL BE 3/4" OR GREATER. FEATHERED EDGES WILL NOT BE ACCEPTABLE.
3. REMOVE UNSOUND CONCRETE USING MECHANICAL ABRASION, BUT DO NOT USE EXCESSIVE FORCE, WHICH MAY CAUSE MICRO-FRACTURING OF THE SOUND CONCRETE.
4. CARE SHALL BE TAKEN TO AVOID DAMAGING THE EXISTING REINFORCEMENT.
5. PREPARED SURFACES SHALL BE INTENTIONALLY ROUGHENED TO A MINIMUM PROFILE OF 1/4" TO PROVIDE MECHANICAL LOCK FOR THE REPAIR.
6. CONCRETE SURFACES SHALL BE STRUCTURALLY SOUND AND FREE OF BOND INHIBITING SURFACES.
7. WHERE THE BOND BETWEEN EXISTING CONCRETE AND REINFORCEMENT HAS BEEN DESTROYED OR WHERE MORE THAN HALF THE DIAMETER OF THE BAR IS EXPOSEDTO A DEPTH THAT WILL PERMIT THE CONCRETE MORTAR TO BOND TO THE ENTIRE PERIPHERY OF THE BAR. PROVIDE A MINIMUM DEPTH BEHIND THE REINFORCEMENT OF 3/4" FOR THIS PURPOSE.
8. APPLY A TYPE A EPOXY COMPOUND IN ACCORDANCE WITH SECTION 926 OF THE SPECIFICATION TO THE EXISTING CONCRETE SURFACES PRIOR TO PLACING THE FRESH REPAIR MATERIAL.

CONCRETE SPALL REPAIR NOTES

1. RESTORE CONCRETE SURFACES USING APPROVED MATERIALS IN ACCORDANCE WITH SECTION 926 OR SECTION 930 OF THE SPECIFICATIONS.
2. FOR SPALLS WITH AN AVERAGE DEPTH OF 1" OR LESS, REPAIR USING A TYPE F-1 OR TYPE F-2 EPOXY REPAIR MORTAR, FOR SPALLS WITH AN AVERAGE DEPTH GREATER THAN 1", REPAIR USING A RAPID HARDENING CONCRETE MORTAR.
3. SELECT MATERIALS SUITABLE FOR APPLICATION INCLUDING ORIENTATION (E.G. HORIZONTAL, VERTICAL OR OVERHEAD APPLICATION) AND THICKNESS.
4. MIX, PLACE AND CURE REPAIR MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
5. FINISH REPAIR MATERIALS FLUSH WITH THE ORIGINAL CONCRETE SURFACE (U.N.O). THE SURFACE FINISH SHALL MEET THE REQUIREMENTS FOR A GENERAL SURFACE FINISH PER SECTION 400 OF THE SPECIFICATIONS.
6. COMPLETION OF CLEANING OPERATIONS AND REPAIR SHALL OCCUR WITHIN THE SAME DAY AND SHALL NOT EXCEED THE BONDING AGENT WINDOW OF APPLICATION.
7. SAW-CUT 1" AT THE AREA OF THE DAMAGED CONCRETE. THE CONCRETE SHALL BE REMOVED FROM 3/4" TO 1" DEPTH BEHIND THE REINFORCING BAR BY MECHANICAL MEANS. THE CONTRACTOR SHALL NOT DAMAGE THE EXISTING REINFORCING.

BRIDGE NO. 010020

REVISIONS

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CHARLOTTE COUNTY PUBLIC WORKS

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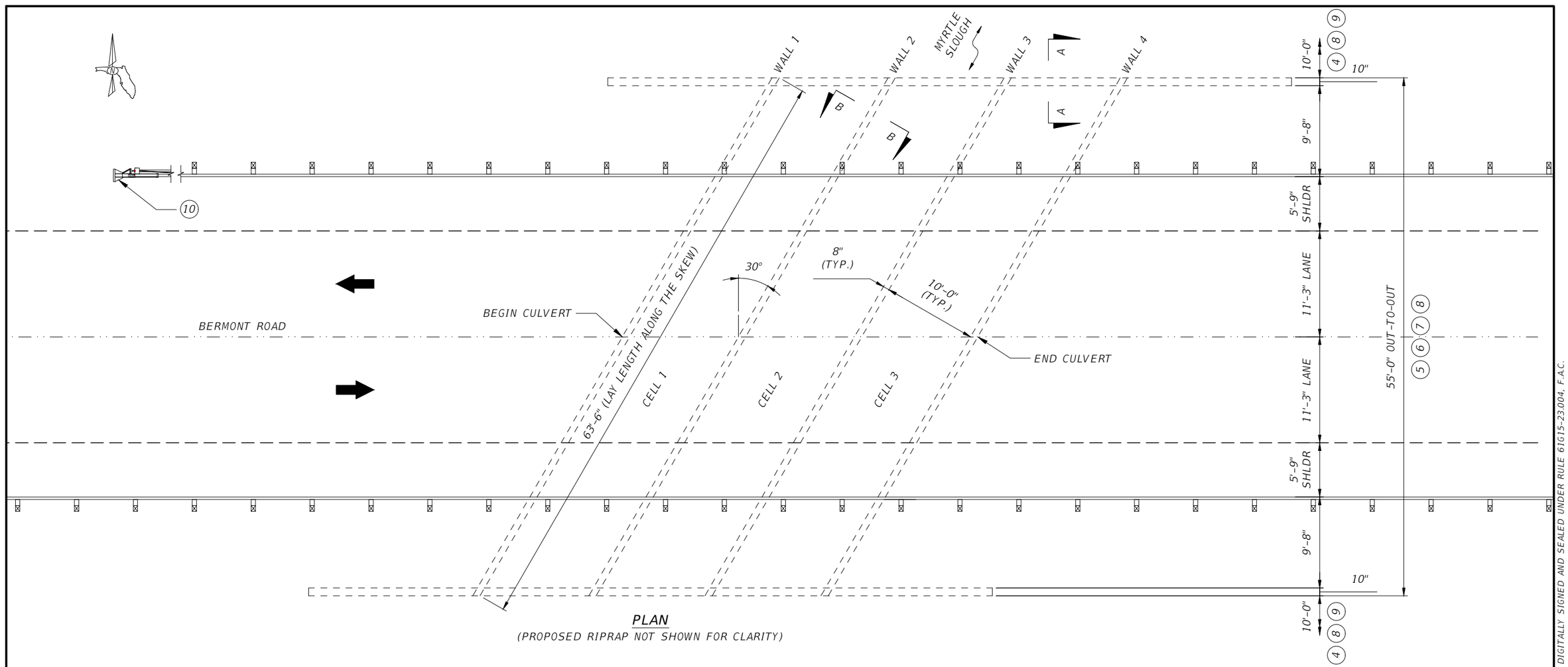
N/A	CHARLOTTE	N/A

SHEET TITLE: STANDARD CONCRETE SPALL REPAIR DETAILS

REF. DWG. NO.

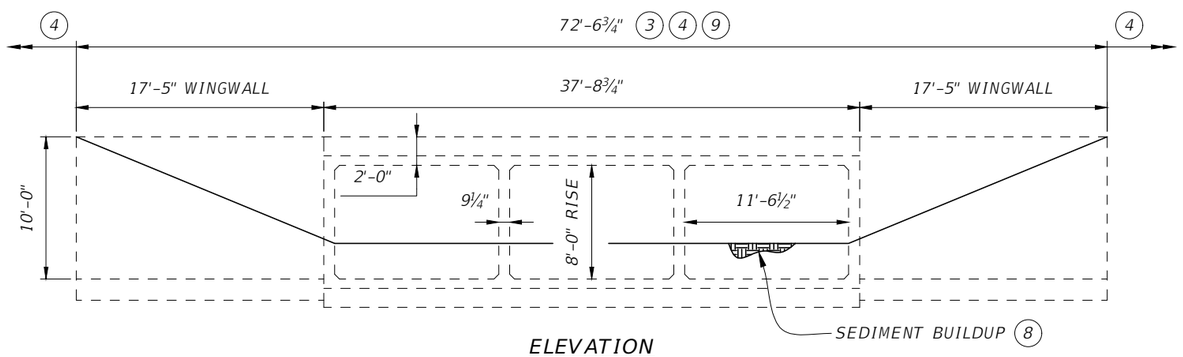
PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO. B-06



PLAN

(PROPOSED RIPRAP NOT SHOWN FOR CLARITY)



ELEVATION

(PROPOSED RIPRAP NOT SHOWN FOR CLARITY)

NOTES:
1. WORK THIS SHEET WITH B-05.
2. SEE SHEET B-08 FOR PROPOSED RIPRAP DETAIL.
3. SEE SHEET B-09 FOR SECTIONS A-A AND B-B.

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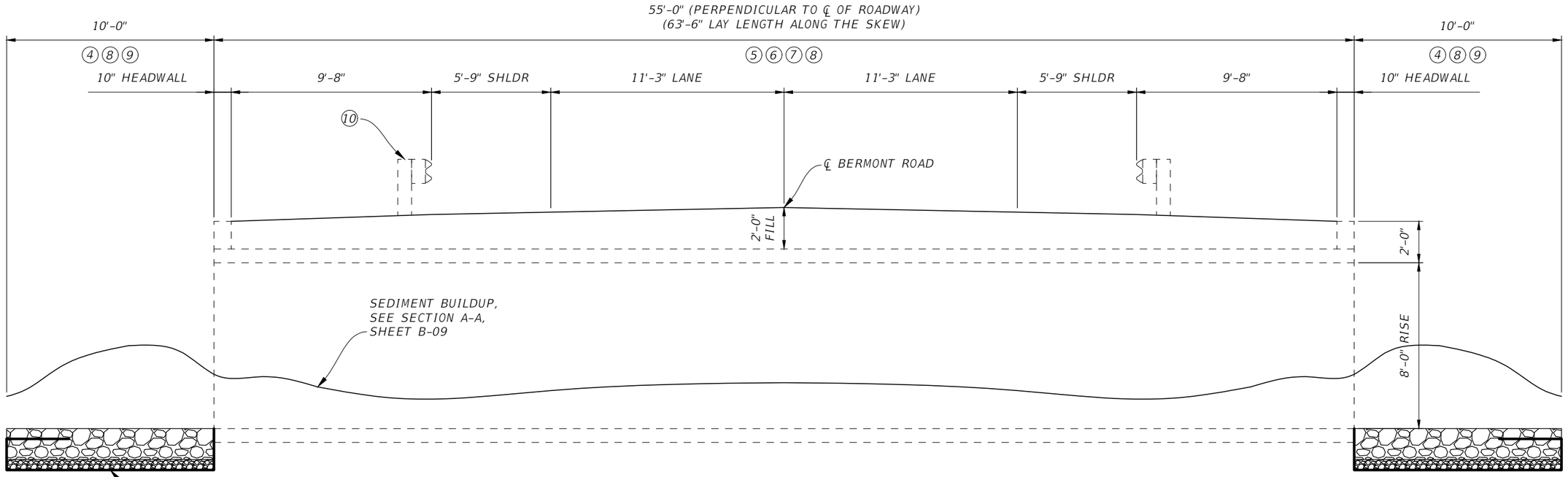
SHEET TITLE: PLAN AND ELEVATION

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

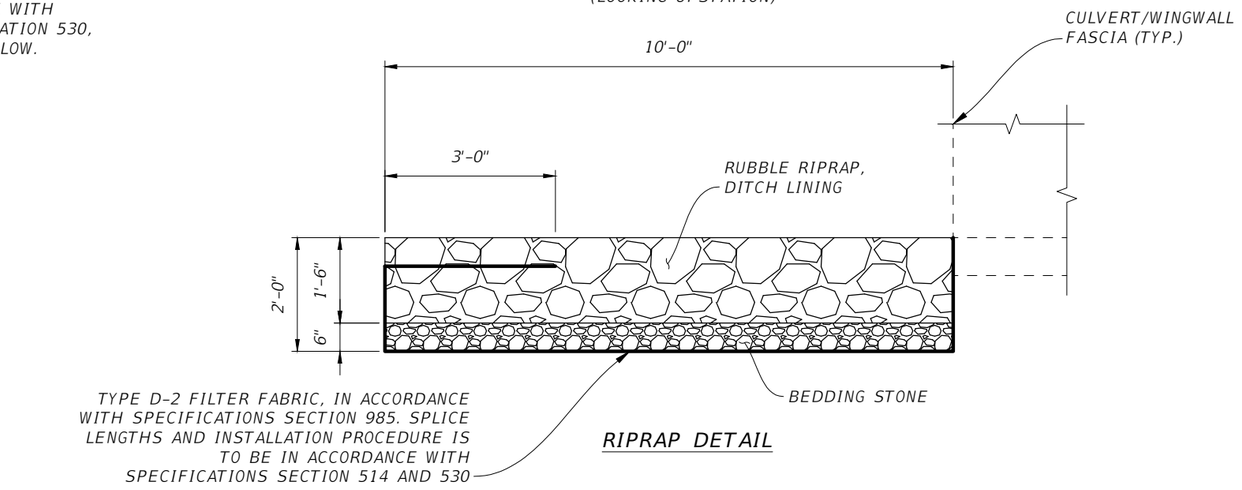
SHEET NO.: B-07



TYPICAL SECTION

(LOOKING UPSTATION)

NOTE: WORK THIS SHEET WITH B-05.



RIPRAP DETAIL

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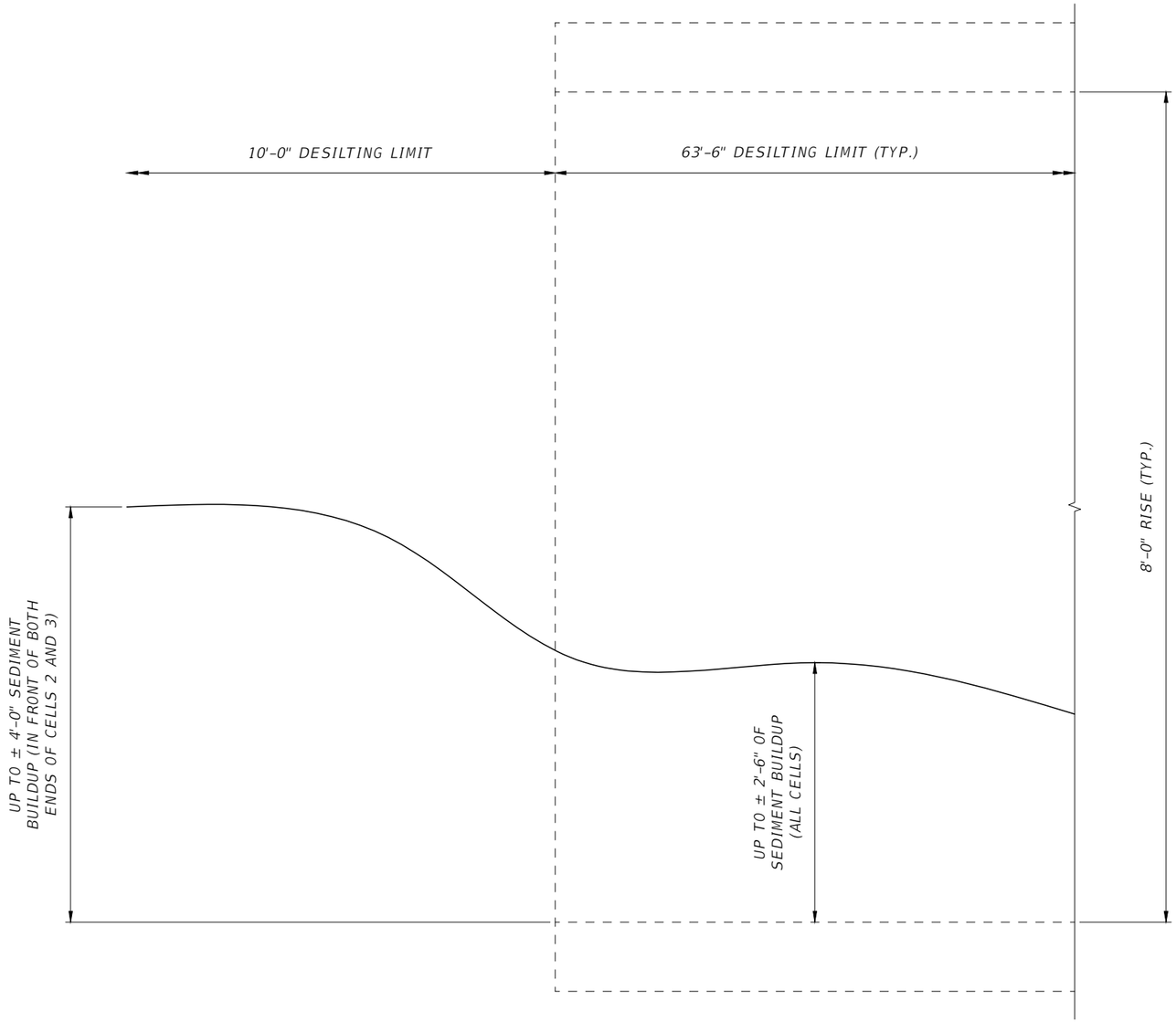
SHEET TITLE: TYPICAL SECTION

REF. DWG. NO.:

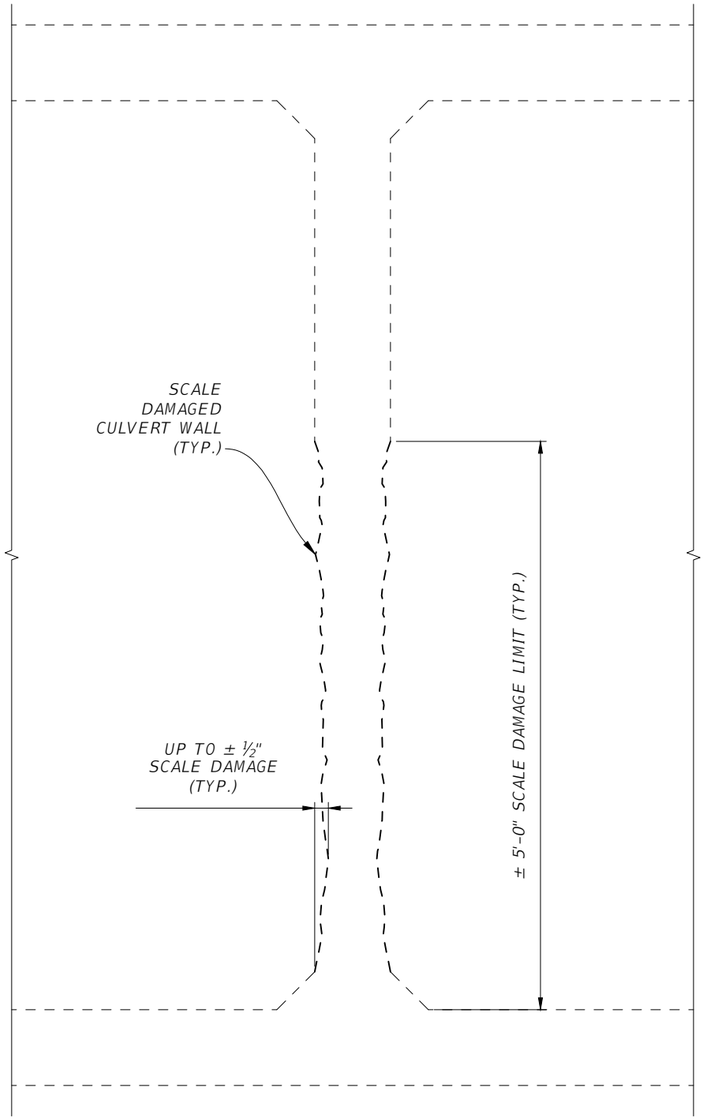
PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-08



SECTION A-A

DESILT BOX CULVERT CELLS OF SEDIMENT BUILDUP PER FDOT SPECIFICATION 430-10, INCLUDING 10 FT BEYOND THE CULVERT FASCIAS, RESTORING THE ORIGINALLY DESIGNED HYDRAULIC OPENING. PROPOSED RIPRAP NOT SHOWN FOR CLARITY.



SECTION B-B

RESTORE CULVERT WALL SURFACES PER FDOT SPECIFICATION 450-12.3.1.4 AND 450-13.3. CONTRACTOR SHALL USE A HIGH-QUALITY POLYMER-MODIFIED REPAIR MORTAR THAT CAN BE HAND TROWELED, ENSURING PROPER COMPACTION AND BONDING. THE SELECTED REPAIR MORTAR SHALL BE LISTED ON FDOT'S APPROVED PRODUCTS LIST (APL). BOTH PLANITOP XS AND EUCOREPAIR V100 ARE REPAIR MORTARS LISTED ON THE APL THAT MAY BE USED FOR THIS PURPOSE.

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SHEET TITLE: MISCELLANEOUS REPAIR DETAILS

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

REF. DWG. NO.:

SHEET NO.: B-09

PHOTO 1 - TYPICAL CELL

PHOTO 2 - LEFT FASCIA

PHOTO 3 - RIGHT FASCIA

PHOTO 4 - CELLS 2 AND 3

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SHEET TITLE: DEFICIENCY PHOTOGRAPHS (1 OF 5)

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-10

PHOTO 5 - TYPICAL HEADWALL/WINGWALL

PHOTO 6 - BEGIN, LEFT WINGWALL

PHOTO 7 - RIGHT HEADWALL

PHOTO 8 - LEFT, END WINGWALL

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID.
N/A	CHARLOTTE	N/A

SHEET TITLE: DEFICIENCY PHOTOGRAPHS (2 OF 5)

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-11

PHOTO 9 - TYPICAL SIDE WALLS

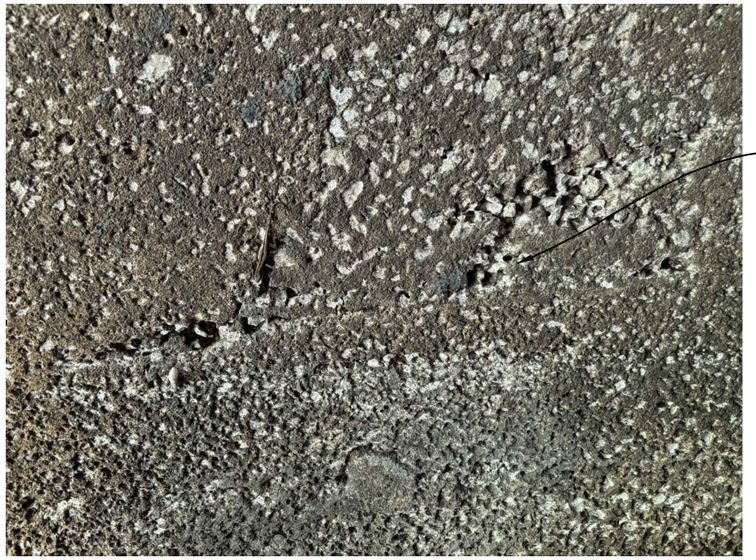

PHOTO 10 - TYPICAL SIDE WALL (CLOSE UP)

PHOTO 11 - CELL 1, WALL 2, LEFT END

PHOTO 12 - CELL 1, WALL 2, LEFT END

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SHEET TITLE: DEFICIENCY PHOTOGRAPHS (3 OF 5)

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

REF. DWG. NO.

SHEET NO. B-12

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PHOTO 13 - CELL 2, WALL 2, RIGHT END

PHOTO 14 - CELL 2, CEILING, RIGHT WIDENING JOINT

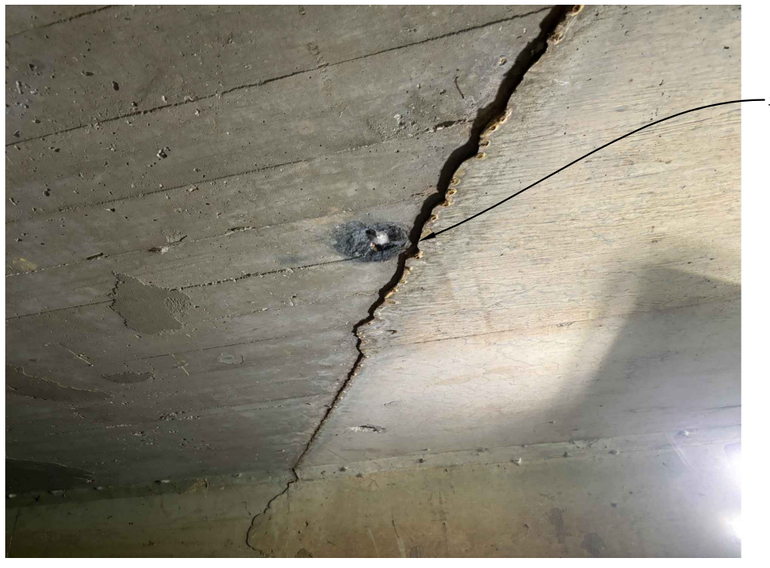

PHOTO 15 - CELL 2, CEILING, LEFT WIDENING JOINT

PHOTO 16 - CELL 2, WALL 3, LEFT WIDENING JOINT

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SHEET TITLE: DEFICIENCY PHOTOGRAPHS (4 OF 5)

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-13

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PHOTO 17 - CELL 3, CEILING, RIGHT WIDENING JOINT

PHOTO 18 - CELL 3, WALL 4, LEFT WIDENING JOINT

PHOTO 19 - BEGIN, LEFT, TERMINAL GUARDRAIL

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID.
N/A	CHARLOTTE	N/A

SHEET TITLE: DEFICIENCY PHOTOGRAPHS (5 OF 5)

REF. DWG. NO.:

PROJECT NAME: BERMONT ROAD OVER MYRTLE SLOUGH

SHEET NO.: B-14

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SHEET	TABLE OF CONTENTS
1	General Notes, TTC Tables
2	Definitions Temporary Traffic Control Devices Overhead Work Railroads Sight Distance Above Ground Hazard
3	Clear Zone Widths For Work Zones Superelevation Length Of Lane Closures Overweight/Oversize Vehicles Lane Widths High-Visibility Safety Apparel Speed Reduction Signing
4	Flagger Control Survey Work Zones Signs
5	Work Zone Sign Supports
6	Commonly Used Warning and Regulatory Signs In Work Zones
7	Manholes/Crosswalks/Joints Truck Mounted Attenuators Signals Channelizing Devices Channelizing Devices Consistency Advanced Warning Arrow Boards
8	Drop-Offs In Work Zones
9	Business Entrance Temporary Asphalt Separator
10	Channelizing Devices Notes Temporary Barrier Notes
11	Pavement Markings

GENERAL NOTES:

1. This Index contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD.

2. Use this Index in accordance with the Plans and Indexes 102-601 through 102-680. Indexes 102-601 through 102-680 are Department-specific typical applications of commonly encountered situations. Adjust device location or number thereof as recommended by the Worksite Traffic Supervisor and approved by the Engineer. Devices include, but are not limited to, flaggers, portable temporary signals, signs, pavement markings, and channelizing devices. Comply with MUTCD or applicable Department criteria for any changes and document the reason for the change.

3. Except for emergencies, any road closure on State Highway System must comply with Section 335.15, F.S.

TABLE 1
CHANNELIZING DEVICE SPACING

Work Zone Speed (mph)	Max. Spacing (feet)			
	Cones or Temporary Tubular Markers		Type I Barricades, Type II Barricades, Vertical Panels, or Drums	
	Taper	Tangent	Taper	Tangent
≤ 45	25	50	25	50
≥ 50	25	50	50	100

TABLE 2
TAPER LENGTH "L"

Work Zone Speed (mph)	Min. Length (feet)
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	$L = WS$
Where: W = width of offset in feet S = speed in mph	

TABLE 3
WORK ZONE SIGN SPACING "X"

Road Type	Min. Spacing (feet)
Arterials and Collectors with Work Zone Speed ≤ 40 mph	200
Arterials and Collectors with Work Zone Speed ≥ 45 mph	500
Limited Access Roadways *	1,500

* For Limited access roadways with work zone speed ≤ 55 mph, the minimum spacing may be reduced in accordance with the MUTCD and as approved by the Engineer.

TABLE 4
BUFFER LENGTH "B"

Work Zone Speed (mph)	Min. Length (feet)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

Note: When Buffer Length "B" cannot be attained due to geometric constraints, use the greatest length possible, but not less than 155 feet.

SYMBOLS:

- Work Area
- Channelizing Device
- Work Zone Sign
- Type III Barricade
- Lane Identification and Direction of Traffic

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LAST REVISION	REVISION	DESCRIPTION:				
11/01/23			FDOT FY 2024-25 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX 102-600	SHEET 1 of 11

DEFINITIONS:

Regulatory Speed (In Work Zones)

The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit signs. The work zone speed must be shown or noted in the plans. This speed should be used as the minimum design speed to determine runout lengths, departure rates, flare rates, lengths of need, clear zone widths, taper lengths, crash cushion requirements, marker spacings, superelevation and other similar features.

Advisory Speed

The maximum recommended travel speed through a curve or a hazardous area.

Travel Way

The portion of the roadway for the movement of vehicles. For traffic control through work zones, travel way may include the temporary use of shoulders and any other permanent or temporary surface intended for use as a lane for the movement of vehicular traffic.

a. Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes.

b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic.

Detour, Lane Shift, and Diversion

A detour is the redirection of traffic onto another roadway to bypass the temporary traffic control zone. A lane shift is the redirection of traffic onto a different section of the permanent pavement. A diversion is the redirection of traffic onto a temporary roadway, usually adjacent to the permanent roadway and within the limits of the right of way.

Aboveground Hazard

An aboveground hazard is any object, material or equipment other than traffic control devices that encroaches upon the travel way or that is located within the clear zone which does not meet the Department's safety criteria, i.e., anything that is greater than 4" in height and is firm and unyielding or doesn't meet breakaway requirements.

TEMPORARY TRAFFIC CONTROL DEVICES:

1. All temporary traffic control devices shall be ON the Department's Approved Products List (APL). Ensure the appropriate APL number is permanently marked on the device in a readily visible location.

2. All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered. Do not store temporary traffic control devices on the shoulder, sidewalk, or other roadway facility not affected by the work when work is suspended.

3. Arrow Boards, Portable Changeable Message Signs, Radar Speed Display Trailer, Portable Regulatory Signs, and any other trailer mounted device shall be delineated with a channelizing device placed at each corner when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use.

OVERHEAD WORK:

Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)

Overhead work using a modified lane closure is allowed if all of the following conditions are met:

a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
e. Aerial lift equipment is placed directly below the work area to close the lane.
f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 100 foot taper.
g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)

Overhead work above a open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within an area bounded by 2 feet outside the edge of travel way and 18 feet high.
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK ADJACENT TO AN OPEN TRAFFIC LANE)

Overhead work adjacent to an open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b .Work operations are 1 day or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within 2 foot from the edge of travel way up to 18' height. Above 18' in height, no encroachment by any part of the work activities and equipment over the open traffic lane (except as allowed in Option 2 for work operations of 60 minutes or less).
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OVERHEAD WORK: (Cont.)

OPTION 4 (OVERHEAD WORK MAINTAINING TRAFFIC WITH NO ENCROACHMENT BELOW THE OVERHEAD WORK AREA)

Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations in accordance with the appropriate index drawing or detailed in the plans. This option applies to, but not limited to, the following construction activities:

a. Beam, girder, segment, and bent/pier cap placement.
b. Form and falsework placement and removal.
c. Concrete placement.
d. Railing construction located at edge of deck.
e. Structure demolition.

OPTION 5 (CONDUCTOR/CABLE PULLING ABOVE AN OPEN TRAFFIC LANE)

Overhead cable and/or de-energized conductor installations initial pull to proper tension shall be done in accordance with the appropriate Index or temporary traffic control plan.

Continuous pulling operations of secured cable and/or conductors are allowed over open lane(s) of traffic with no encroachment by any part of the work activities, materials or equipment within the minimal vertical clearance above the travel way. The utility shall take precautions to ensure that pull ropes and conductors/cables at no time fall below the minimum vertical clearance.

On Limited Access facilities, a site specific temporary traffic control plan is required. The temporary traffic control plan shall include:

a. The temporary traffic control set up for the initial pulling of the pull rope across the roadway.
b. During pulling operations, advance warning consisting of no less than a Changeable Message Sign upstream of the work area with alternating messages, "Overhead Work Ahead" and "Be Prepared to Stop" followed by a traffic control officer and police vehicle with blue lights flashing during the pulling operation.

RAILROADS:

Railroad crossings affected by a construction project should be evaluated for traffic controls to reduce queuing on the tracks. The evaluation should include as a minimum: traffic volumes, distance from the tracks to the intersections, lane closure or taper locations, signal timing, etc.

SIGHT DISTANCE:

1. Tapers: Transition tapers should be obvious to drivers. If restricted sight distance is a problem (e.g., a sharp vertical or horizontal curve), the taper should begin well in advance of the view obstruction. The beginning of tapers should not be hidden behind curves.

2. Intersections: Traffic control devices at intersections must provide sight distances for the road user to perceive potential conflicts and to traverse the intersection safely. Construction equipment and materials shall not restrict intersection sight distance.

ABOVEGROUND HAZARD:

1. Aboveground hazards (see definitions) are to be considered work areas during working hours and treated with appropriate work zone traffic control procedures. During nonworking hours, all objects, materials and equipment that constitute an aboveground hazard must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crash cushion.

2. For aboveground hazards within a work zone the clear zone required should be based on the regulatory speed posted during construction.

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CLEAR ZONE WIDTHS FOR WORK ZONES:

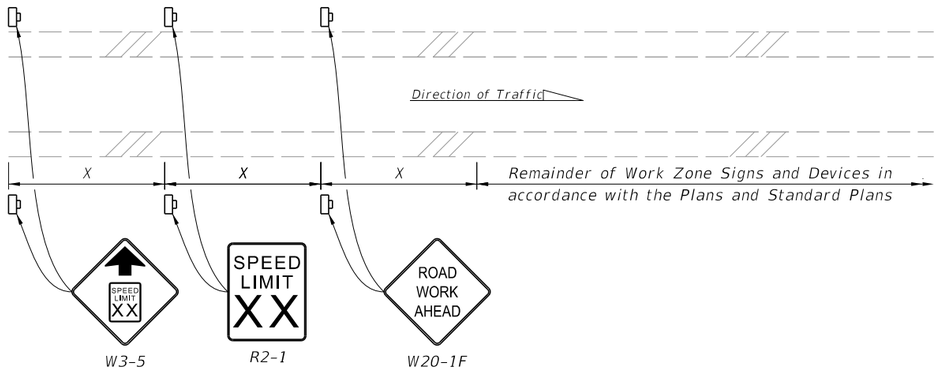
The term 'clear zone' describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the traffic lane. The table below gives clear zone widths in work zones for medians and roadside conditions other than for roadside canals; where roadside canals are present, clear zone widths are to conform with the distances to canals as described in the FDOT Design Manual 215.2.

TABLE 5

CLEAR ZONE WIDTHS FOR WORK ZONES

WORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)
60–70	30	18
55	24	14
45–50	18	10
30–40	14	10
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB	4' BEHIND FACE OF CURB

NOTE: For temporary conditions where existing curb has been removed but not reconstructed, curb and gutter values may be used.



NOTES:

1. X = Work Zone Sign Spacing
2. When called for in the Plans, use this detail in accordance with the Plans and Standard Plans. Place the speed reduction signs (W3–5 and R2–1) in advance of the "Road Work Ahead" sign (W20–1F) as shown.
3. Do not use this detail in conjunction with the Motorist Awareness System.
4. For speed reductions greater than 10 MPH, reduce the speed in 10 MPH increments of 'X' distance. Do not reduce the speed below the minimum statutory speed for the class of facility.
5. Place additional "Speed Limit" signs (R2–1) at intervals of no more than one mile for rural conditions and 1,000 feet for urban conditions.
6. For undivided roadways, omit the signs shown in the median.
7. Remove temporary regulatory speed signs as soon as the conditions requiring the reduced speed no longer exist. Once the work zone regulatory speeds are removed, the regulatory speed existing prior to construction will automatically go back into effect.

SPEED REDUCTION SIGNING

SUPERELEVATION:

Horizontal curves constructed in conjunction with work zone traffic control should have the required superelevation applied to the design radii. Under conditions where normal crown controls curvature, the minimum radii that can be applied are listed in the table below.

TABLE 6

MINIMUM RADII FOR NORMAL CROWN

WORK ZONE POSTED SPEED	MINIMUM RADIUS
MPH	feet
70	4090
65	3130
60	2400
55	1840
50	1390
45	1080
40	820
35	610
30	430
Superelevate When Smaller Radii is Used	

LENGTH OF LANE CLOSURES:

For interstates and state highways with a posted speed of 55MPH or greater, lane closures must not exceed 3 miles (includes taper, buffer, and work zone) in any given direction and must not close two consecutive interchanges.

OVERWEIGHT/OVERSIZE VEHICLES:

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensioned loads. The Contractor shall notify the Engineer who in turn shall notify the State Permits Office, phone no. (850) 410–5777, at least seven calendar days in advance of implementing a maintenance of traffic plan which will impact the flow of overweight/oversized vehicles. Information provided shall include location, type of restriction (height, width or weight) and restriction time frames. When the roadway is restored to normal service the State Permits Office shall be notified immediately.

LANE WIDTHS:

Lane widths of through roadways should be maintained through work zone travel ways wherever practical. Provide minimum widths for work zone travel lanes as follows: 11' for Interstate with at least one 12' lane provided in each direction, unless formally excepted by the Federal Highway Administration; 11' for all other limited access roadways; and 10' for all other facilities.

HIGH-VISIBILITY SAFETY APPAREL:

All high–visibility safety apparel shall meet the requirements of the International Safety Equipment Association (ISEA) and the American National Standards Institute (ANSI) for "High–Visibility Safety Apparel", and labeled as ANSI/ISEA 107–2004 or newer. The apparel background (outer) material color shall be either fluorescent orange–red or fluorescent yellow–green as defined by the standard. The retroreflective material shall be orange, yellow, white, silver, yellow–green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet. Class 3 apparel may be substituted for Class 2 apparel. Replace apparel that is not visible at 1,000 feet.

WORKERS: All workers within the right–of–way shall wear ANSI/ISEA Class 2 apparel. Workers operating machinery or equipment in which loose clothing could become entangled during operation shall wear fitted high–visibility safety apparel. Workers inside the bucket of a bucket truck are not required to wear high–visibility safety apparel.

UTILITIES: When other industry apparel safety standards require utility workers to wear apparel that is inconsistent with FDOT requirements such as NFPA, OSHA, ANSI, etc., the other standards for apparel may prevail.

FLAGGERS: For daytime activities, Flaggers shall wear ANSI/ISEA Class 2 apparel. For nighttime activities, Flaggers shall wear ANSI/ISEA Class 3 apparel.

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FLAGGER CONTROL:

Regulatory Speed (In Work Zones)

Where flaggers are used, a FLAGGER symbol or legend sign must replace the WORKERS symbol or legend sign.

The flagger must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed or to stop as required before entering the work site. Flaggers shall be positioned to maintain maximum color contrast between the Flagger's high-visibility safety apparel and equipment and the work area background.

Hand-Signaling Devices

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. If the STOP/SLOW paddle is placed on a rigid staff, the minimum length of the staff, measured from the bottom of the paddle to the end of the staff that rests on the ground, must not be less than 6 ft. STOP/SLOW paddles shall be at least 24 inches wide with letters at least 6 inches high and should be fabricated from light semirigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at night-time, the STOP/SLOW paddle shall be retroreflectorized.

Flag use is limited to immediate emergencies, intersections, and when working on the centerline or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes. Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length. When used at nighttime, flags shall be retroreflectorized red.

Flashlight, lantern or other lighted signal that will display a red warning light shall be used at night.

Flagger Stations

Flagger stations shall be located far enough in advance of the work area so that approaching road users will have sufficient distance to stop before entering the work area. When used at nighttime, the flagger station shall be illuminated.

SURVEY WORK ZONES:

The SURVEY CREW AHEAD symbol or legend sign shall be the principal Advance Warning Sign used for Traffic Control Through Survey Work Zones and may replace the ROAD WORK AHEAD sign when lane closures occur, at the discretion of the Party Chief.

When Traffic Control Through Work Zones is being used for survey purposes only, the END ROAD WORK sign as called for on certain 102 Series of Indexes should be omitted.

Survey Between Active Traffic Lanes or Shared Left Turn Lanes

The following provisions apply to Main Roadway Traffic Control Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Work Zone includes intersections.

(A) A STAY IN YOUR LANE (M0T-1-06) sign shall be added to the Advance Warning Sign sequence as the second most immediate sign from the work area.

(B) Elevation Surveys-Cones may be used at the discretion of the Party Chief to protect prism holder and flagger(s). Cones, if used, may be placed at up to 50' intervals along the break line throughout the work zone.

SURVEY WORK ZONES: (Cont.)

(C) Horizontal Control-With traffic flow in the same direction, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' towards the flow of traffic.

(D) Horizontal Control-With traffic flow in opposite directions, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' in both directions towards the flow of traffic.

SIGNS:

SIGN MATERIALS

Mesh signs and non-retroreflectice vinyl signs may only be used for daylight operations. Non-retroreflectice vinyl signs must meet the requirements of Specifications Section 994.

Retroreflective vinyl signs meeting the requirements of Specification Section 994 may be used for daylight or night operations not to exceed 1 day except as noted in the Indexes.

Rigid or Lightweight sign panels may be used in accordance with the vendor APL drawing for the sign stand to which they are attached.

INTERSECTING ROAD SIGNING

Signing for the control of traffic entering and leaving work zones by way of intersecting crossroads shall be adequate to make drivers aware of work zone conditions. When Work operations exceed 60 minutes, place the ROAD WORK AHEAD sign on the side street entering the work zone.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

Adjoining work zones may not have sufficient spacing for standard placement of signs and other traffic control devices in their advance warning areas or in some cases other areas within their traffic control zones. Where such restraints or conflicts occur or are likely to occur, one of the following methods will be employed to avoid conflicts and prevent conditions that could lead to misunderstanding on the part of the traveling public as to the intended travel way by the traffic control procedure applied:

(A) For scheduled projects the engineer in responsible charge of project design will resolve anticipated work zone conflicts during the development of the project traffic control plan. This may entail revision of plans on preceding projects and coordination of plans on concurrent projects.

(B) Unanticipated conflicts arising between adjoining in progress highway construction projects will be resolved by the Resident Engineer for projects under his residency, and, by the District Construction Engineer for in progress projects under adjoining residencies.

(C) The District Maintenance Engineer will resolve anticipated and occurring conflicts within scheduled maintenance operations.

(D) The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance works; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works and highway construction projects.

SIGNS: (Cont.)

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

Existing or temporary traffic control signs that are no longer applicable or are inconsistent with intended travel paths shall be removed or fully covered.

Sign blanks or other available coverings must completely cover the existing sign. Rigid sign coverings shall be the same size as the sign it is covering, and bolted in a manner to prevent movement.

Sign covers are incidental to work operations and are not paid for separately.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

Detours should be signed clearly over their entire length so that motorists can easily determine how to return to the original roadway. The reverse curve (W1-4) warning sign should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCE WARNING SIGN

Advance Warning Signs shall be used at extended distance of one-half mile or more when limited sight distance or the nature of the obstruction may require a motorist to bring their vehicle to a stop. Extended distance Advanced Warning Signs may be required on any type roadway, but particularly be considered on multilane divided highways where vehicle speed is generally in the higher range (45 MPH or more).

UTILITY WORK AHEAD SIGN

The UTILITY WORK AHEAD (W21-7) sign may be used as an alternate to the ROAD WORK AHEAD or the ROAD WORK XX FT (W20-1) sign for utility operations on or adjacent to a highway.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G20-1) bearing the legend ROAD WORK NEXT _____ MILES is required for all projects of more than 2 miles in length. The number of miles entered should be rounded up to the nearest mile. The sign shall be located at begin construction points.

GROOVED PAVEMENT AHEAD SIGN

The GROOVED PAVEMENT AHEAD sign is required 500 feet in advance of a milled or grooved surface open to traffic. The W8-15P placard shall be used in conjunction with the GROOVED PAVEMENT AHEAD sign.

END ROAD WORK SIGN

The END ROAD WORK sign (G20-2) should be installed on all projects, but may be omitted where the work operation is less than 1 day. The sign should be placed approximately 500 feet beyond the end of a construction or maintenance project unless other distance is called for in the plans. When other Construction or Maintenance Operations occur within 1 mile this sign should be omitted and signing coordinated in accordance with Index 102-600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

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NOTES:

1. All signs shall be post mounted when work operations exceed one day except for:

   a. Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the APL.
   b. Pedestrian and bicycle advanced warning or pedestrian regulatory signs mounted on sign supports in accordance with the vendor drawing shown on the APL.
   c. Median barrier mounted signs per Index 700-013.
   d. Bridge mounted signs per Index 700-012.

2. Unless shielded with barrier or outside of the Clear Zone, signs mounted on temporary supports or barricades, and barricade/sign combination must be crashworthy in accordance with NCHRP 350 requirements and included on the Approved Products List (APL).

3. Use only approved systems listed on the Department's Approved Products List (APL).

4. Manufacturers seeking approval of U-Channel and steel square tube sign support assemblies for inclusion on the Approved Products List (APL) must submit a APL application, design calculations (for square tube only), and detailed drawings showing the product meets all the requirements of this Index.

5. Provide 3 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.43 in^3 for 60 ksi steel, a minimum section modulus of 0.37 in^3 for 70 ksi steel, or a minimum section modulus of 0.34 in^3 for 80 ksi steel.

6. Provide 4 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.56 in^3 for 60 ksi steel, or a minimum section modulus of 0.47 in^3 for 70 ksi or 80 ksi steel.

7. U-channel posts shall conform with ASTM A 499, Grade 60, or ASTM A 576, Grade 1080 (with a minimum yield strength of 60 ksi). Square tube posts shall conform with ASTM A 653, Grade 50, or ASTM A 1011, Grade 50.

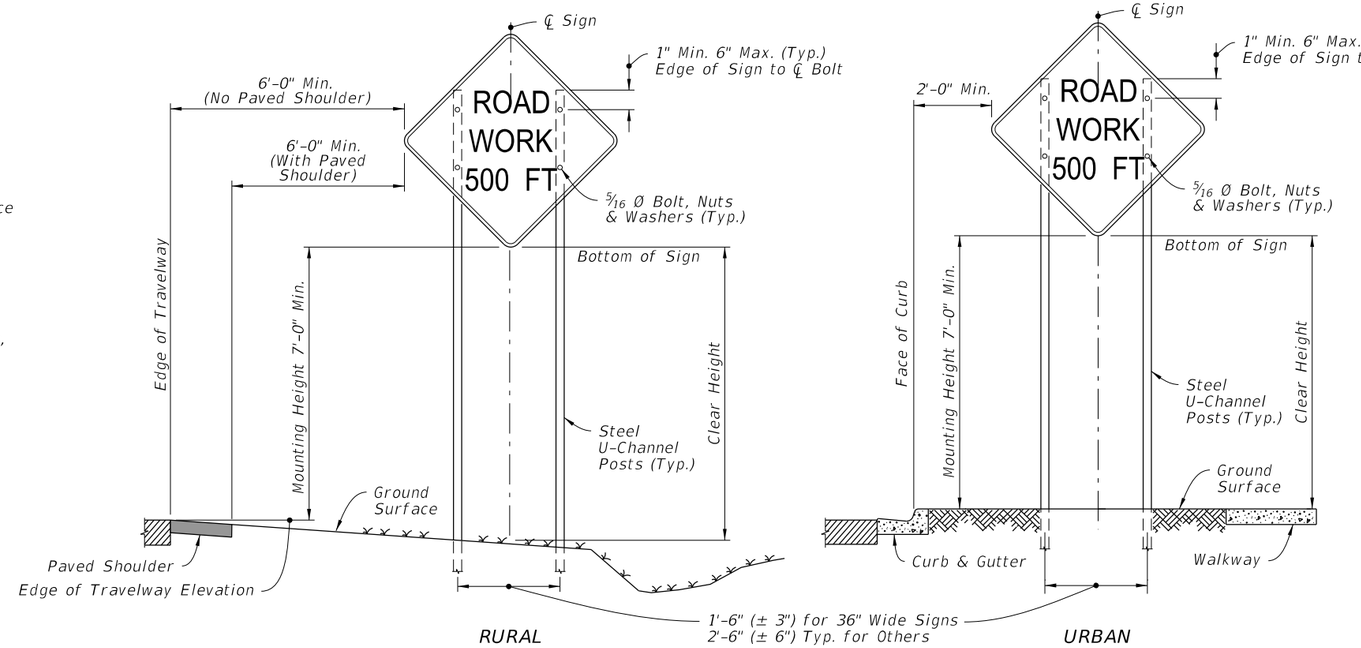
8. Sign attachment bolts, washers, nuts, and spacers shall conform with ASTM A307 or A 36.

9. Install 4 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.

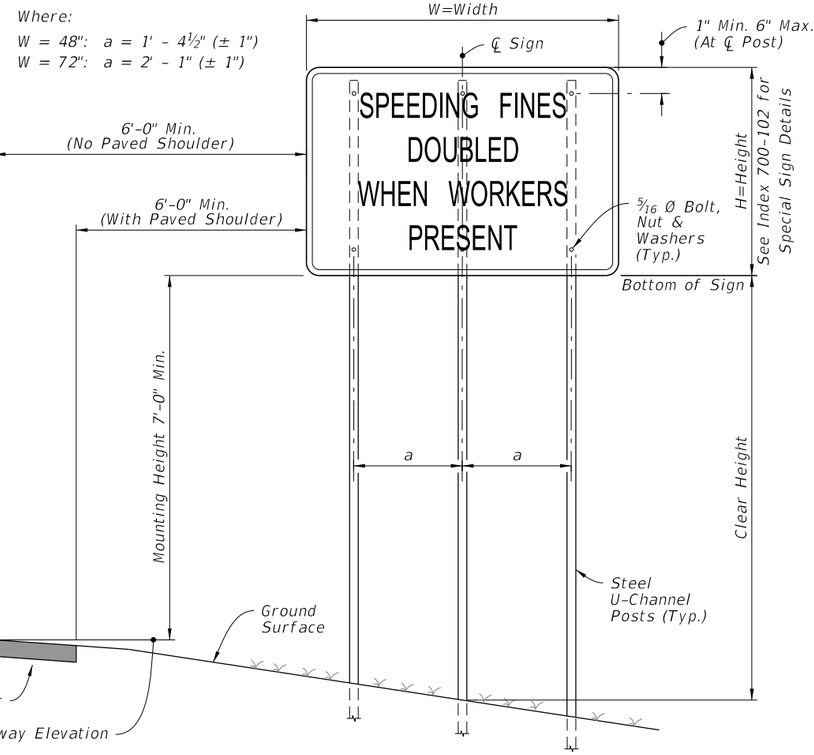
10. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.

11. Install all posts plumb.

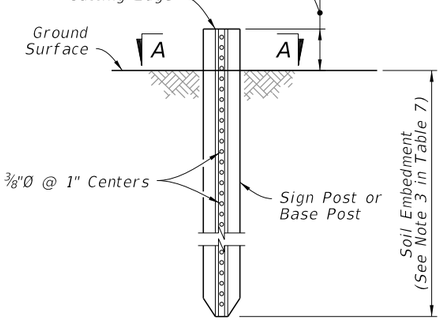
12. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the APL.



2 POST SIGN SUPPORT MOUNTING DETAILS
(SINGLE POST SIMILAR)

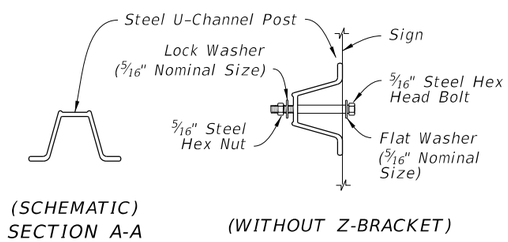


3 POST SIGN SUPPORT MOUNTING DETAILS



See APL for post, splice and connection details.
No bolts installed closer than 1" to cutting edge.

FOUNDATION DETAIL



SIGN ATTACHMENT DETAIL

TABLE 7
POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

SIGN SHAPE	SIGN SIZE (inches)	NUMBER OF STEEL U CHANNEL POSTS
Octagon	30x30	1
Triangle	36x36x36	1
	48x48x48	1
	60x60x60	2
Rectangle (W x H)	24x18	1
	24x30	1
	30x24	1
	36x18	1
	36x24	1
	48x18	1
	48x24	1
	36x48	2
	48x30	2
	48x36	2
	54x36	2
	48x60	3
	72x48	3
Square	30x30	1
	36x36	2
	48x48	2
Diamond	48x48	2
Circle	36Ø	2

Notes For Table:

1. Use 3 lb/ft posts for Clear Height up to 10' and 4 lb/ft posts for Clear Height up to 12'.
2. Minimum foundation depth is 4.0' for 3 lb/ft posts and 4.5' for 4 lb/ft posts.
3. For both 3 lb/ft and 4 lb/ft base or sign posts installed in rock, a minimum cumulative depth of 2' of rock layer is required.
4. The soil plate as shown on the APL vendor drawing is not required for base posts or sign posts installed in existing rock (as defined in Note 3), asphalt roadway, shoulder pavement or soil under sidewalk.
5. For diamond warning signs with supplement plaque (up to 5 ft^2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).

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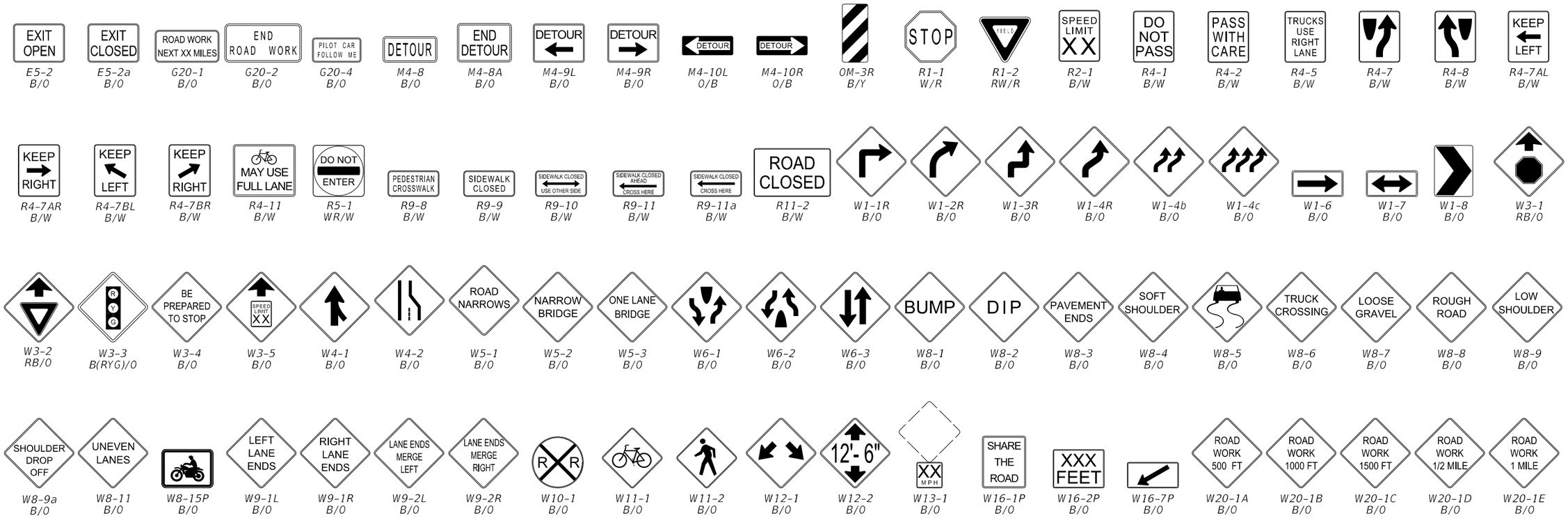
WORK ZONE SIGN SUPPORTS

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/21			FY 2024-25 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	102-600	5 of 11



NOTES:

1. The size of diamond shaped Temporary Traffic Control (TTC) warning signs shall be a minimum of 48" X 48".
2. Fluorescent orange shall be used for all orange colored work zone signs.
3. The sign shields, symbols and messages contained on this sheet are provided for ready reference to those signs used in the development of the 102 Series of Indexes and are commonly used in the development of traffic control plans. For additional signs and sign detail information refer to the STANDARD HIGHWAY SIGNS MANUAL as specified in the MUTCD. Special signs for traffic control plans will be as approved by the State Traffic Plans Engineer.

   The sign codes shown on this sheet are for the purpose of identifying cell names found in the Traffic Control Cell Library (TCZ.Cel).

   The STANDARD HIGHWAY SIGNS MANUAL should be referenced for the official sign codes for use in the development of traffic control plans.

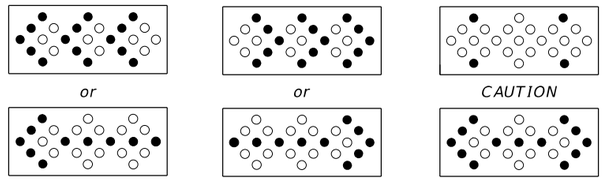
   See Index 700-102 for MOT sign details.

COLOR CODES:

Legend and/or
Symbol Background

R-Red (Reflectorized)
Y-Yellow (Reflectorized)
G-Green (Reflectorized)
O-Orange (Reflectorized)
B-Black (Non-Reflectorized)
W-White (Reflectorized)

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES



MODES

NOTES:

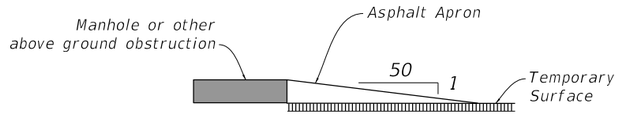
An arrow board in the arrow or chevron mode shall be used only for stationary or moving lane closures on multilane roadways.

For shoulder work, blocking the shoulder, for roadside work near the shoulder, or for temporarily closing one lane on a two-lane, two-way roadway, an arrow board shall be used only in the caution mode.

A single arrow board shall not be used to merge traffic laterally more than one lane. When arrow boards are used to close multiple lanes, a single board shall be used at the merging taper for each closed lane.

When Advance Warning Arrow Boards are used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.

ADVANCE WARNING ARROW BOARDS



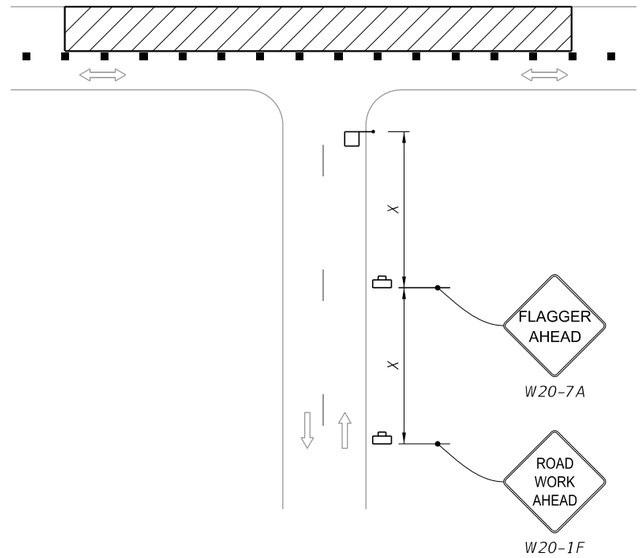
NOTES:

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than ¼" shall have a temporary asphalt apron constructed as shown above.

All transverse joints that have a difference in elevation of 1" or more shall have a temporary asphalt apron constructed as shown above.

The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the contract unit price for Maintenance of Traffic, LS.

MANHOLES/CROSSWALKS/JOINTS



NOTE:

Optionally, use "Flagger Ahead" sign with text (W20-7A) instead of "Flagger Ahead" sign with symbol (W20-7).

SIDE ROAD INTERSECTING THE WORK ZONE

SIGNALS:

Existing traffic signal operations that require modification in order to carry out work zone traffic control shall be included in the Plans and be approved by the District Traffic Operations Engineer.

Refer to Specification 102-9 for additional information.

CHANNELIZING DEVICES:

Channelizing devices for work zone traffic control shall be as prescribed in Part VI of the MUTCD, subject to supplemental revisions provided in the contract documents and the 102 Series of Indexes. Lighting Devices must not be used to supplement channelization. Omit tapers and channelizing devices for paved shoulders less than 4' in width.

CHANNELIZING DEVICE CONSISTENCY:

Barricades, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

TRUCK/TRAILER-MOUNTED ATTENUATORS:

Truck/Trailer-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Index 102-607. For short-term, stationary operations, see Part VI of the MUTCD.

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DROP-OFF CONDITION NOTES

1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.

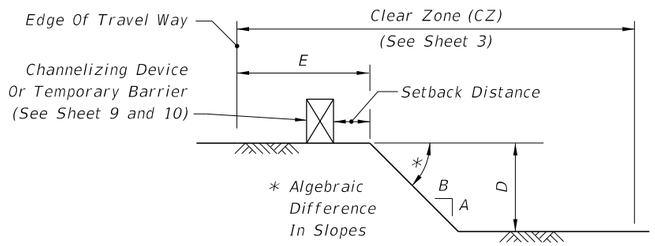
2. When drop-offs occur within the clear zone due to construction or maintenance activities, protection devices are required (See Table 8). A drop-off is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slope (A:B) steeper than 1:4. In superelevated sections, the algebraic difference in slopes should not exceed 0.25 (See Drop-off Condition Detail).

3. Drop-offs may be mitigated by placement of slopes with optional base material per Specifications Section 285. Slopes shallower than 1:4 may be required to avoid algebraic difference in slopes greater than 0.25. Include the cost for the placement and removal of the material in Maintenance of Traffic, LS. Use of this treatment in lieu of a temporary barrier is not eligible for CSIP consideration. Conduct daily inspections for deficiencies related to erosion, excessive slopes, rutting or other adverse conditions. Repair any deficiencies immediately.

4. For Setback Distance, refer to the Index or Approved Products List (APL) drawing of the selected barrier.

5. For Conditions 1 and 3 provided in Table 8, any drop-off condition that is created and restored within the same work period will not be subject to use of temporary barriers; however, channelizing devices will be required.

6. When permanent curb heights are ≥ 6", no channelizing device will be required. For curb heights < 6", see Table 8.



DROP-OFF CONDITION DETAIL

Table 8
Drop-off Protection Requirements

Condition	E (ft)	D (in.)	Device Required
1	0-12	> 3	Temporary Barrier
2	> 12-CZ	> 3 to ≤ 5	Channelizing Device
3	0-CZ	> 5	Temporary Barrier
4	Removal of Bridge or Retaining Wall Barrier		Temporary Barrier
5	Removal of portions of Bridge Deck		Temporary Barrier

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING NOTES

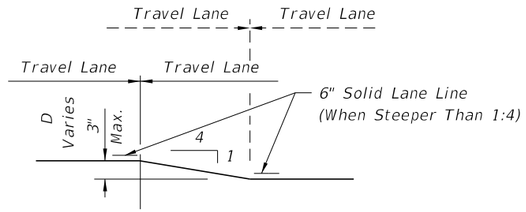
1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.

2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-11 sign with "UNEVEN LANES" is required at intervals of ½ mile maximum.

3. If D is 1½" or less, no treatment is required.

4. Treatment allowed only when D is 3" or less.

5. If the slope is steeper than 1:4 (not to be steeper than 1:1), the R4-1 and MOT-1-06 signs shall be used as a supplement to the W8-11; this condition should never exceed 3 miles in length.



TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING DETAIL

PEDESTRIAN WAY DROP-OFF CONDITION NOTES

1. A pedestrian way drop-off is defined as:

   a. a drop in elevation greater than 10" that is closer than 2' from the edge of the pedestrian way

   b. a slope steeper than 1:2 that begins closer than 2' from the edge of the pedestrian way when the total drop-off is greater than 60"

2. Protect any drop-off adjacent to a pedestrian way with pedestrian longitudinal channelizing devices, temporary barrier wall, or approved handrail.

DROP-OFFS IN WORK ZONES

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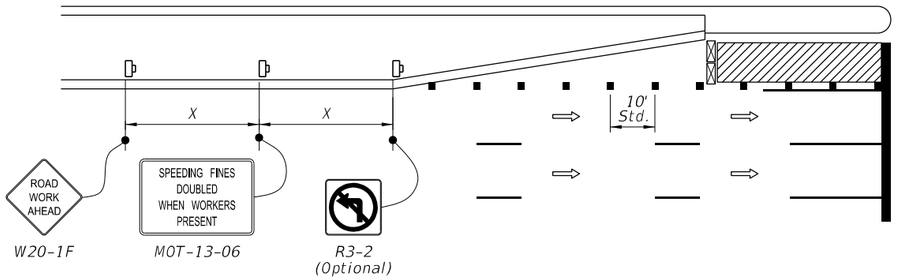
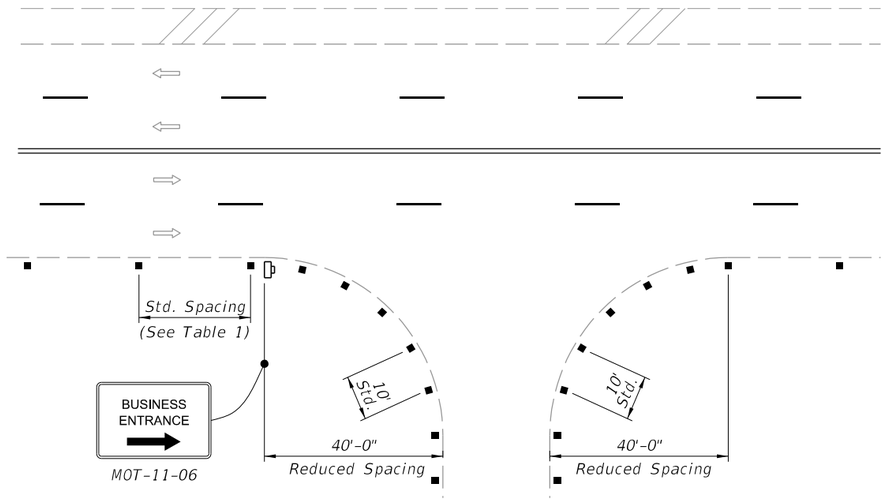


NOTES:

1. X = Work Zone Sign Spacing (See Table 3).

2. The SPEEDING FINES DOUBLE WHEN WORKERS PRESENT sign (MOT-13-06) may be omitted when work operation will be in place for 24 hours or less.

AUXILIARY LANE CLOSURE



NOTES:

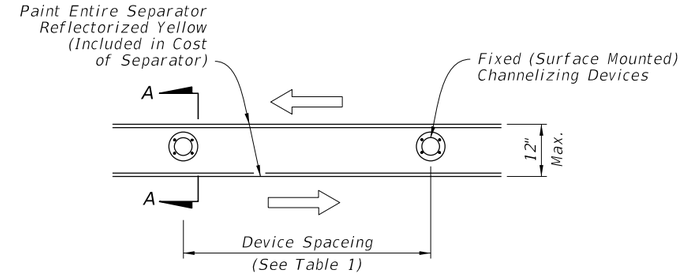
1. For single business entrances, place one 24" x 36" BUSINESS ENTRANCE sign (MOT-11-06) showing the specific business name for each affected driveway entrance. Logos may be provided by business owners. Standard BUSINESS ENTRANCE sign (MOT-11-06) may be used when approved by the Engineer.

2. When several businesses share a common driveway entrance, place one 24" x 36" standard BUSINESS ENTRANCE sign (MOT-11-06) in accordance with Index 700-102 at the common driveway entrance.

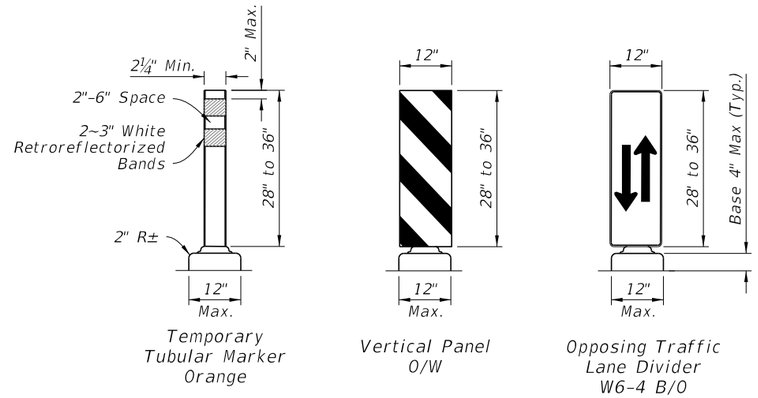
3. Channelizing devices shall be placed at a reduced spacing on each side of the driveway entrance, but shall not restrict sight distance for the driveway users.

4. Business entrance signs are intended to guide motorist to business entrances moved/modified or disturbed during construction projects. Business entrance signs are not required where there is minimal disruption to business driveways which is often the case with resurfacing type projects.

BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES PLACEMENT AT BUSINESS ENTRANCE



PLAN



SECTION A-A

NOTES:

1. Temporary lane separators shall be supplemented with any of the following approved fixed (surface mounted) channelizing devices: temporary tubular markers, vertical panels, or opposing traffic lane divider panels. Opposing traffic lane divider panels (W6-4) shall only be used as center lane dividers to separate opposing vehicular traffic on a two-lane, two-way operation. Temporary Tubular Markers, Vertical Panels and Opposing Traffic Lane Divider panels shall not be intermixed within the limits where the temporary lane separator is used. The connection between the channelizing device and the temporary lane separator curb shall hold the channelizing device in a vertical position.

2. Reflectorized materials shall have a smooth sealed outer surface which will display the same approximate color day and night. Furnish channelizing devices having retroreflective sheeting meeting the requirements of Section 990.

3. 12" openings for drainage shall be constructed in the asphalt and portable temporary lane separator at a maximum spacing of 25' in areas with grades of 1% or less or 50' in areas with grades over 1% as directed by the Engineer.

4. Tapered ends shall be used at the beginning and end of each run of the temporary lane separator to form a gradual increase in height from the pavement level to the top of the temporary lane separator.

5. The Contractor has the option of using portable temporary lane separators containing fixed channelizing devices in lieu of the temporary asphalt separator and channelizing devices detailed on this sheet. The portable temporary lane separator shall come in portable sections that can be connected to maintain continuous alignment between the separate curb sections. Each temporary lane separator section shall be 36 inches to 48 inches in total length. Portable temporary lane separators shall duplicate the color of the pavement marking. Portable temporary lane separators shall be one of those listed on the Approved Products List.

FIXED CHANNELIZING DEVICES (Temporary Lane Separators)

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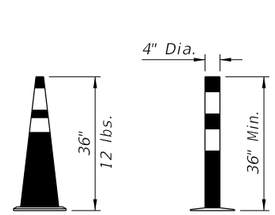
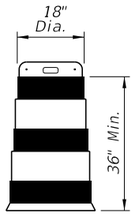
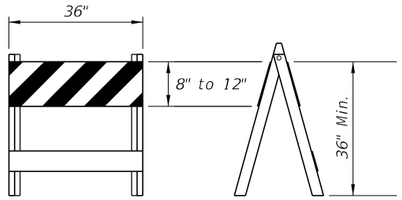


CONES

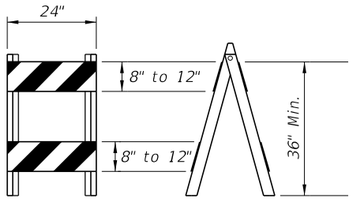
TEMPORARY TUBULAR MARKER



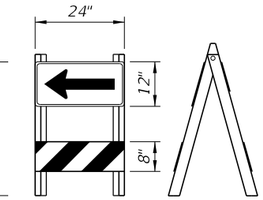
PLASTIC DRUMS



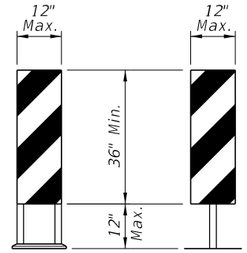
TYPE I BARRICADE



TYPE II BARRICADE

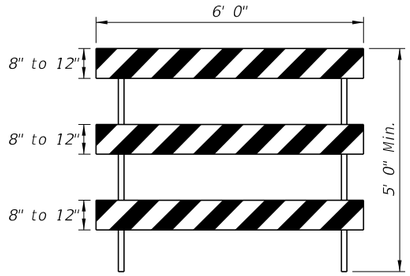


DIRECTION INDICATOR BARRICADE



A-FRAME POST MOUNT

VERTICAL PANEL



TYPE III BARRICADE

CHANNELIZING DEVICES

CHANNELIZING DEVICE NOTES:

1. The details shown on this sheet are for the following purposes:
   a. For ease of identification and
   b. To provide information that supplements or supersedes that provided by the MUTCD.

2. The Type III Barricade shall have a unit length of 6'-0" only. When barricades of greater lengths are required those lengths shall be in multiples of the 6'-0" unit.

3. No sign panel should be mounted on any channelizing device unless the channelizing device/sign combination was found to be crashworthy and the sign panel is mounted in accordance with the vendor drawing for the channelizing device shown on the Approved Products List (APL).

4. Ballast shall not be placed on top rails or any striped rails or higher than 13" above the driving surface.

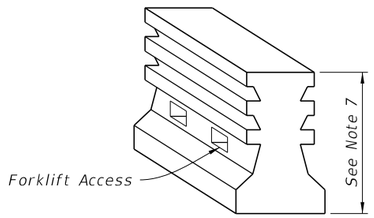
5. The direction indicator barricade may be used in tapers and transitions where specific directional guidance to drivers is necessary. If used, direction indicator barricades shall be used in series to direct the driver through the transition and into the intended travel lane.

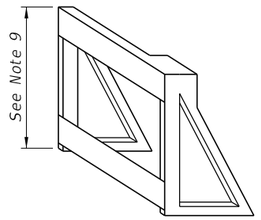
6. The splicing of sheeting is not permitted on channelizing devices or MOT signs.

7. For rails less than 3'-0" long, 4" stripes shall be used.

8. Cones shall:
   a. Be used only in active work zones where workers are present.
   b. Be reflectorized as per the MUTCD with Department-approved reflective collars when used at night.

9. For pedestrian longitudinal channelizing devices, the device shall have a minimum of 8" continuous detectable edging above the walkway. A gap not exceeding a height of 2" is allowed to facilitate drainage. The top surface of the device shall be a minimum height of 32" and have a ⅛" or less difference in any plane at all connection points between the devices to facilitate hand trailing. The bottom and the top surface of the device shall be in the same vertical plane. If pedestrian drop-off protection is required, the device shall have a footprint or offset of at least 2', otherwise the device must be at least 42" in height above the walkway and be anchored or ballasted to withstand a 200 lb lateral point load at the top of the device.





PEDESTRIAN LONGITUDINAL CHANNELIZING DEVICES

TEMPORARY BARRIER NOTES:

1. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

Index	Description
102-100	Temporary Barrier
102-120	Low Profile Barrier
536-001	Guardrail

2. Trailer Mounted Barriers may be used to provide positive protection for workers within the work areas. APL drawings may be used as a guide to develop project specific Temporary Traffic Control Plans that are signed and sealed by the Contractor's Engineer.

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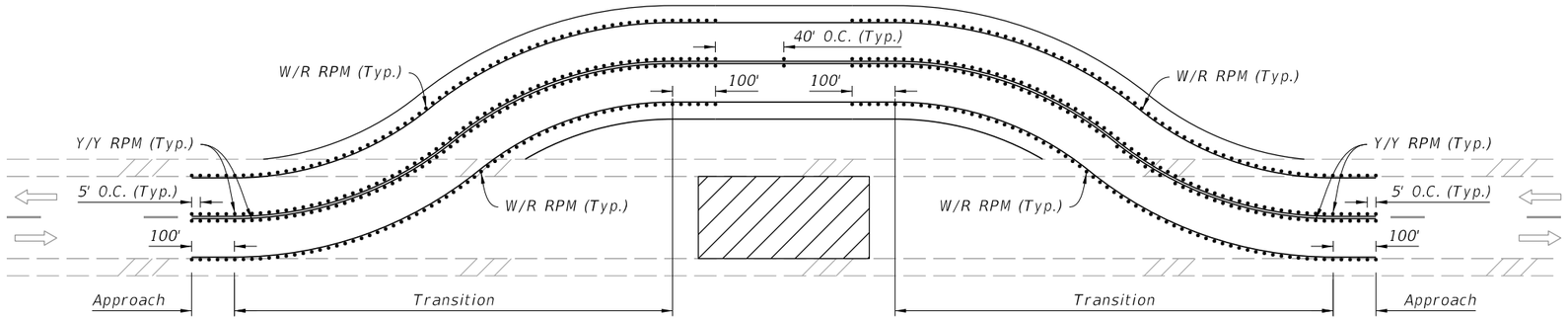
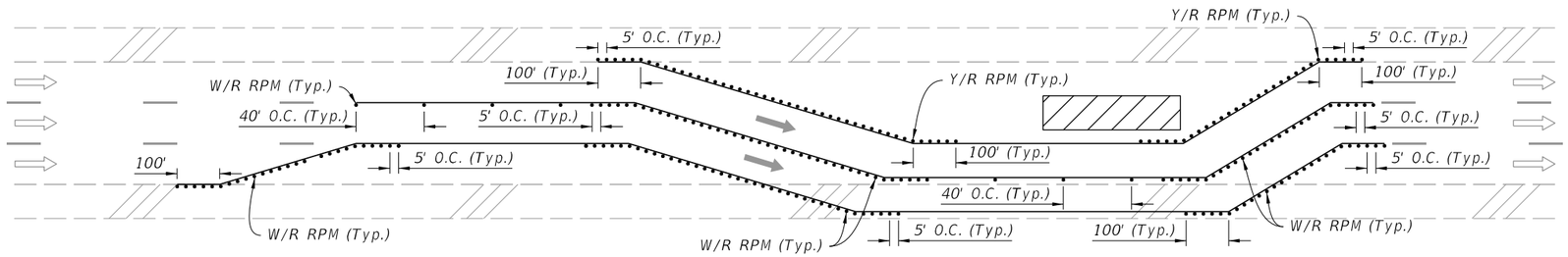


RPM PLACEMENT ON TWO-LANE ROADWAYS



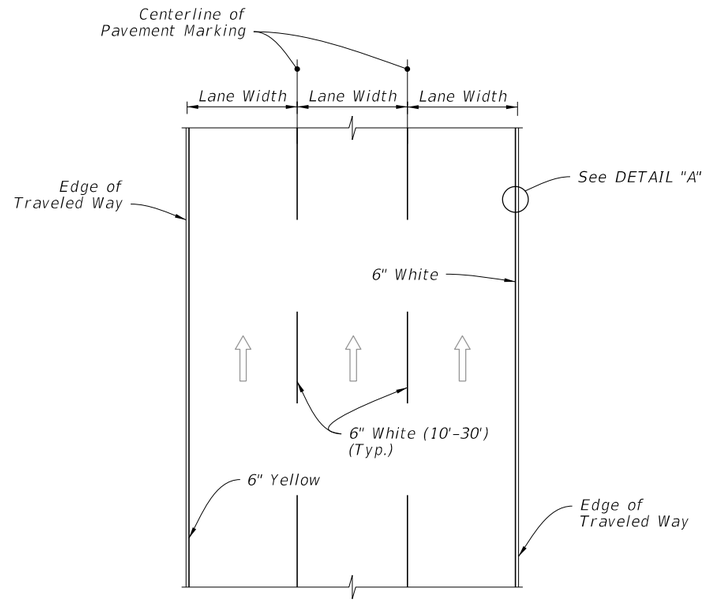
RPM PLACEMENT ON MULTILANE ROADWAYS
(Lane Shift Shown, Other Multilane Typical Applications Similar)

NOTES:

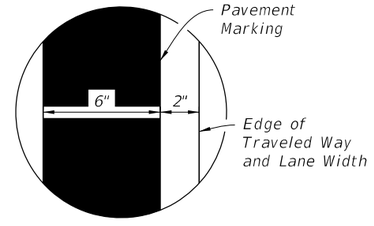
1. Install RPMs as a supplement to:
   a. All lane lines
   b. Edge lines in transitions (e.g., merges, diversions, lane shifts)
   c. Edge lines of gore areas

2. Extend pavement marking and 5' RPM spacing by 100' in each direction for all transitions regardless of the line type.

3. Place RPMs in accordance with this detail and Index 706-001.



PLAN VIEW



DETAIL "A"

RPM PLACEMENT IN WORK ZONES

PAVEMENT MARKINGS PLACEMENT

WORK ZONE PAVEMENT MARKINGS

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LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2024-25 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX	SHEET
11/01/23					102-600	11 of 11

NOTE:

1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.

2. L = Taper Length
   X = Work Zone Sign Spacing
   B = Buffer Length
   See Index 102-600 for "L", "X", "B", and channelizing device spacing values.

3. Where work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes or less.

4. When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), use a flagger or lane closure to accommodate work vehicle ingress and egress.

5. For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.

6. The "Speeding Fines Doubled When Workers Present" signs (M0T-13-06) and "End Road Work" Signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.

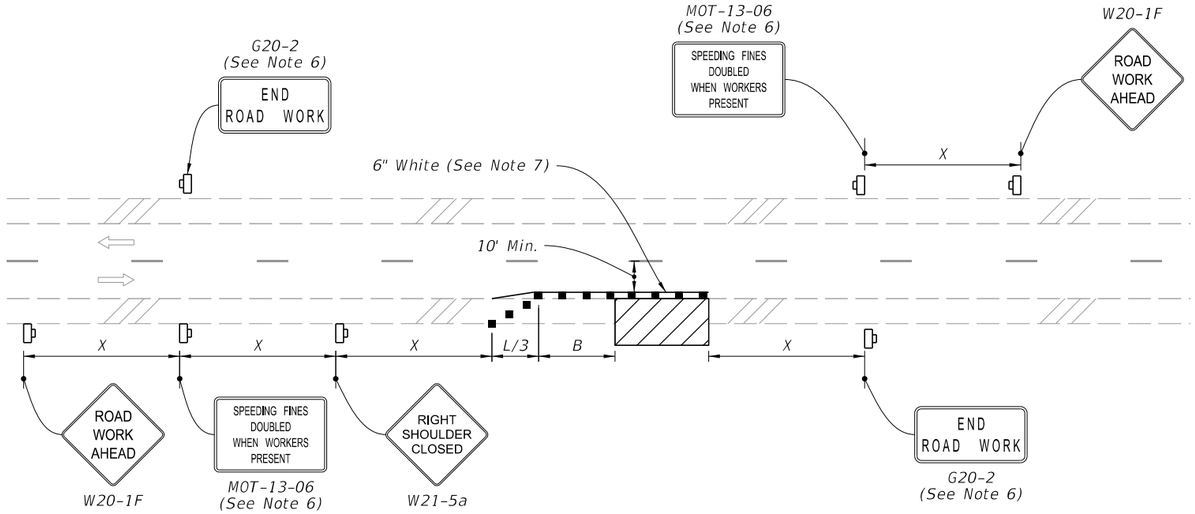
7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.

8. Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.

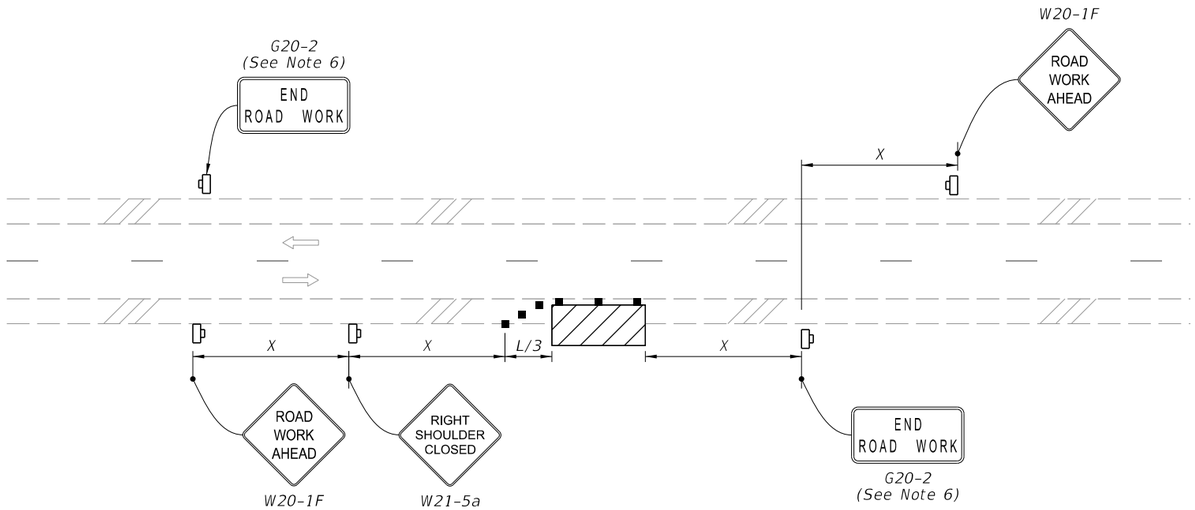
9. When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

SYMBOLS:

- Work Area
- ■ Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic



TWO-LANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY WITH WORK ZONE SPEED OF 45 MPH OR LESS



TWO-LANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

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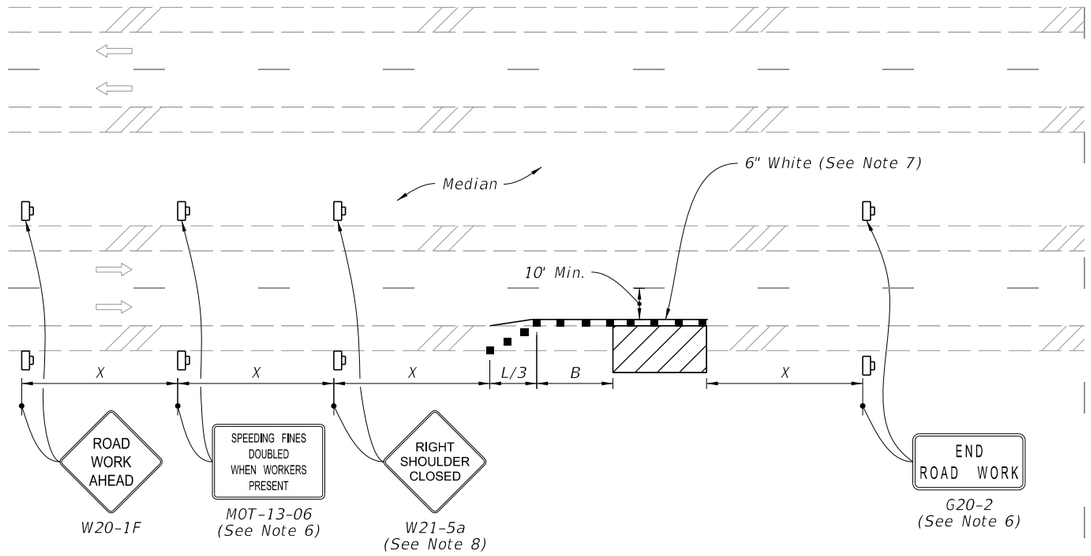
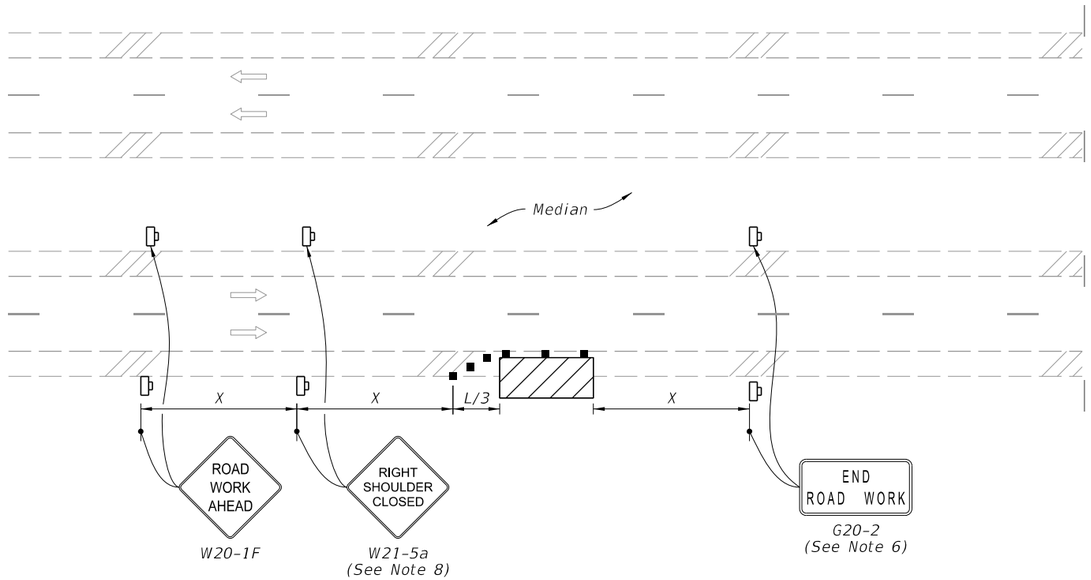
LAST REVISION	REVISION	DESCRIPTION:				
11/01/21			FY 2024-25 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX 102-602	SHEET 1 of 2



MULTILANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS



MULTILANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic

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LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/20			FY 2024-25 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	102-602	2 of 2

SHEET	CONTENTS
1	General Notes; Index Contents
2	General, TL-3 Guardrail – Installed Plan and Elevation
3	Low-Speed, TL-2 Guardrail – Installed Plan and Elevation
4	W-Beam and Thrie-Beam Panel Details
5	Post and Offset Block Details
6	Guardrail Sections – Heights and Adjacent Slopes
7	End Treatment – Approach Terminal Geometry, Parallel
8	End Treatment – Approach Terminal Geometry, Curbed and Double Faced
9	End Treatment – Trailing Anchorage
10	End Treatment – Component Details
11	End Treatment – Controlled Release Terminal (CRT) System
12	Layout for CRT System – Side Roads and Driveways
13	Approach Transition Connection to Rigid Barrier – General, TL-3
14	Approach Transition Connection to Rigid Barrier – General, TL-3 – Curb Connections
15	Approach Transition Connection to Rigid Barrier – Low-Speed, TL-2
16	Approach Transition Connection to Rigid Barrier – Low-Speed, TL-2 – Curb Connections
17	Approach Transition Connection to Rigid Barrier – Details
18	Approach Transition Connection to Rigid Barrier – Double Faced Guardrail
19	Layout to Rigid Barrier – Approach Ends
20	Layout to Rigid Barrier – Approach Ends with Double Faced Guardrail Layout to Rigid Barrier – Trailing Ends Trailing End Transition Connection to Rigid Barrier
21	Trailing End Transition Connection to Rigid Barrier – Curb Connections
22	Rub Rail Details
23	Pedestrian Safety Treatment – Pipe Rail
24	Modified Mount – Special Steel Post for Concrete Structure Mount; Modified Mount – Encased Post for Shallow Mount; Modified Mount – Frangible Leave-Out for Concrete Surface Mount
25	Barrier Delineators – Post Mounted; Clear Space – Reduced Post Spacing for Hazards; ⅝" Button-Head Bolt System

GENERAL NOTES:

1. INSTALLATION: Construct guardrail in accordance with Specification 536.

   This Index, along with the plans and the manufacturers' drawings on the Approved Products List (APL), is sufficiently detailed for installation of General Guardrail, Low-Speed Guardrail, End Treatment assemblies, and their connecting options shown herein. This precludes requirements for shop drawing submittals unless otherwise specified in the plans.

2. COMPATIBILITY: The General Guardrail in this Index is based on the Midwest Guardrail System (MGS) design, with an approximate height of 31" at the top of the Panel (2'-1" mounting height at vertical ℄ of Panel) and a midspan panel splice as shown on Sheet 2. Guardrail components included on the APL, which are compatible with this Index, may also be identified as 31" or MGS Guardrail.

3. STANDARD COMPONENTS: Standard guardrail components, including posts, panels, and bolt systems, are based on the Task Force 13 Publication: Guide to Roadside Hardware Components (http://tf13.org/Guides/componentGuide/).

4. BUTTON-HEAD BOLTS: Install Button-Head Bolts where indicated using bolts, nuts, and washers as defined on Sheet 25. Place washers under nuts against timber posts. Washers are not required at steel post flanges and panel lap splices. Do not place washers between bolt heads and panels, except where otherwise shown in this Index.

5. HEX-HEAD BOLTS: Install Hex-Head Bolts where indicated using bolts, nuts, and washers in accordance with material properties of Specification 967. Place washers under nuts.

6. MISCELLANEOUS ASPHALT PAVEMENT: Install Miscellaneous Asphalt Pavement where indicated with a tolerance of ± ½" depth and in accordance with Specification 339.

7. ADJACENT SIDEWALKS & SHARED USE PATHS: When guardrail posts are placed within 4'-0" of a sidewalk or shared use path, use timber posts, or use steel posts only if treated with Pipe Rail as shown on Sheet 23.

   When timber posts are used, one of the following safety treatments is required for the bolt(s) protruding from the back face of the posts:
   a. After tightening the nut, trim the protruding post bolt flush with the nut and galvanize per Specification 562.
   b. Use post bolts 15" in length and countersink the washer and nut between 1" and 1½" deep into the back face of the post.
   c. Use 15" post bolts with sleeve nuts and washers.

   When End Treatment posts are within 4'-0" of a sidewalk or shared use path, steel posts are not permitted within the End Treatment segment. Terminate the Pipe Rail outside of End Treatment segments, as noted per Sheet 23.

8. NESTED W-BEAM: Where called for in the plans, install two W-Beam Panels mounted flush per location, securing all panels with Button-Head Bolts threaded through aligned slots and holes. 2" Button-Head Bolts are permitted for panel splice locations.

9. CONNECTION TO RIGID BARRIER: The connections to Rigid Barrier in this Index only apply to newly constructed bridge Traffic Railing and Concrete Barrier or where the complete Approach Transition Connection to Rigid Barrier shown herein can be installed without conflicting with existing Traffic Railings, structures, or approach slabs.

   For connecting guardrail to existing bridge Traffic Railings, see Indexes 536-002, 521-404, and 521-405.

10. CONNECTION TO EXISTING GUARDRAIL: Where a transition to existing guardrail at 27" height is required, linearly transition the new guardrail height over a distance ranging from 25'-0" to 31'-3". Height transitions must occur outside of End Treatment and Approach Transition segments.

    Provide an immediate transition to the required midspan panel splice using the available panel options on Sheet 4 (9'-4½" or 15'-7½" panel). Alternatively, this transition to midspan panel splice may be achieved by installing a single reduced post spacing of 3'- 1½" within the new guardrail, immediately adjacent to the connection location.

11. PLANS CALLOUTS: Begin/End Station labels are shown throughout this Index as they correspond to the station and offset callouts specified in the plans.

    In the plans, Begin/End Guardrail Station refers to the General TL-3 Guardrail Pay Item, and it may be abbreviated as Begin/End GR. Station. Where the Low-Speed TL-2 Guardrail Pay Item is specifically required, the callout in the plans will then specify Begin/End TL-2 GR. Station.

12. QUANTITY MEASUREMENT: Measure guardrail and corresponding components as defined in Specification 536. The Guardrail length is measured along the centerline of installed Panels, between the points labeled Begin/End Guardrail Station shown on the following Index Sheets and defined in the plans (typically measured from the ℄ of the panel's post bolt slots at the approach/trailing ends).

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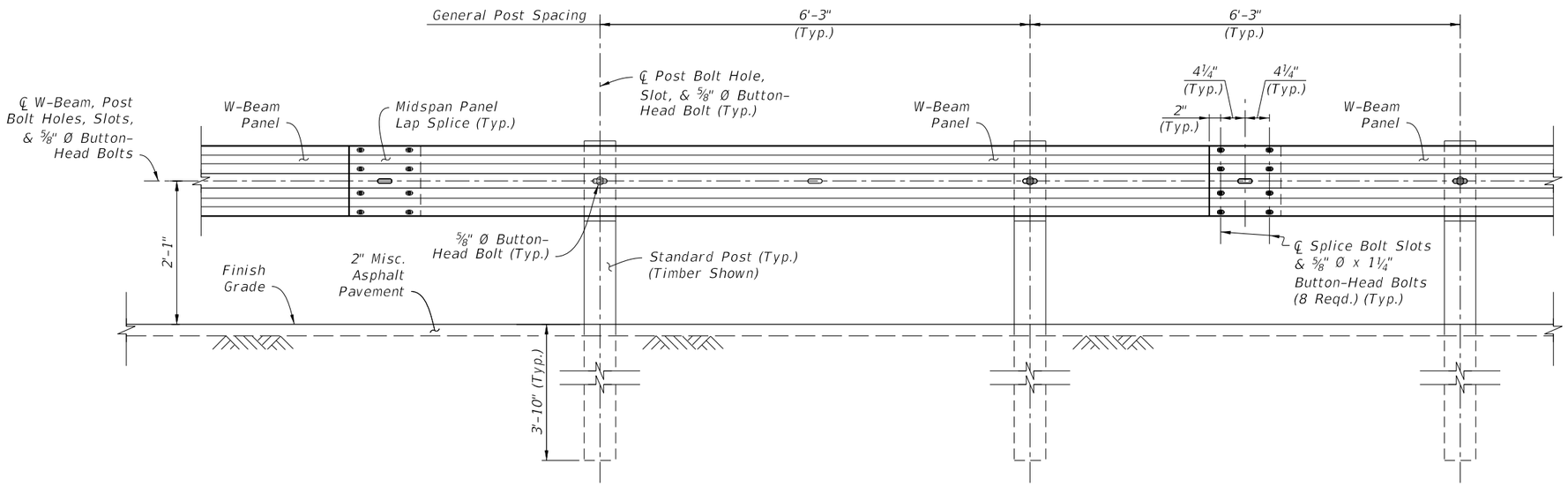
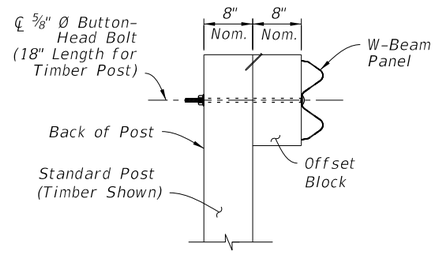
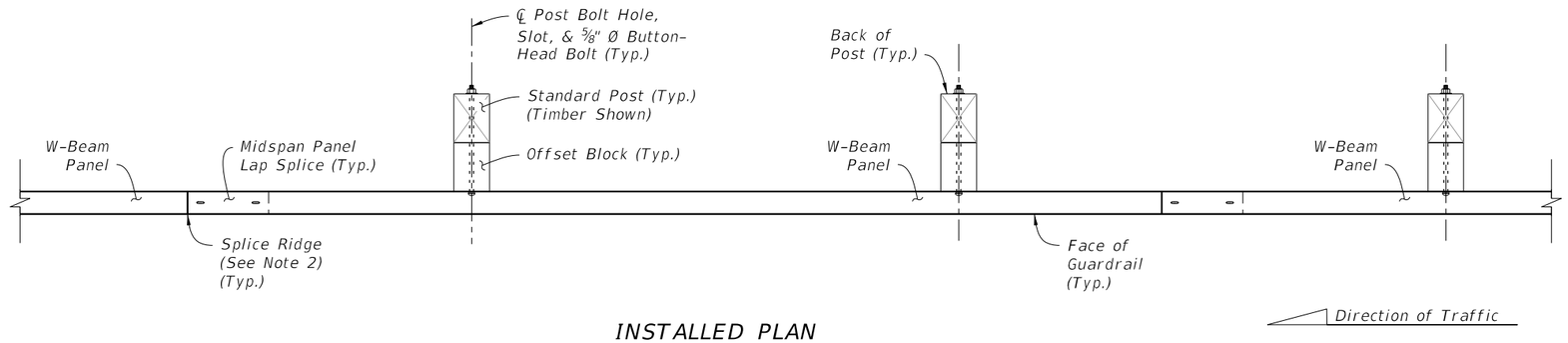


GENERAL GUARDRAIL
INSTALLED ELEVATION



INSTALLED SECTION



INSTALLED PLAN

NOTES:

1. GENERAL: Install the General Guardrail configuration where indicated in the plans. This may include tapered segments if called for in the plans.

   Use 12'-6" or longer W-Beam Panels. A single 6'-3" Panel may be used at the end of the run to meet the nominal Begin/End Guardrail Sta. requirements.

   Where a differing guardrail configuration is required for constructability beyond the options shown in this Index or the plans, obtain approval from the Engineer prior to installation.

2. MIDSPAN PANEL LAP SPLICE: For proper structural function, place all Lap Splices at midspan unless otherwise indicated.

   Lap the Panels with the Splice Ridge oriented downstream of the final Direction of Traffic in the nearest traffic lane. For reverse lane conditions, orient the Splice Ridge downstream of the lane direction with the highest traffic volume. Orienting Lap Splices for Temporary Traffic Control phasing is not required.

3. CONNECTION DETAILS: Connections to End Treatments, Approach Transitions, or other segment types are defined in the following Index Sheets, APL Drawings, or the plans.

4. W-BEAM PANEL DETAILS: See Sheet 4.

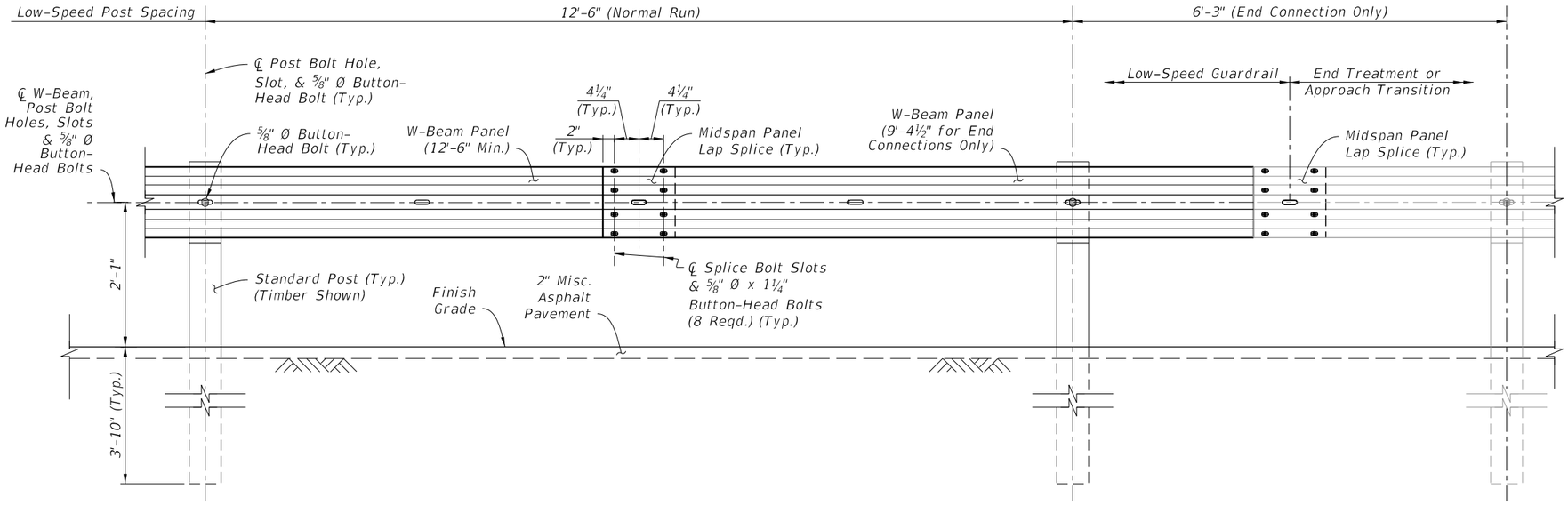
5. POST & OFFSET BLOCK DETAILS: See Sheet 5.

6. GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.

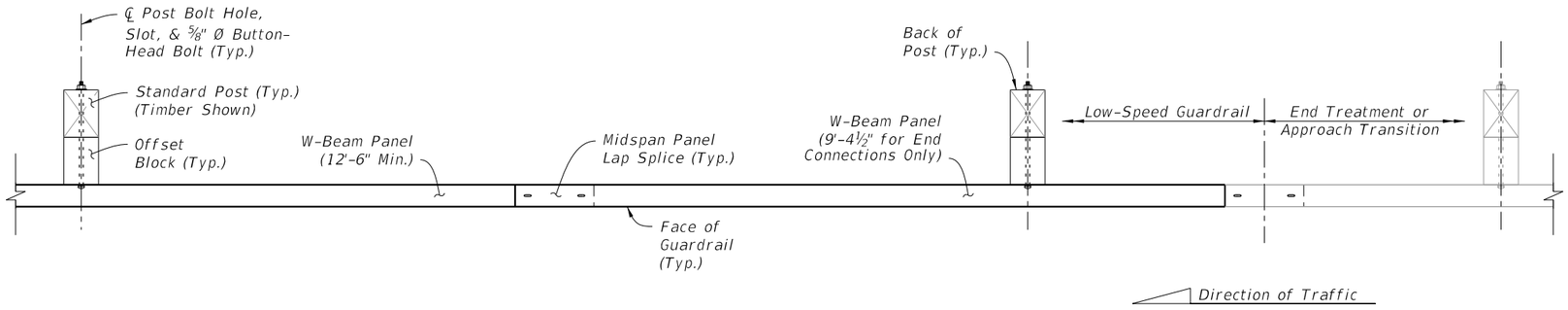
7. MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 24 for additional post mounting options.

8. DEFINED SEGMENTS: The General Guardrail shown provides the base configuration, including Post Spacing and splice locations, for Defined Segment modifications where indicated in the plans and using the Guardrail Types, Sections, and/or hardware as shown in this Index (e.g. Double Faced W-Beam, Deep Posts at Slope Breaks, Pipe Rail, Rub Rail, or Reduced Post Spacing for Hazards).

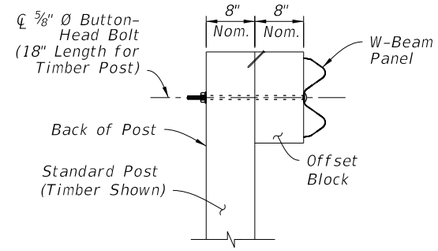
GENERAL, TL-3 GUARDRAIL DETAILS



LOW-SPEED GUARDRAIL INSTALLED ELEVATION



INSTALLED PLAN



INSTALLED SECTION

NOTES:

1. *GENERAL: Install the Low-Speed Guardrail configuration where indicated in the plans. Low-Speed Guardrail may include tapered segments if called for in the plans.*

   Use 12'-6" or 25'-0" W-Beam Panels for normal spans, and use 9'-4½" Panels for end connections to adjoining segments as shown. A single 6'-3" Panel may be used at the end of the Low-Speed Guardrail run along with a single reduced 6'-3" post spacing to meet the nominal Begin/End Guardrail Sta. required.

   Where a differing guardrail configuration is required for constructability beyond the options shown in this Index or the Plans, obtain approval from the Engineer prior to installation.

2. *MIDSPAN PANEL LAP SPLICE: For proper structural function, place all Lap Splices at midspan unless otherwise indicated.*

   Lap the Panels with the Splice Ridge oriented downstream of the final Direction of Traffic in the nearest traffic lane. For reverse lane conditions, orient the Splice Ridge downstream of the lane direction with the highest traffic volume. Orienting Lap Splices for Temporary Traffic Control phasing is not required.

3. *CONNECTION DETAILS: Connections to End Treatments, Approach Transitions, or other segment types are defined in the following Index Sheets, APL Drawings, or the plans.*

4. *W-BEAM PANEL DETAILS: See Sheet 4.*

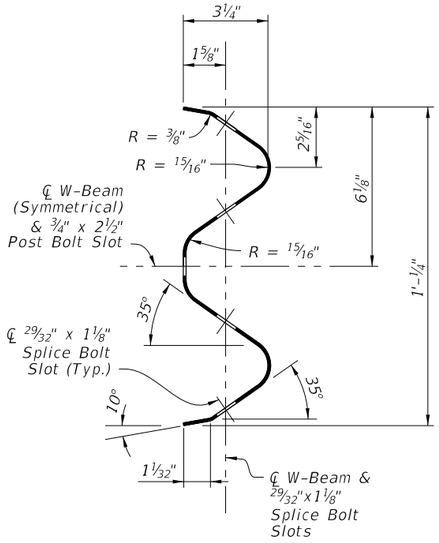
5. *POST & OFFSET BLOCK DETAILS: See Sheet 5.*

6. *GUARDRAIL SECTIONS: For Sections showing typical mounting heights, grading, and lateral offsets in relation to adjacent roadway features, see Sheet 6.*

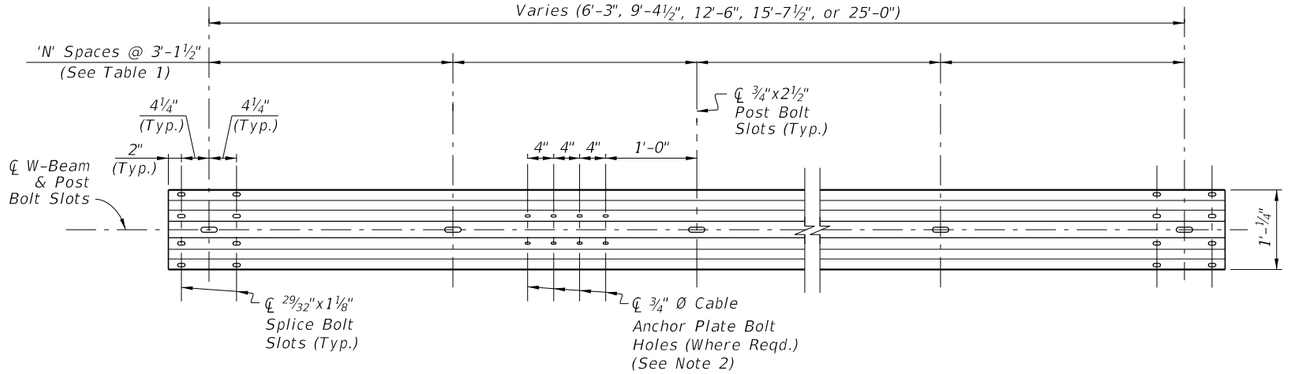
7. *MODIFIED MOUNTS: Where concrete structures, concrete sidewalk, or shallow depth conditions are encountered, see Sheet 24 for additional post mounting options.*

8. *RESTRICTIONS: Low-Speed Guardrail segments are not permitted for use with items including, but not limited to, Double Faced W-Beam, Deep Posts at Slope Breaks, Raised Curb, Pipe Rail, and/or Rub Rail.*

LOW-SPEED, TL-2 GUARDRAIL DETAILS



W-BEAM PANEL SECTION



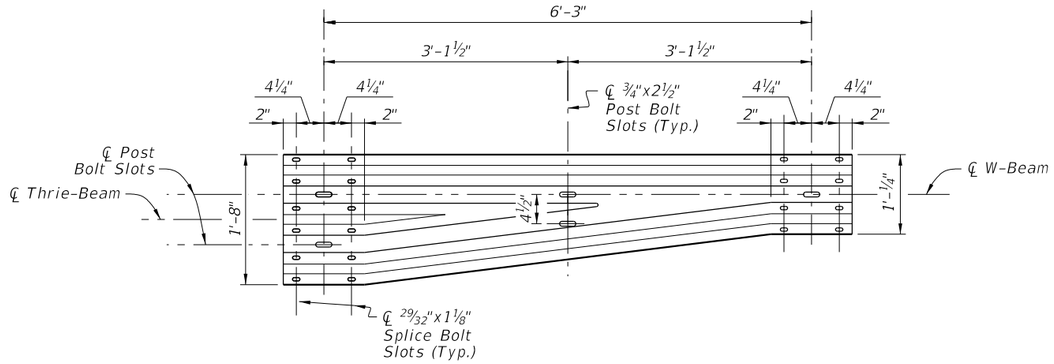
W-BEAM PANEL ELEVATION

PANEL SUMMARY TABLE:

Panel Type	Number of Spaces 'N'	Gauge
6'-3" W-Beam	2	12
9'-4½" W-Beam	3	12
12'-6" W-Beam	4	12
15'-7½" W-Beam	5	12
25'-0" W-Beam	8	12
3'-1½" Thrie-Beam	1	10
6'-3" Thrie-Beam	2	12
12-6" Thrie-Beam	4	12
25-0" Thrie-Beam	8	12
Thrie-Beam Trans.	2	10

THRIE-BEAM PANEL SECTION

THRIE-BEAM PANEL ELEVATION



THRIE-BEAM TRANSITION PANEL ELEVATION
(Reverse Direction Similar by Opposite Hand)

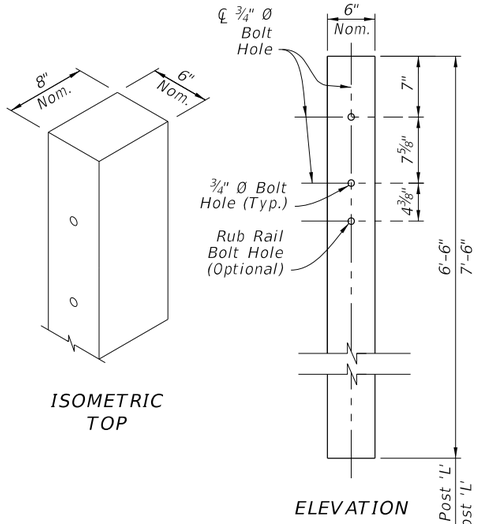
NOTES:

1. MATERIALS:
   Use corrugated steel panels in accordance with Specification 967 and made from either Class A, 12 gauge steel or Class B, 10 gauge steel as specified in the 'Panel Summary Table' above.

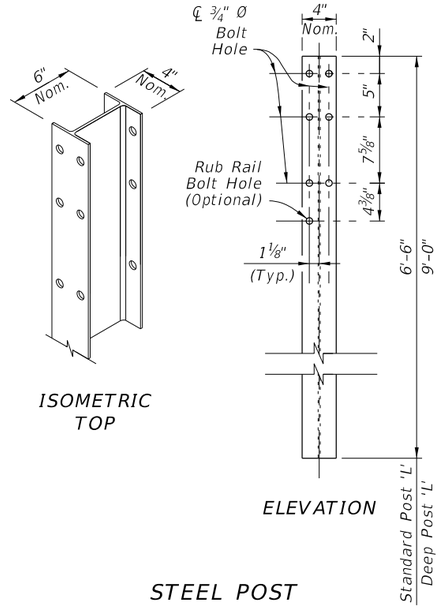
2. CABLE ANCHOR PLATE BOLT HOLES:
   Include ¾" Ø Cable Anchor Plate Bolt Holes only where required for installation of the Cable Anchor Plate shown on Sheet 9, 10, & 11.

   29⁄32" x 1⅛" slots may substitute for the ¾" Ø holes shown.

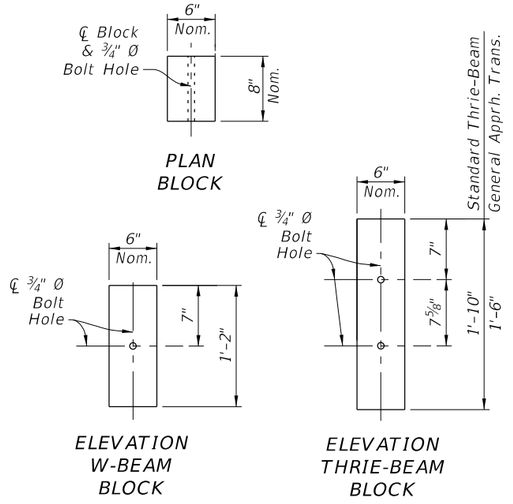
W-BEAM AND THRIE-BEAM PANEL DETAILS



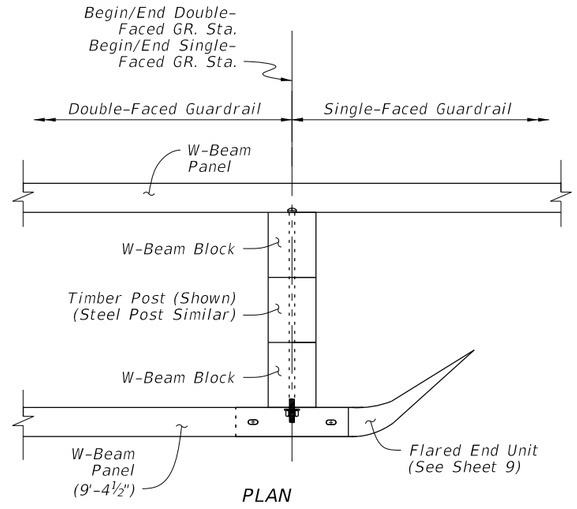
TIMBER POST
(6"X8" Nominal)



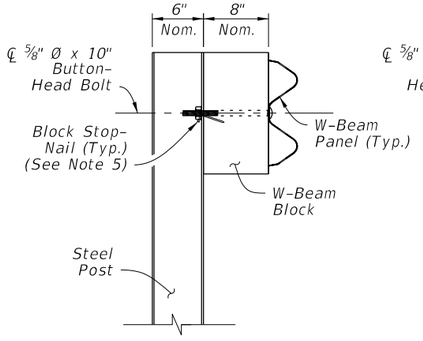
STEEL POST
(W6X8.5 or W6X9)

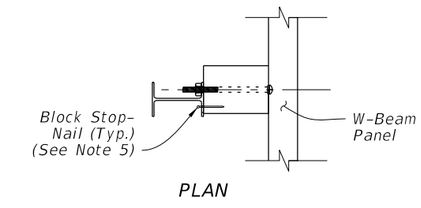


TIMBER OFFSET BLOCK
(6"X8" Nominal)

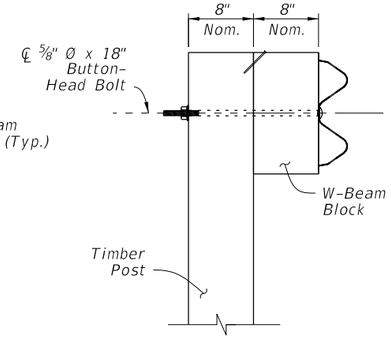


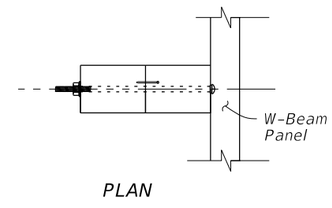
SINGLE-FACED / DOUBLE-FACED
GUARDRAIL CONNECTION



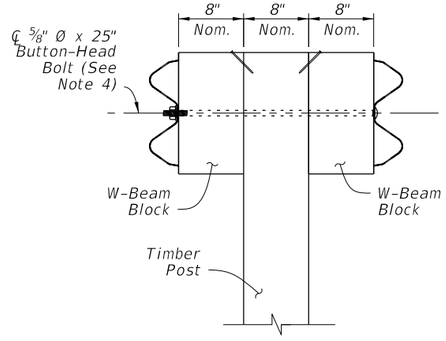


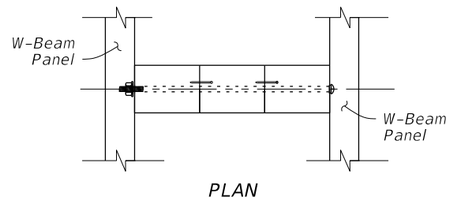
SINGLE-FACED
W-BEAM
STEEL POST



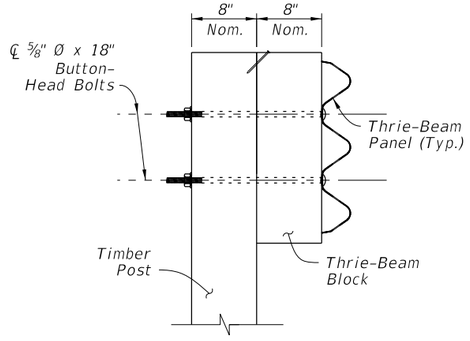


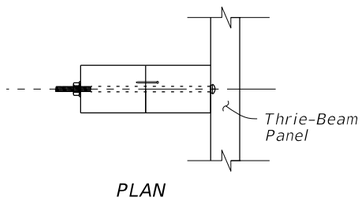
SINGLE-FACED
W-BEAM
TIMBER POST





DOUBLE-FACED W-BEAM
TIMBER POST
(Thrie-Beam Similar)
(Steel Post Similar)





THRIE-BEAM
TIMBER POST
(Steel Post Similar)

NOTES:

1. STANDARD POSTS: Where Standard Posts are called for in this Index, use either a Timber Post or Steel Post at the Length, 'L', shown for Standard Posts. Use a single post material type consistently per each run of guardrail. Only where specified in the Plans, use the Deep Post 'L' for Slope Break Conditions as shown on Sheet 6.
2. OFFSET BLOCKS: For each Panel type, install the corresponding Offset Block type as shown. For General, TL-3 (Single Faced) Approach Transitions only, use the 1'-6" Thrie-Beam Block (See Sheet 13).
3. BOLT HOLES: ¾" Ø Bolt Holes shown in posts within this Index may be substituted with $13/16$" Ø Bolt Holes.
4. DOUBLE FACED GUARDRAIL: Orient Post Bolts with the Button-Head located on the side nearest the traffic lane. The bolt's threaded portion is not permitted to extend beyond ¾" from the face of the tightened nut; trim the threaded portion as needed and galvanize in accordance with Specification 562.
5. BLOCK STOP-NAIL: Drive one nail per Standard Offset Block as shown to prevent Block rotation. Use steel 3½" Type 16d nails with ASTM A153 hot-dip galvanization. For steel posts, drive the nail through the unused flange Bolt Hole and bend the nail so its head contacts the flange.
6. MATERIALS: Use timber and steel posts and offset blocks in accordance with Specification 967. Composite offset blocks may be substituted as approved on the APL. Use a single offset block type consistently per each run of guardrail.

POST AND OFFSET BLOCK DETAILS

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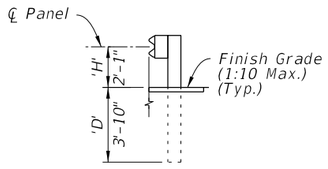
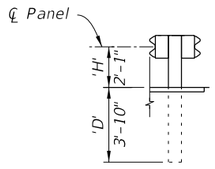
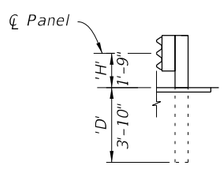


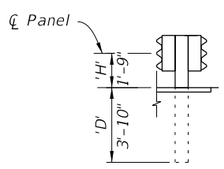
W-BEAM



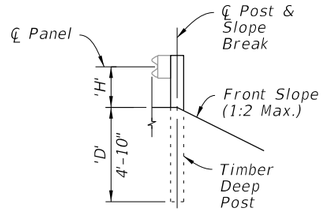
DOUBLE FACED
W-BEAM



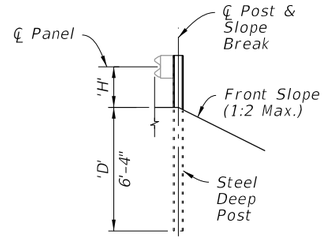
THRIE-BEAM



DOUBLE FACED
THRIE-BEAM

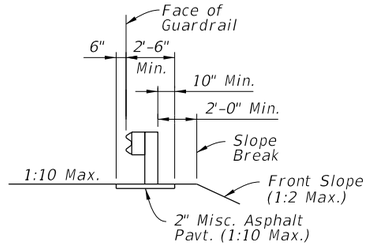


SLOPE BREAK CONDITION
TIMBER DEEP POST

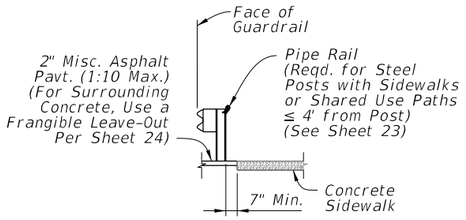


SLOPE BREAK CONDITION
STEEL DEEP POST

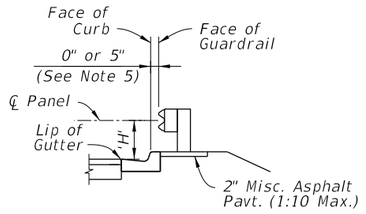
GUARDRAIL TYPES - MOUNTING HEIGHTS & POST DEPTHS



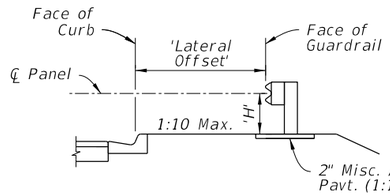
TYPICAL GRADING &
PAVT. PLACEMENT DETAIL
(See Note 2)



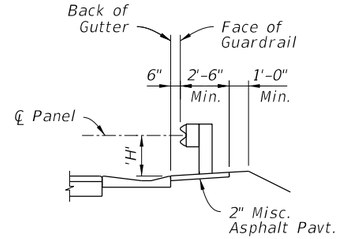
TYPICAL SIDEWALK DETAIL
(Work with Other
Sections as Reqd.)



ADJACENT TO CURB
(Type F Curb Shown)



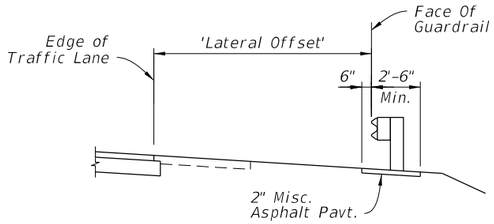
BEHIND CURB
(Type F Curb Shown)



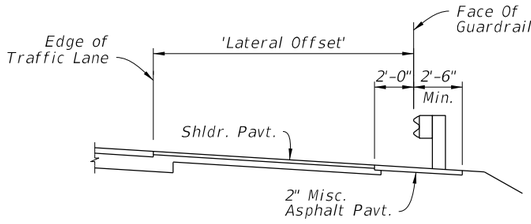
ADJACENT TO
SHOULDER GUTTER

GUARDRAIL SECTIONS - TYPICAL

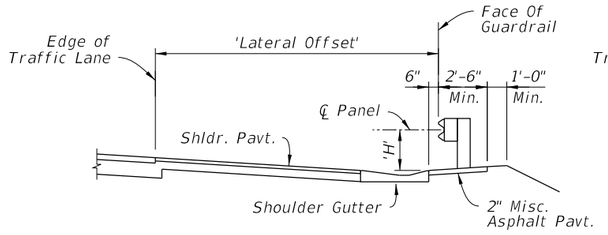
GUARDRAIL SECTIONS - CURB & GUTTER



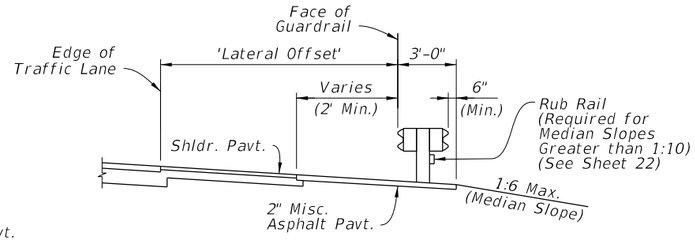
UNPAVED OR PARTIALLY
PAVED SHOULDER



FULLY PAVED SHOULDER



SHOULDER GUTTER



DOUBLE FACED GUARDRAIL
(Shown In Median)

GUARDRAIL SECTIONS - SHOULDERS

GUARDRAIL HEIGHT SUMMARY TABLE:			
Type:	Min. Depth 'D':	Mounting Height 'H':	Post Length 'L':
W-Beam (Single and Double Faced)	3'-10"	2'-1"	6'-6"
Thrie-Beam (Single and Double Faced)	3'-10"	1'-9"	6'-6"
Timber Deep Post	4'-10"	See Above	7'-6"
Steel Deep Post	6'-4"	See Above	9'-0"

NOTES:

1. GUARDRAIL SECTIONS: Construct Sections as indicated in the plans. The details shown herein depict W-Beam Guardrail, but are applicable to the other defined Guardrail Types placed at the corresponding height, 'H'. Use components per Sheets 4 & 5. Steel and timber post types are interchangeable unless otherwise defined. The 1:10 Max. cross slope shown is the maximum slope permitted for proper guardrail function, but project-specific cross slope requirements are governed by additional design criteria, per the plans.
2. TYPICAL GRADING & PAVEMENT PLACEMENT DETAIL: Construct features as depicted except where superceded by specific Guardrail Sections or the plans. Place the Slope Break a Minimum of 2' behind the post. For Deep Posts, the slope break may be placed at the ℄ Post with the 2" Miscellaneous Asphalt Pavement omitted.
3. SLOPE BREAK CONDITION: Install Deep Posts only where called for in the plans. Deep Posts are only permitted where post spacing is 6'-3" or less.
4. LATERAL OFFSETS: The Lateral Offsets shown are governed by the station and offset call outs for Face of Guardrail, as shown in the plans.
5. ADJACENT TO CURB: Place the Face of Guardrail consistently offset either flush with the Face of Curb or 5" behind the Face of Curb, as indicated by the plans station and offset callout. For offset changes, transition the Face of Guardrail as shown in the plans.

GUARDRAIL SECTIONS

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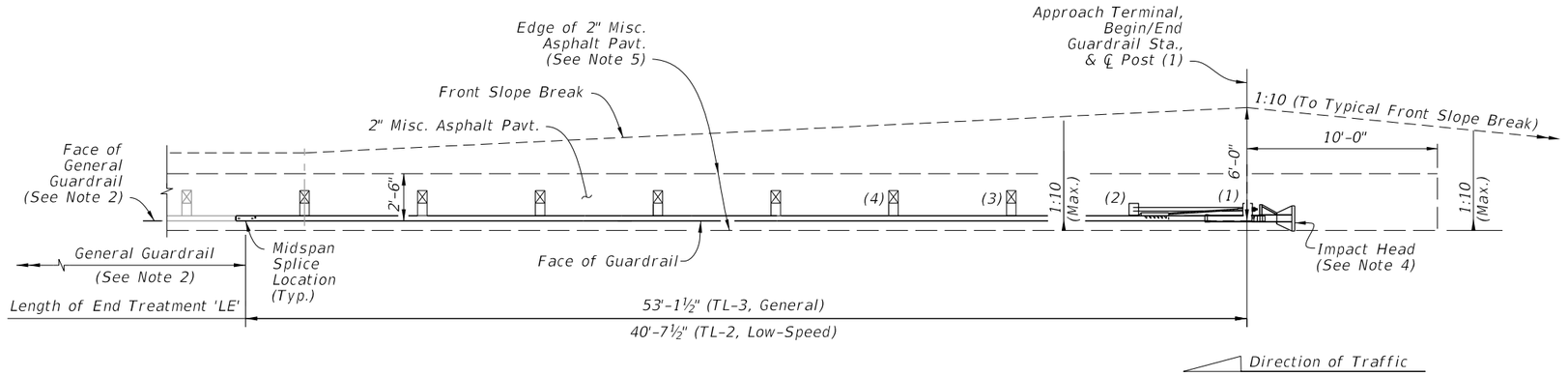
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2024-25 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
11/01/23					536-001	6 of 25



APPROACH TERMINAL ASSEMBLY
'PARALLEL' TYPE - PLAN VIEW

NOTES:

1. *INSTALLATION: Locate Approach Terminals where called for in the plans, with the Post (1) ℄ placed at the Begin/End Guardrail Station indicated in the plans.*

   The Plan Views shown herein are schematic only, showing basic geometry for Approach Terminals listed on the APL. The predefined Length of End Treatment, 'LE', includes the proprietary portion of various Approach Terminals and provides for more consistent planning of assembly installations across the differing Approach Terminal types. Forward-anchoring style Approach Terminals may vary from the planned lengths shown by up to 3'-0".

   Construct Approach Terminals as shown in the APL and in accordance with the manufacturer's unique drawing details, procedures, and specifications.

   Install posts in accordance with the manufacturer's drawings. The Special Posts on Sheet 24, including Special Steel Posts, Encased Posts, and Frangible Leave-Outs, are not permitted within the Approach Terminal segment unless otherwise called for in the plans.

   Align panel lap splices in accordance with the manufacturer's drawings, regardless of the direction of traffic.

   Install adjacent grading, gutters, and/or curbing as shown herein.

2. *GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments.*

   Approach Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.

3. *APPROACH TERMINAL TEST LEVEL: Install either a Test Level 3 (TL-3) or Test Level 2 (TL-2) Approach Terminal as specified in the plans. TL-3 Approach Terminals may substitute for TL-2 Approach Terminals unless the substitution is specifically prohibited in the plans. TL-2 Approach Terminals may not substitute for TL-3 installations.*

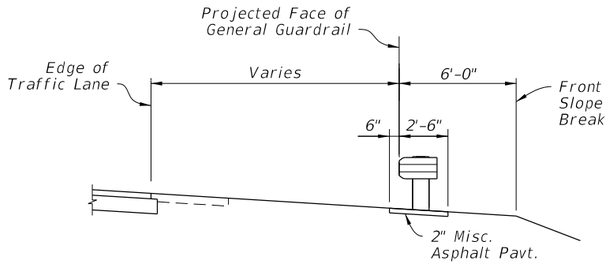
4. *IMPACT HEAD END DELINEATOR: Apply Yellow Retroreflective Sheeting to the nose of the End Terminal in accordance with Specification 536.*

5. *2" MISCELLANEOUS ASPHALT PAVEMENT: The Plan View depicts the Unpaved Shoulder condition. For Fully Paved Shoulder and Shoulder Gutter conditions, extend the 2" Misc. Asphalt Pavement as shown in the corresponding 'Section at Post (1)' details below.*

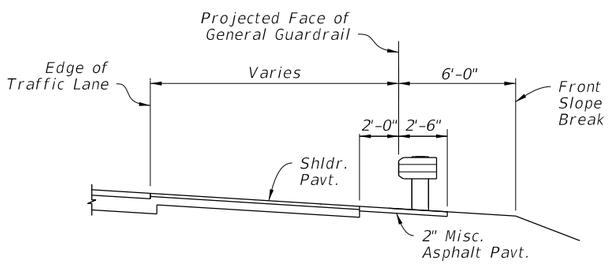
   The 2" Misc. Asphalt Pavement shown upstream of Post (1) may be substituted with a different pavement type where called for in the Plans.

6. *CLEAR AREA REQUIREMENT: Do not place any permanent aboveground installations within the areas shown with 1:10 maximum grading. For the finished condition, keep this area free of all aboveground obstructions, including dense vegetation and trees.*

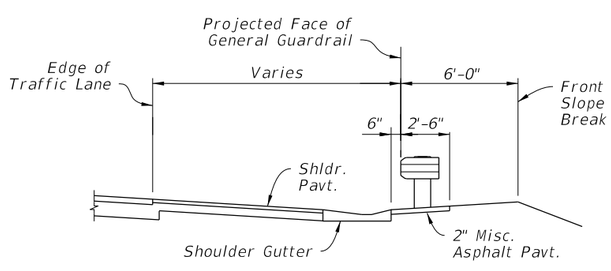
7. *'CURBED' AND 'DOUBLE FACED' GUARDRAIL SEGMENTS: See Sheet 8.*



SECTION AT POST (1)
WITH UNPAVED SHOULDER



SECTION AT POST (1)
WITH FULLY PAVED SHOULDER



SECTION AT POST (1)
WITH SHOULDER GUTTER

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END TREATMENT - APPROACH TERMINAL GEOMETRY - PARALLEL

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
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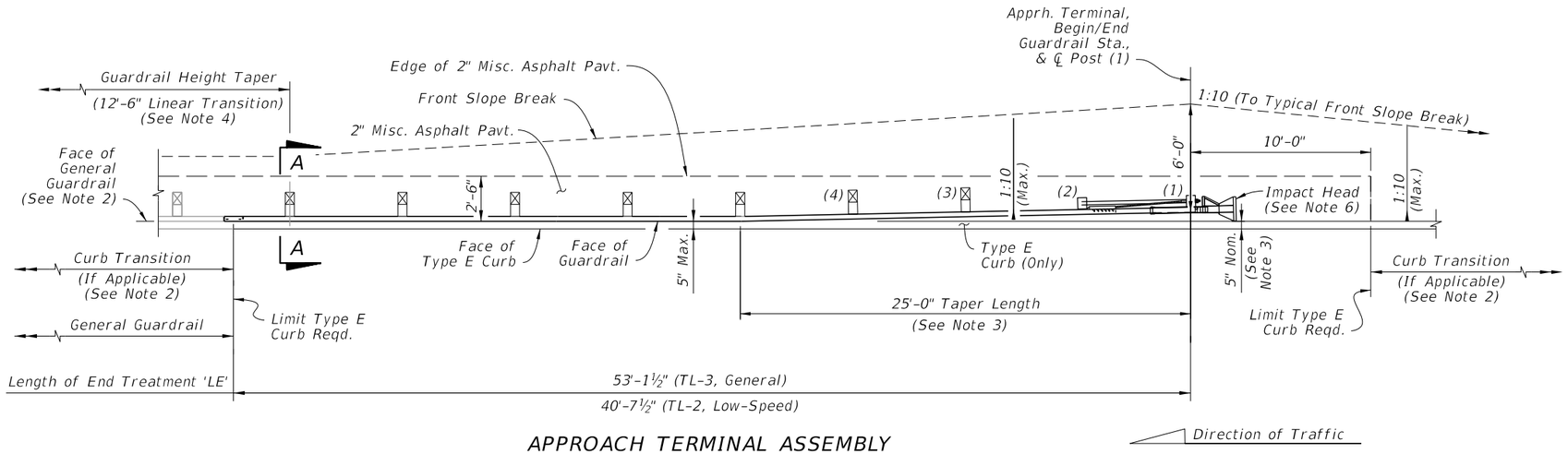
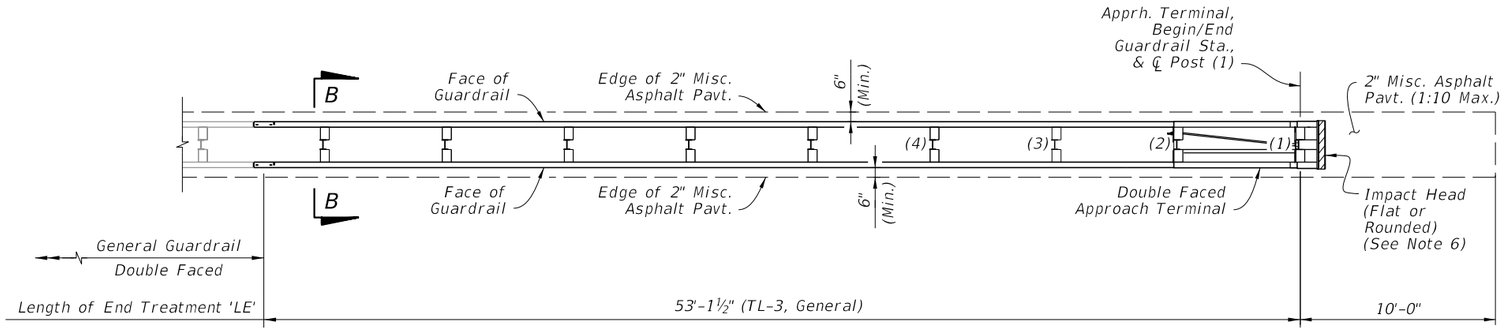
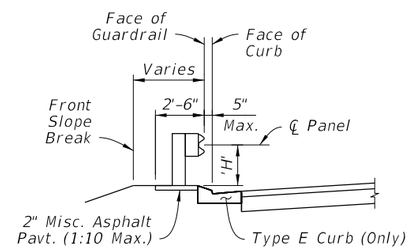


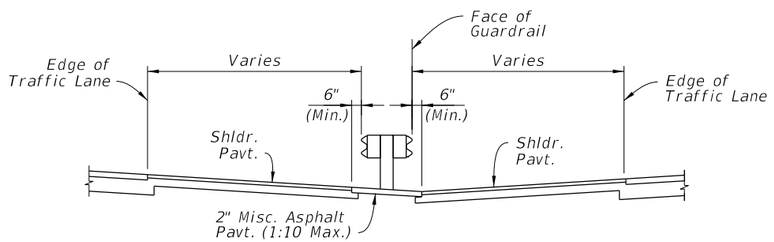
APPROACH TERMINAL ASSEMBLY
'CURBED' SEGMENT - PLAN VIEW



APPROACH TERMINAL ASSEMBLY
'DOUBLE FACED' SEGMENT - PLAN VIEW



'CURBED' SECTION A-A
(Height, 'H', Measured from Misc. Asphalt Pavt.)



'DOUBLE FACED' SECTION B-B
(1:10 Slope or Flatter Reqd.)

NOTES:

1. GENERAL: See Notes 1 through 3 on Sheet 7.
2. CURBED SEGMENTS: Type E curb is required within the limits shown. When a different curb type is called for outside of the Type E curb limits, transition the curb shape linearly, over a nominal distance ranging 5'-0" to 10'-0"
3. TAPER LENGTH: For Curbed Segments, taper the guardrail away from the roadway where shown to place the inside edge of the Impact Head at 5" behind the face of the curb. Where additional lateral offset is required to fit the Approach Terminal Assembly hardware, such as a soil plate, place the Impact Head as close to the curb as the hardware allows, not to exceed 2'-0" from the face of curb.
4. GUARDRAIL HEIGHT TAPER: For Curbed Segments, the connecting General Guardrail Mounting Height, 'H', is typically measured from the Lip of Gutter (See Sheet 6 Guardrail Sections, 'Adjacent to Curb'), while the End Terminal Assembly 'H' is measured from the Misc. Asphalt Pavt. (See Section A-A). Linearly taper the difference in Mounting Height over a minimum length of 12'-6", starting where indicated herein.
5. DOUBLE FACED SEGMENT: Connect to Double Faced General Guardrail. Use consistent Posts and Offset Block types as specified in the APL drawings over the entire Length of End Treatment, 'LE'. Posts and Offset Blocks in the adjoining General Guardrail segment may be different from those inside of the 'LE'. A change in post type between timber and steel is permitted, immediately outside of the 'LE' segment.

   Maintain the 1:10 maximum grading as shown in Section B-B throughout segment 'LE'. Where required, transition to differing adjacent slopes linearly, over a minimum longitudinal length of 25'-0".
6. IMPACT HEAD END DELINEATOR: Apply Yellow Retroreflective Sheeting to the nose of the End Terminal in accordance with Specification 536.
7. CLEAR AREA REQUIREMENT: Do not place any permanent aboveground installations within the areas shown with 1:10 maximum grading. For the finished condition, keep this area free of all aboveground obstructions, including dense vegetation and trees.
8. 2" MISCELLANEOUS ASPHALT PAVEMENT: The 2" Misc. Asphalt Pavement shown upstream of Post (1) may be substituted with a different pavement type where called for in the Plans.
9. SINGLE FACED 'PARALLEL' SEGMENTS: See Sheet 7.

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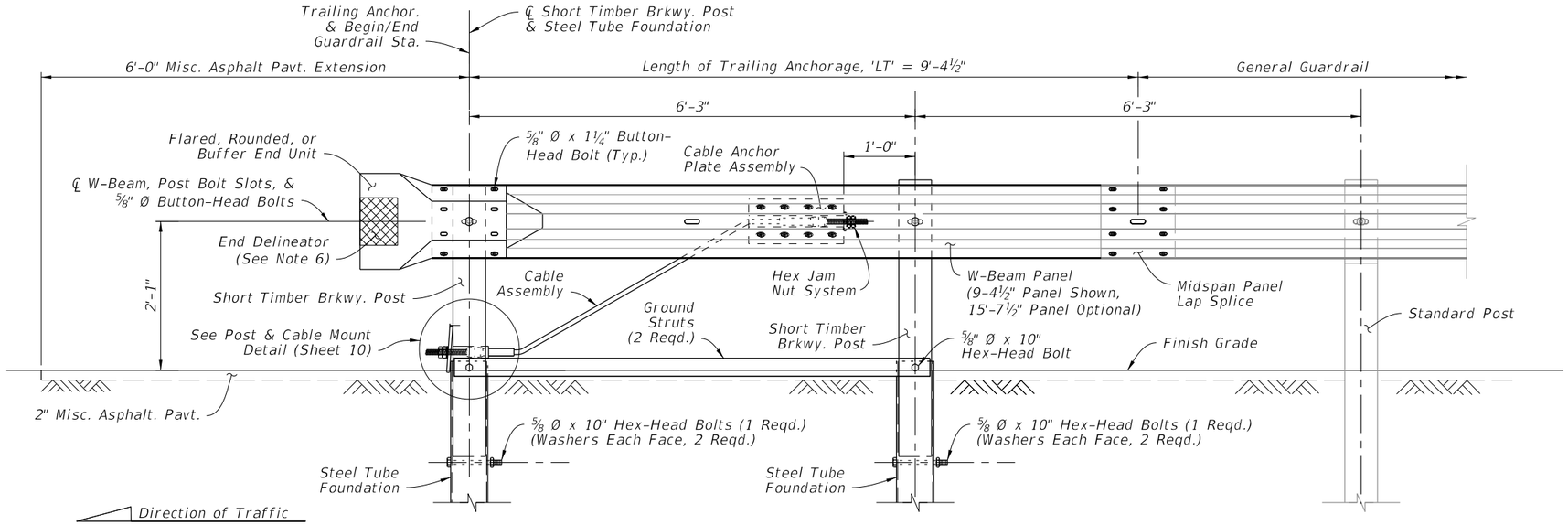
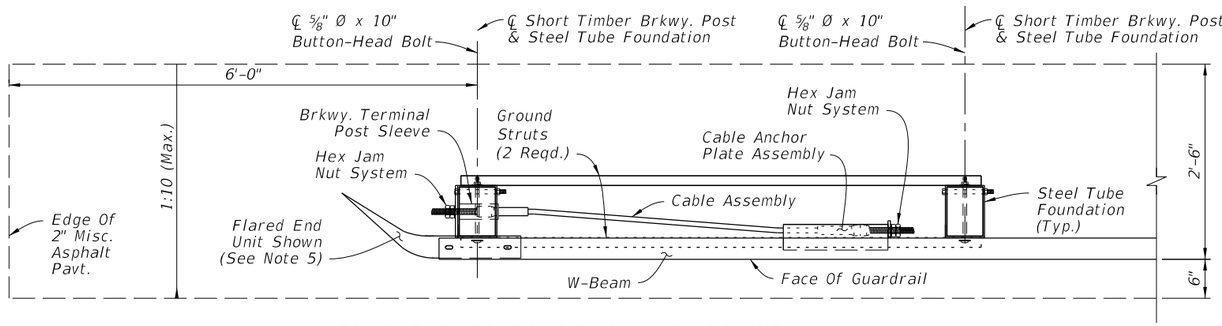
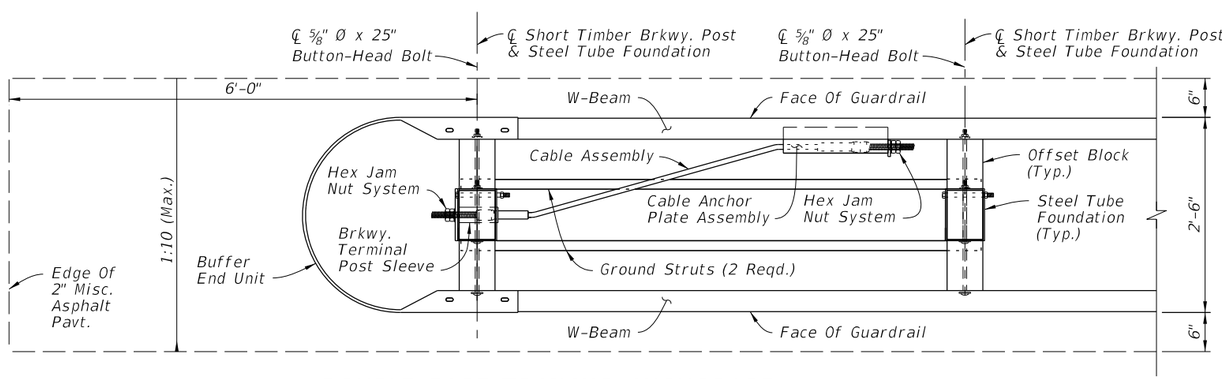
END TREATMENT - APPROACH TERMINAL GEOMETRY CURBED AND DOUBLE FACED



INSTALLED ELEVATION



SINGLE FACE TRAILING ANCHORAGE
INSTALLED PLAN



DOUBLE FACE TRAILING ANCHORAGE
INSTALLED PLAN

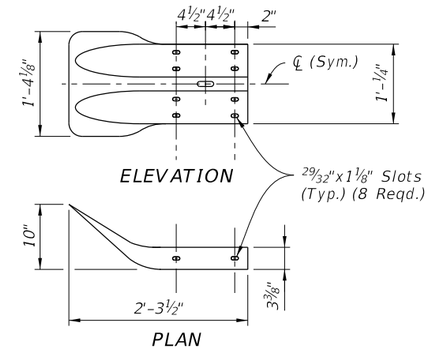
NOTES:

1. *COMPONENT DETAILS: For additional component details, See Sheet 10.*
2. *END UNITS: Use materials for end units as defined in Specifications Section 967. End Units are referred to as "End or Buffer Sections" in AASHTO M180.*

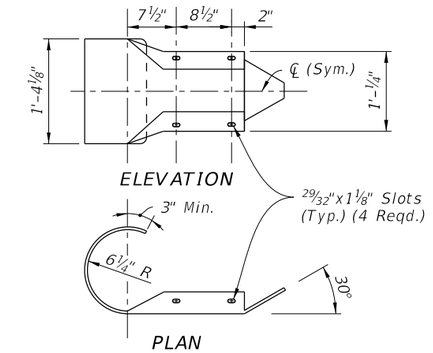
   Lap the Flared End Unit behind the W-Beam; lap the Rounded and Buffered End Units over the face of the W-Beam.
3. *FOUNDATIONS: Install Steel Tubes by either of the following methods:*

   a. Excavate, backfill, and compact material to provide full passive soil resistance to the surface of the Tube.

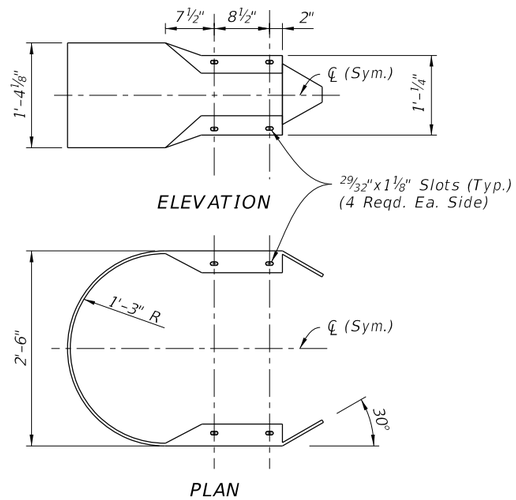
   b. Drive the Tube using a dummy timber post to prevent damage to the Breakaway Post.
4. *GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.*
5. *SIDEWALK REQUIREMENTS: When sidewalks are located adjacent to the End Treatment, install a Rounded End Unit (Flared End Unit not permitted for this case).*
6. *END DELINEATOR: Mount retroreflective sheeting to the approach face of the End Unit in accordance with Specification Sections 536 and 967.*



FLARED END UNIT



ROUNDED END UNIT



BUFFER END UNIT

END TREATMENT - TRAILING ANCHORAGE

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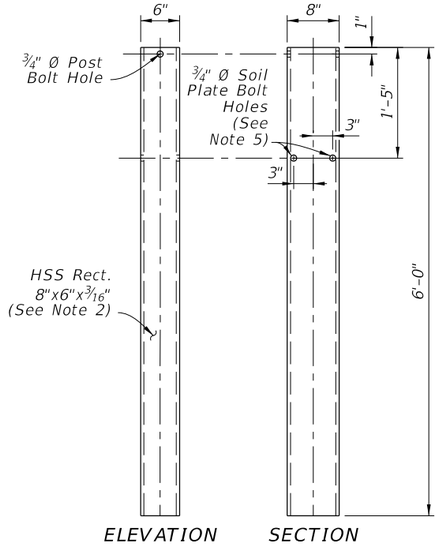
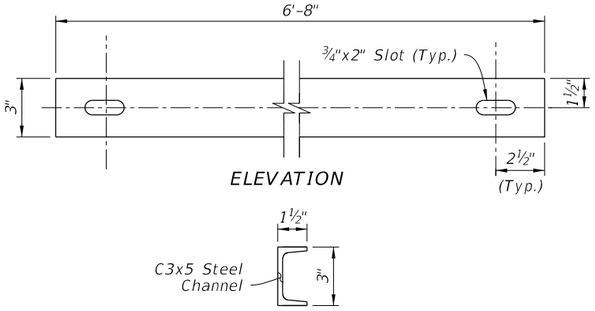
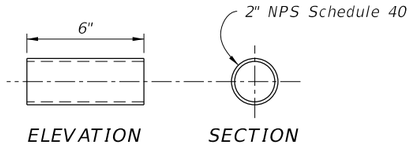


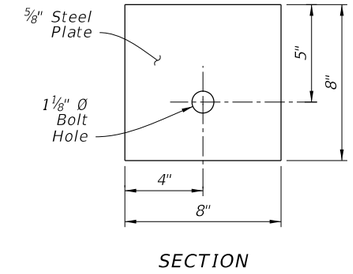
STEEL TUBE FOUNDATION



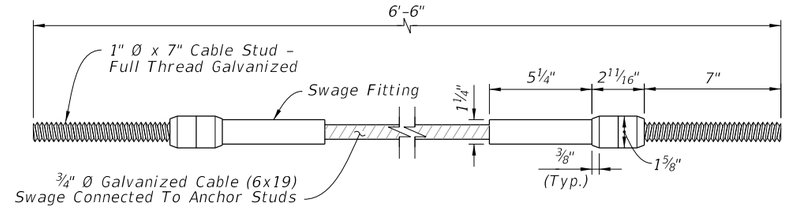
GROUND STRUT



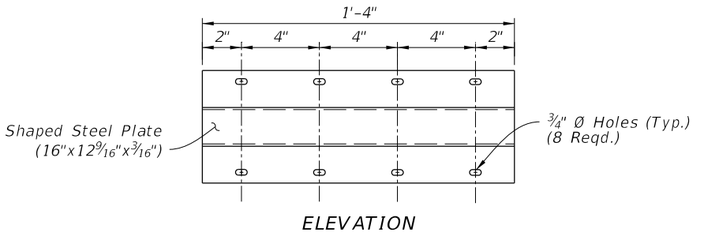
BREAKAWAY TERMINAL POST SLEEVE

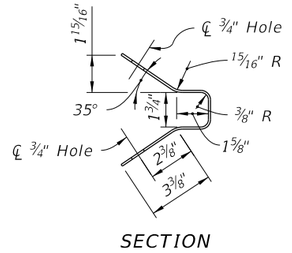


BEARING PLATE

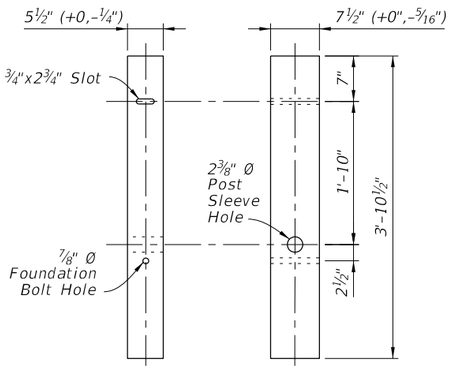


CABLE ASSEMBLY

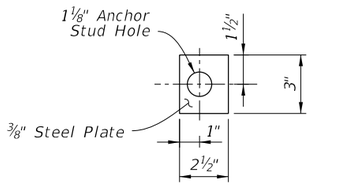




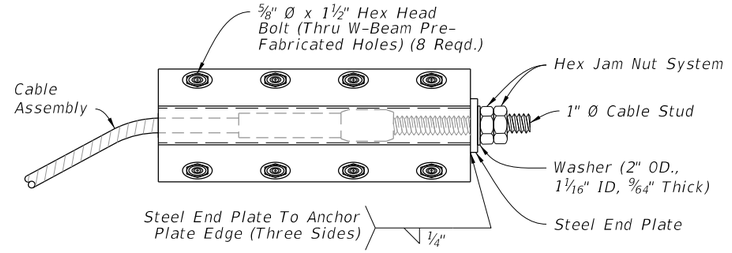
CABLE ANCHOR PLATE

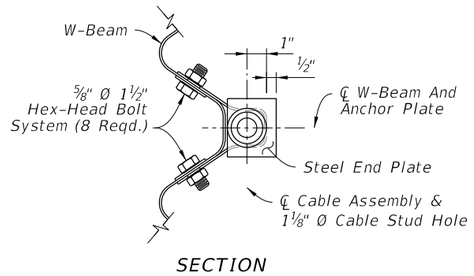


SHORT TIMBER BREAKAWAY POST (6"x8" Nom.)

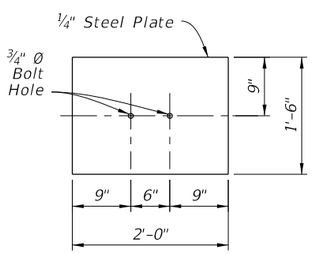


STEEL END PLATE

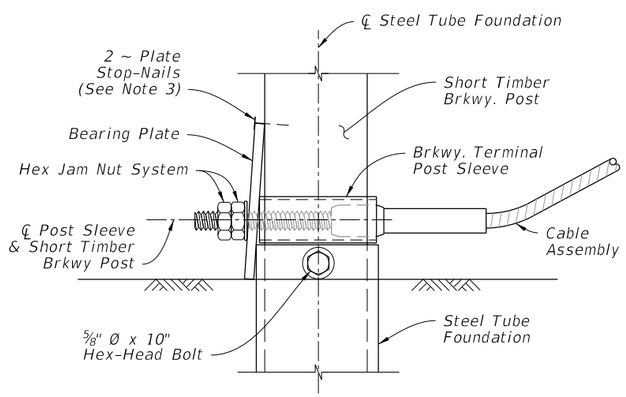




CABLE ANCHOR PLATE ASSEMBLY



SOIL PLATE



POST & CABLE MOUNT ASSEMBLY

NOTES:

1. INSTALLATION: Use components as shown on Sheets 9 & 11.
2. MATERIALS: Use steel plates, channels, and Cable Assemblies in accordance with Specification 967.

   Use Short Timber Breakaway Posts and Steel Tube Foundations in accordance with Specification 536.

   Use Hex Nuts, Hex Jam Nuts, and Washers in accordance with the AASHTO-AGC-ARTBA Guide to Standardized Barrier Hardware with English unit equivalents of components FNX24a and FWC24a, respectively. Two Hex Nuts may be used for the Hex Jam Nut System.
3. PLATE STOP-NAILS: To prevent rotation of the Bearing Plate, drive steel 2½" Type 8d nails with ASTM A153 hot-dip galvanization.
4. CABLE ANCHOR PLATE ASSEMBLY INSTALLATION: Mount to the pre-fabricated Cable Anchor Plate Bolt Holes in the W-Beam Panel, as shown on Sheet 4. These panel holes are only permitted for this Cable Anchor Plate Assembly application.
5. SOIL PLATE BOLT HOLE(S): For Trailing Anchorage installations as shown on Sheet 9, the two bolt holes shown may be substituted with a single bolt hole located at the tube centerline.

END TREATMENT - COMPONENT DETAILS

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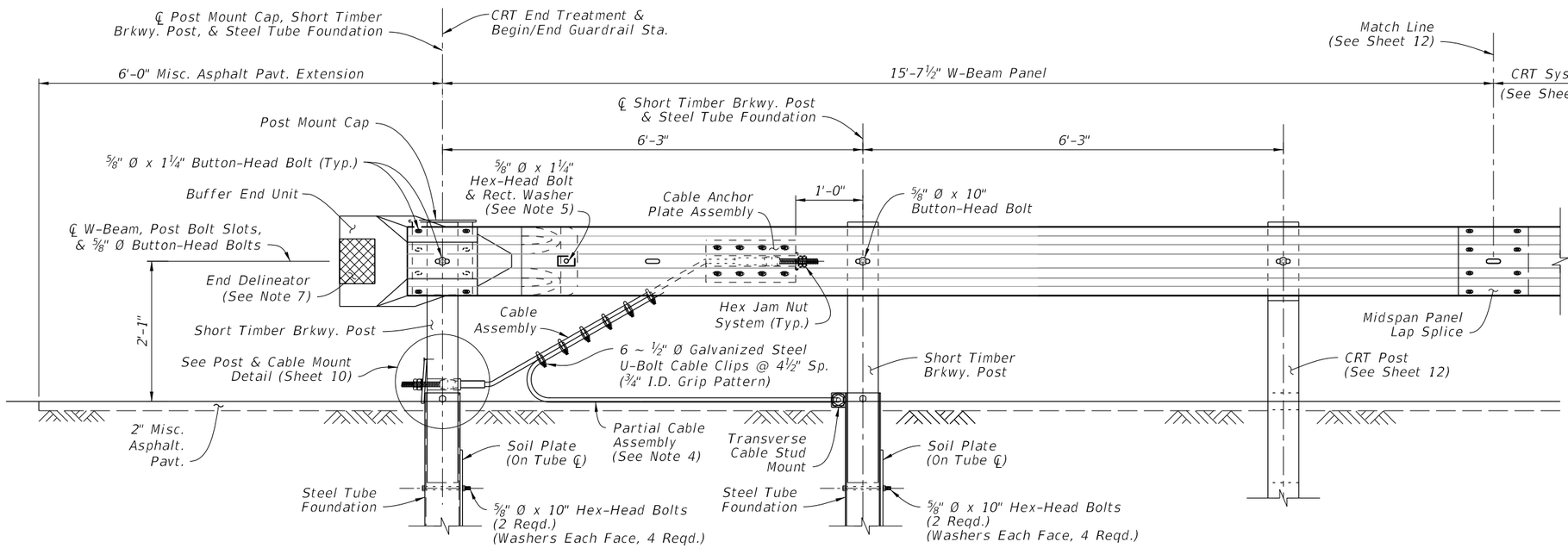
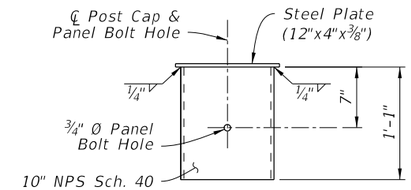
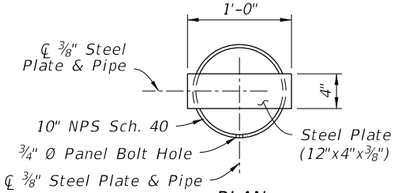


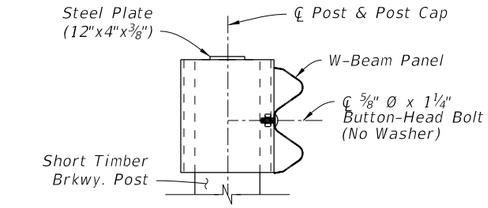
INSTALLED ELEVATION



ELEVATION

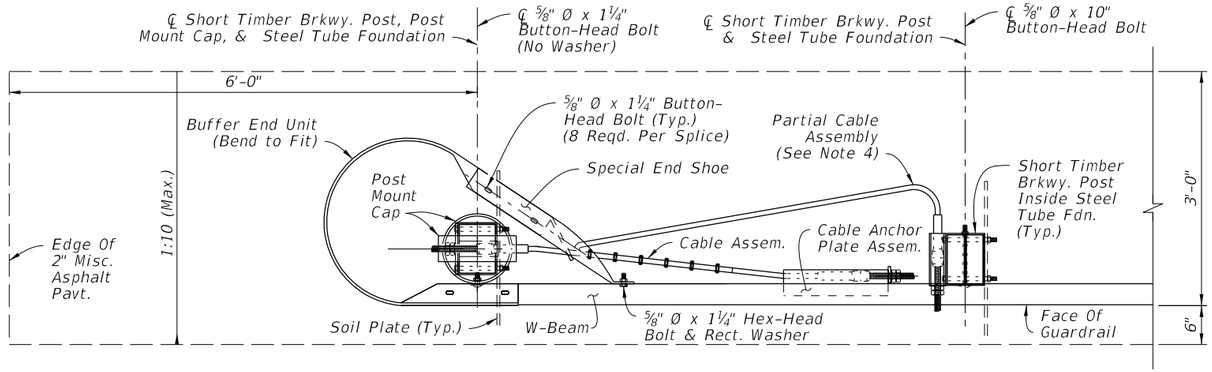


PLAN



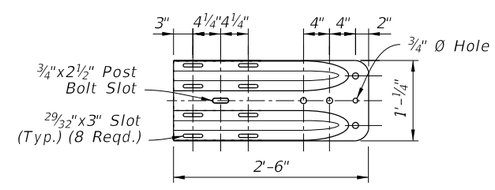
INSTALLED SECTION

POST MOUNT CAP

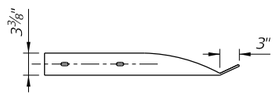


INSTALLED PLAN

CRT END TREATMENT ASSEMBLY

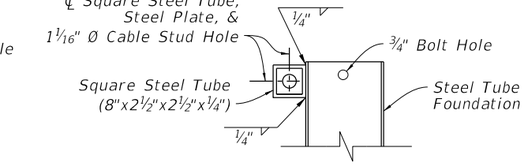


ELEVATION

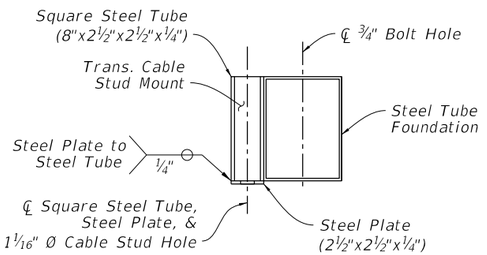


PLAN

SPECIAL END SHOE



ELEVATION



PLAN

TRANSVERSE CABLE STUD MOUNT

NOTES:

1. INSTALLATION: Use with CRT Systems as required on Sheet 12.
2. COMPONENT DETAILS: For additional component details, See Sheet 10 & 12. For the Rectangular Washer detail, see Sheet 25.
3. MATERIALS: Use steel End Shoes, Plates, Tubes, and pipes in accordance with Specification 967.
4. PARTIAL CABLE ASSEMBLY: The Partial Cable Assembly is similar to the Cable Assembly defined on Sheet 10, except with a 9'-0" total length and the Swage Fitting and Cable Stud omitted from one end.

   Feed the Cable Stud through the Cable Stud Hole of the Transverse Cable Stud Mount as shown, and secure it with the Hex Jam Nut System as defined on Sheet 10.
5. SPECIAL END SHOE MOUNT: Punch a ¾" Ø hole in the W-Beam Panel as needed to secure the Special End Shoe with the ⅝" Ø Hex-Head Bolt. Galvanize hole per Specification 562.
6. FOUNDATIONS: Install Steel Tubes with attached Soil Plates by either of the following methods:

   a. Excavate, backfill, and compact material to provide full passive soil resistance to all surfaces of the tube and soil plate.

   b. Drive the steel tube and soil plate as a single unit using a dummy timber post to prevent damage to the breakaway post.
7. END DELINEATOR: Mount retroreflective sheeting to the approach face of the Buffer End Unit in accordance with Specifications 536 and 967.

END TREATMENT - CONTROLLED RELEASE TERMINAL (CRT) SYSTEM

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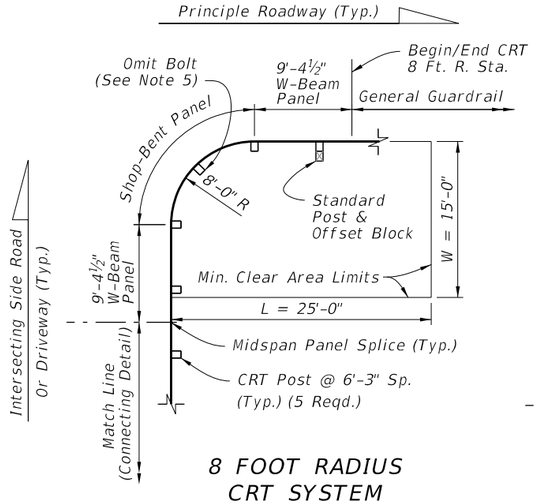
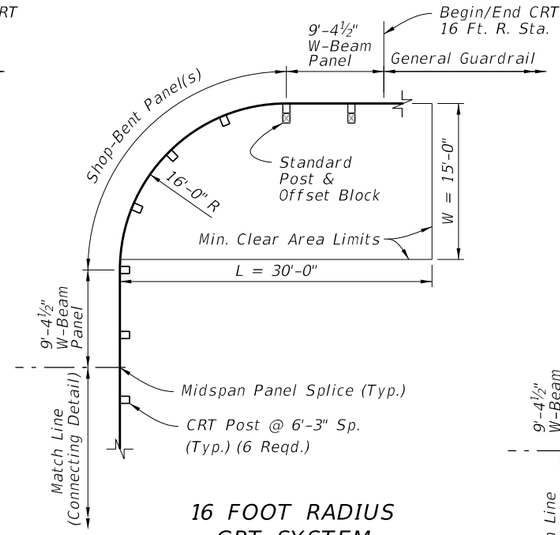
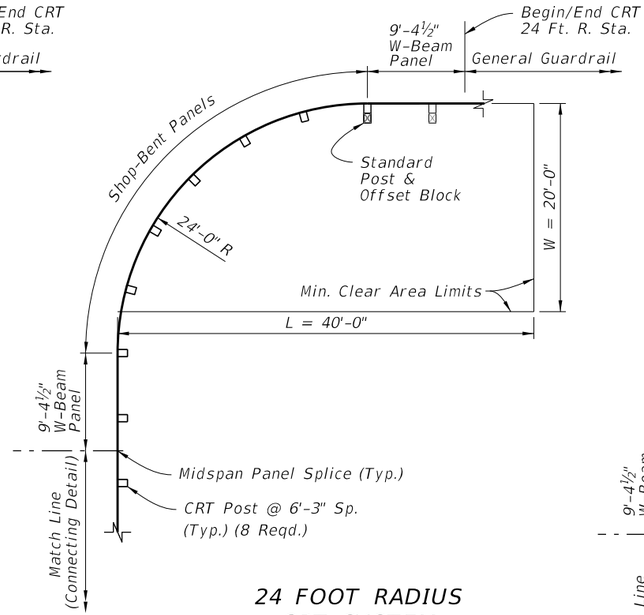


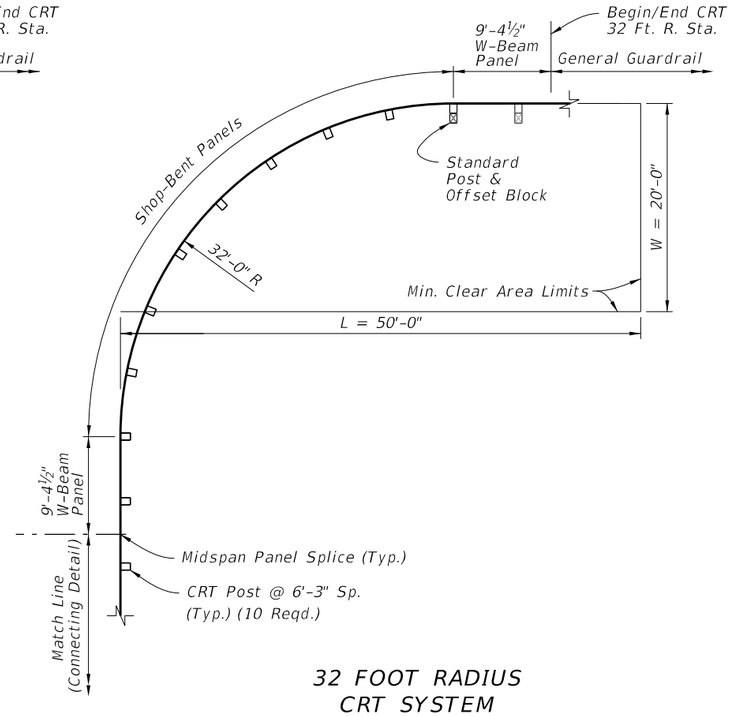
8 FOOT RADIUS CRT SYSTEM PLAN VIEW



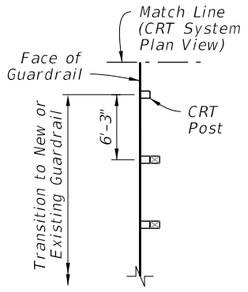
16 FOOT RADIUS CRT SYSTEM PLAN VIEW



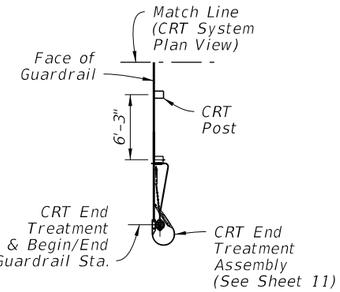
24 FOOT RADIUS CRT SYSTEM PLAN VIEW



32 FOOT RADIUS CRT SYSTEM PLAN VIEW



CONTINUING OPTION

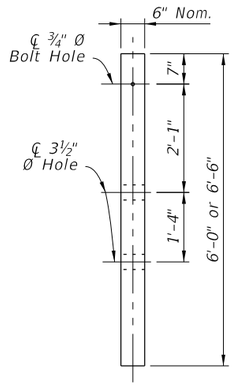


END TREATMENT OPTION

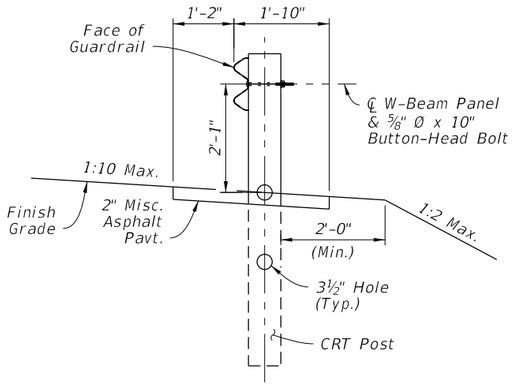
CONNECTING DETAIL

CRT SYSTEM SUMMARY TABLE:

RETURN RADIUS (FT.)	LENGTH OF SHOP-BENT PANEL(S) (FT.)	QUANTITY OF CRT POSTS	AREA CLEAR OF HAZARDS 'L' x 'W' (FT.)
8	12.5	5	25 x 15
16	25.0	6	30 x 15
24	37.5	8	40 x 20
32	50.0	10	50 x 20



CRT POST ELEVATION (6"x8" Nom. Timber)



CRT INSTALLED SECTION

NOTES:

1. INSTALLATION: Construct the specified radius layout and Connecting Detail option as shown in the plans.
2. MIN. CLEAR AREA: Keep the area behind the CRT free of fixed objects and aboveground hazards within the Min. Clear Area limits shown. Maintain a slope not steeper than 1:10 for a minimum 2' behind the posts, and maintain a slope not steeper than 1:2 beyond 2' from the posts.
3. APPROACH GRADING: Maintain grading on the roadway side of the guardrail face at a maximum slope of 1:10.
4. MATERIALS: For CRT Posts, use Timber Post material in accordance with Specification 967. Use steel panels and hardware in accordance with Specification 967.
5. BOLT OMISSION: For the 8 Foot Radius CRT System only, do not place a panel-to-post mount bolt at the center CRT Post (omit the ⅝" Button-Head Bolt only at the location shown).
6. SHOP-BENT PANELS: Install Shop-Bent panel(s) where indicated using 12'-0" or 25'-0" W-Beam Panels. Splice at post locations within the CRT radius using the General configuration of ⅝" Ø Button-Head Bolts (8 reqd. per splice).
7. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Transitions, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.

LAYOUT FOR CONTROLLED RELEASE TERMINAL (CRT) SYSTEMS - SIDE ROADS AND DRIVEWAYS

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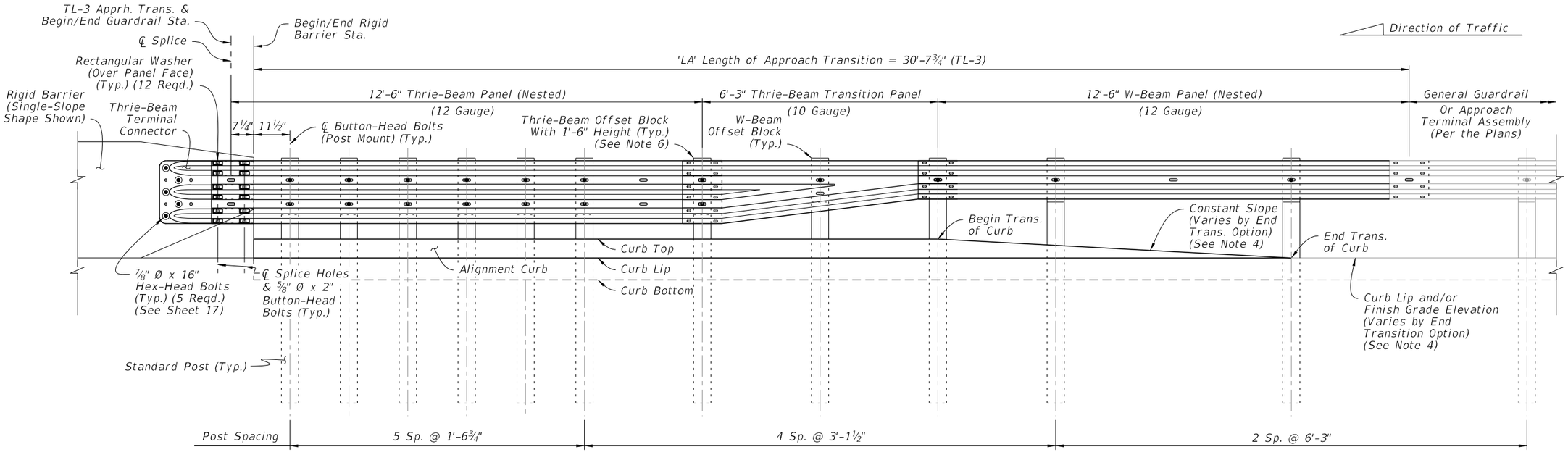
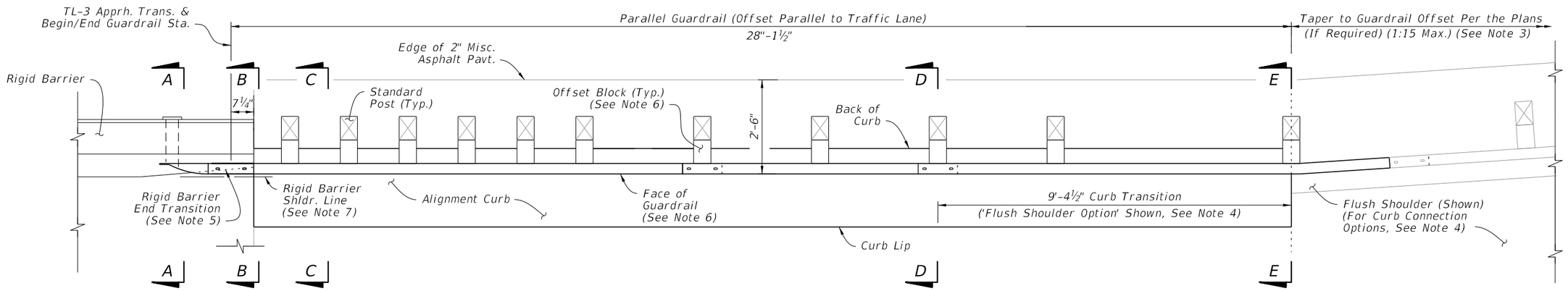


TL-3 APPROACH TRANSITION INSTALLED ELEVATION



TL-3 APPROACH TRANSITION INSTALLED PLAN

NOTES:

1. *INSTALLATION: Construct the Approach Transition segment where indicated in the plans. For example Layouts showing the Approach Transition's fit among other guardrail segments, see Sheet 19.*

   For existing bridge connection options, see Indexes 536-002, 521-404, and 521-405.

2. *SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.*

3. *GUARDRAIL TAPER: The connecting guardrail may require a different lateral offset if shown in the plans. At the location shown herein, taper the guardrail to the connecting guardrail offset. If the adjacent guardrail segment has the same offset as the Approach Transition segment, then no taper is required.*

4. *END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', or 'Flush Shoulder Option'). See Sheet 14 for additional curb options and Sheet 17 for curb shape details.*

5. *RIGID BARRIER END TRANSITION: Taper the Rigid Barrier toe as shown. See Concrete Barrier, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-428, for details.*

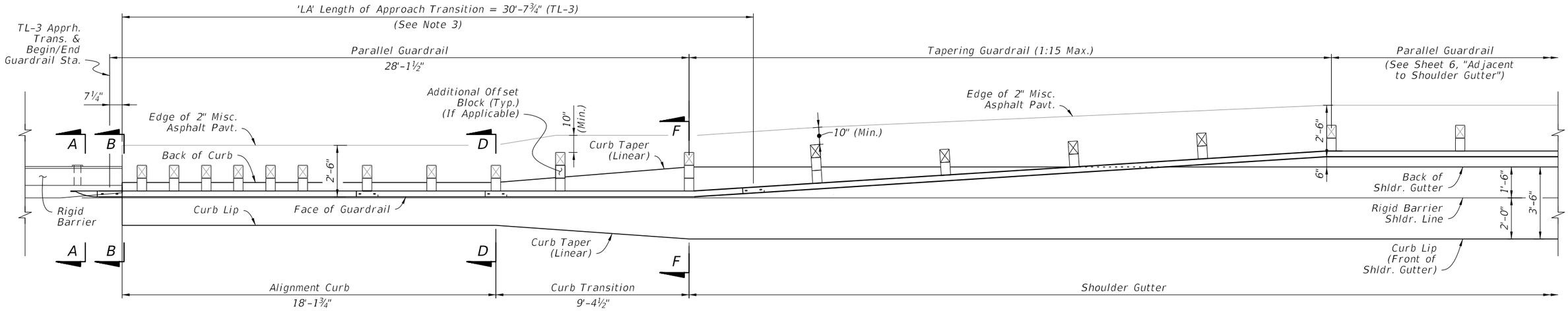
6. *OFFSET BLOCKS: For Thrie-Beam post locations within the Length of Approach Transition segment, use the Timber Offset Blocks with 1'-6" height shown on Sheet 5.*

   For the midspan of the Thrie-Beam Transition Panel and for all other W-Beam locations shown herein, use the W-Beam Offset Blocks with 1'-2" height.

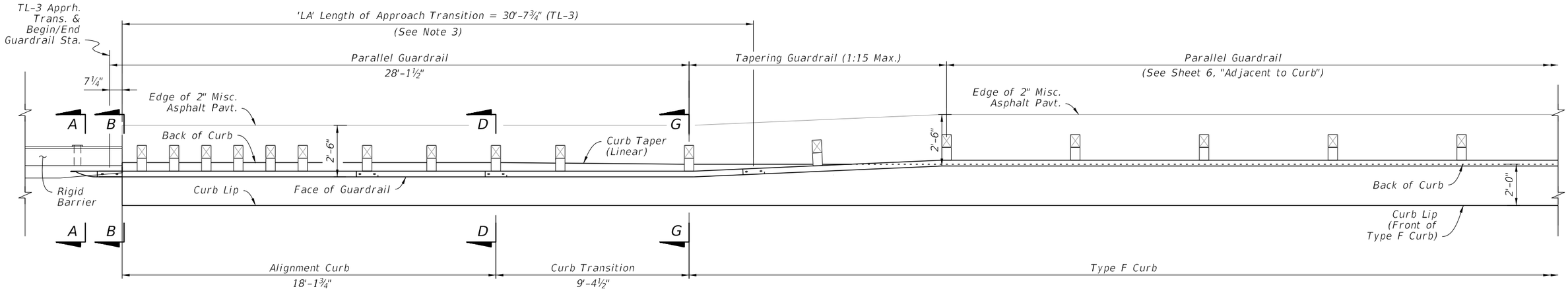
7. *OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is permitted over the length 'LA'.*

8. *GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Terminals, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.*

APPROACH TRANSITION CONNECTION TO RIGID BARRIER - GENERAL, TL-3



TL-3 APPROACH TRANSITION
WITH 'SHOULDER GUTTER'
CONNECTION - PLAN VIEW



TL-3 APPROACH TRANSITION
WITH 'TYPE F CURB'
CONNECTION - PLAN VIEW

NOTES:

1. GENERAL: See the applicable notes and details on Sheet 13.
2. SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
3. ELEVATION VIEW: For post and panel installation details within 'LA', see the elevation view on Sheet 13. The curb details will differ depending on curb option required.

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APPROACH TRANSITION CONNECTION TO RIGID BARRIER - GENERAL, TL-3 CURB CONNECTIONS

LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
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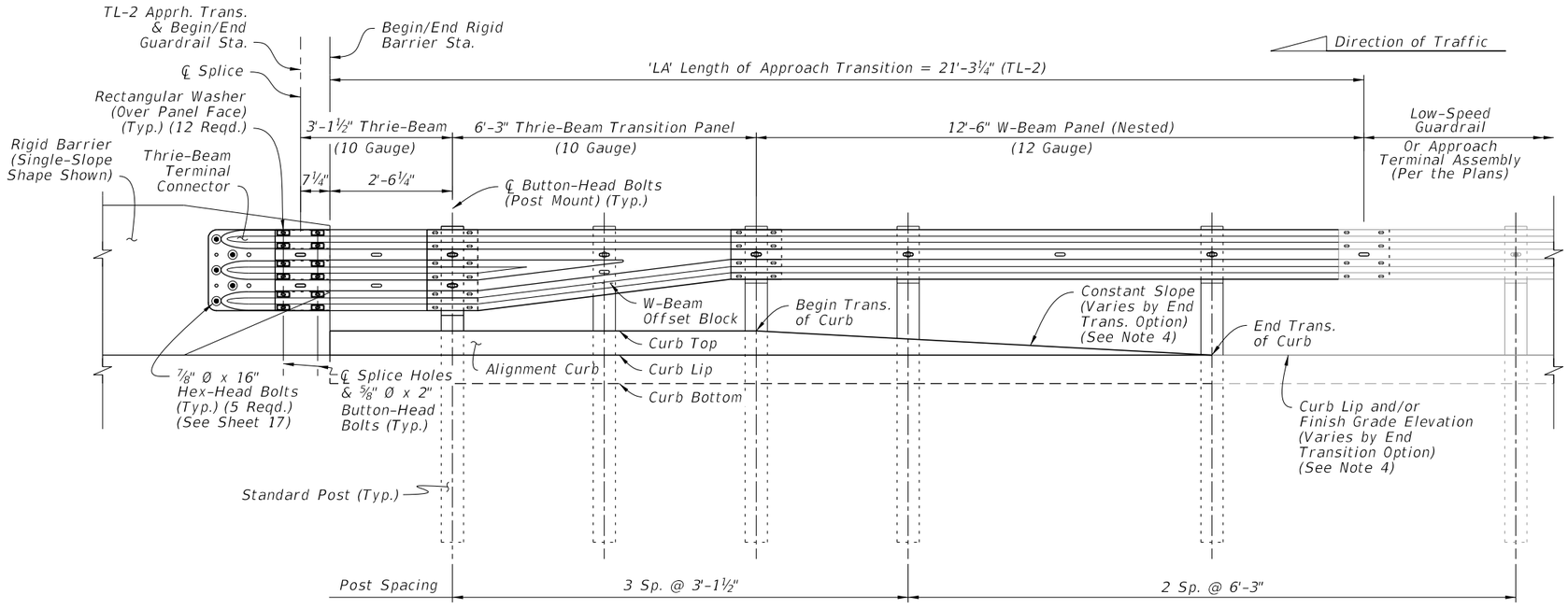
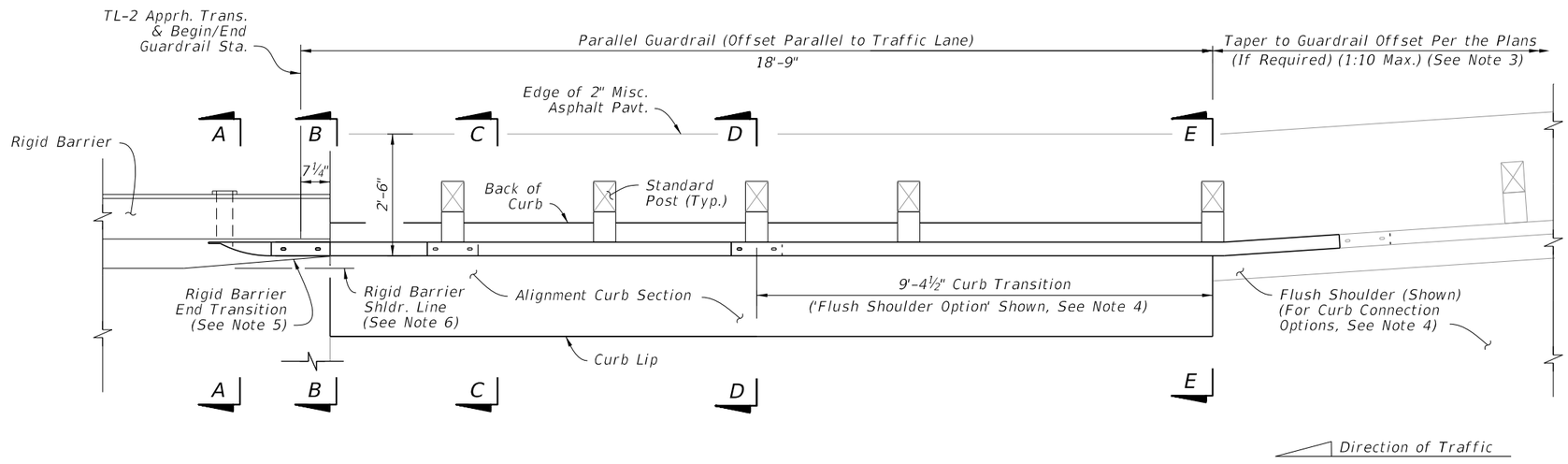


TL-2 APPROACH TRANSITION
INSTALLED ELEVATION



TL-2 APPROACH TRANSITION
INSTALLED PLAN

NOTES:

1. *INSTALLATION: Construct the Approach Transition segment where indicated in the plans. For example Layouts showing the Approach Transition's fit among other guardrail segments, see Sheet 19.*

   For existing bridge connection options, see Indexes 536-002, 521-404, and 521-405.

2. *SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.*

3. *GUARDRAIL TAPER: The connecting guardrail may require a different lateral offset if shown in the plans. At the location indicated herein, taper the guardrail to the connecting guardrail offset. If the adjacent guardrail segment has the same offset as the Approach Transition segment, then no taper is required.*

4. *END TRANSITION OF CURB OPTIONS: The Plan and Elevation views depict an example Curb Transition to Flush Shoulder from Section D-D to E-E, but this transition may require a different shape depending on the End Transition option shown in the plans (Either a 'Shoulder Gutter Option', 'Raised Curb Option', or 'Flush Shoulder Option'). See Sheet 16 for additional curb options and Sheet 17 for curb shape details.*

5. *RIGID BARRIER END TRANSITION: Taper the Rigid Barrier toe as shown. See Concrete Barrier, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-428, for details.*

6. *OFFSET: The required offset difference between the Face of Guardrail and Rigid Barrier Shoulder Line is considered negligible and may not be shown in the guardrail offset callouts in the plans. A consistent guardrail offset deviation of up to 4 inches outside of the Rigid Barrier Shoulder Line is permitted over the length 'LA'.*

7. *GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. Approach Terminals, Low-Speed Guardrail, or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.*

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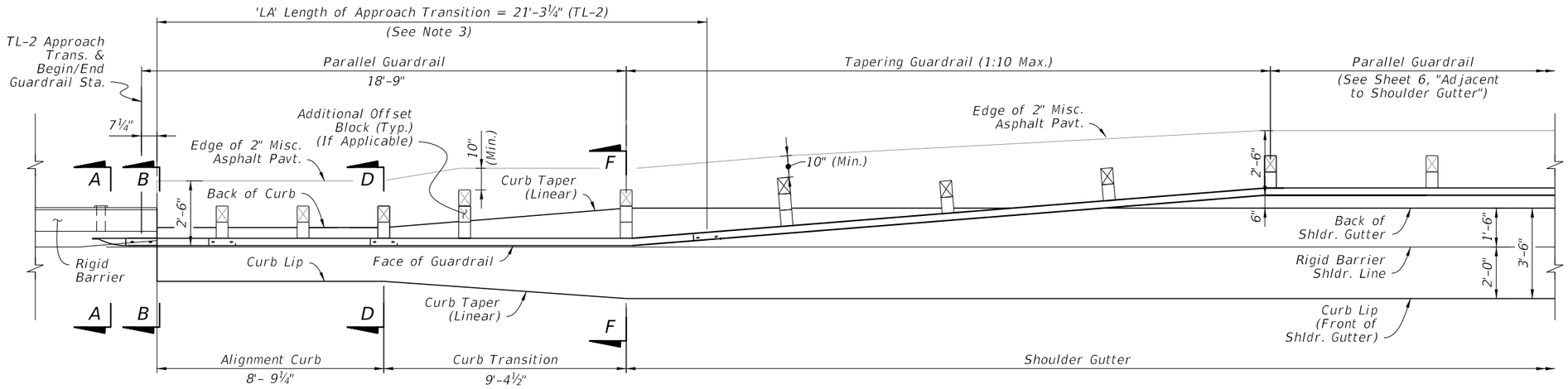
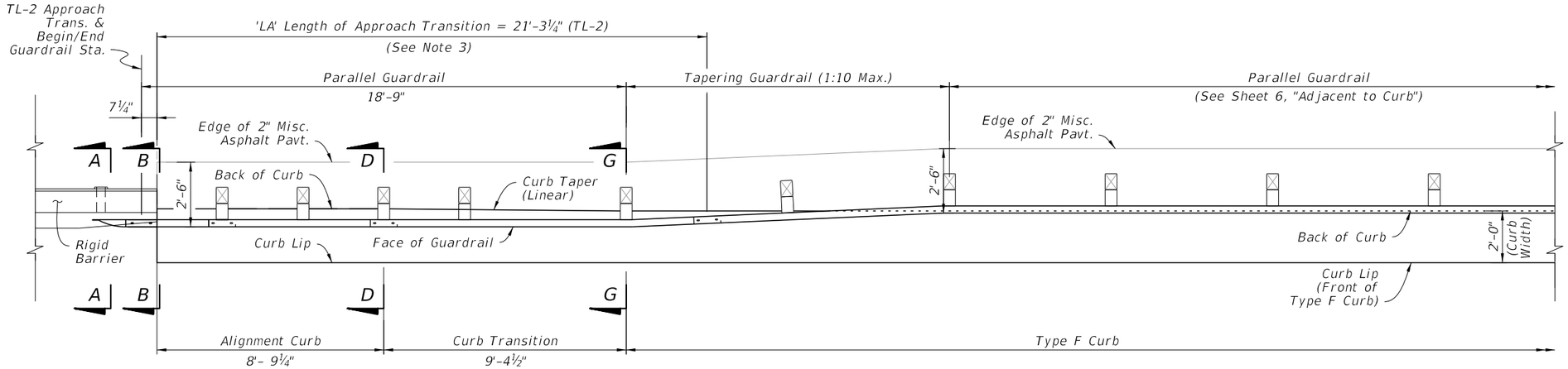
APPROACH TRANSITION CONNECTION TO RIGID BARRIER - LOW-SPEED, TL-2



TL-2 APPROACH TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW



TL-2 APPROACH TRANSITION WITH 'TYPE F CURB' CONNECTION - PLAN VIEW

NOTES:

1. GENERAL: See the applicable notes and details on Sheet 15.
2. SECTION VIEWS & DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.
3. ELEVATION VIEW: For post and panel installation details within 'LA', see the elevation view on Sheet 15. The curb details will differ depending on curb option required.

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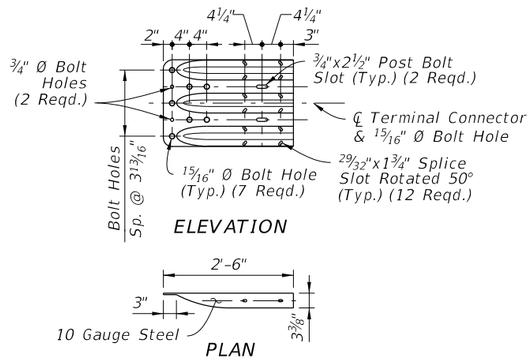
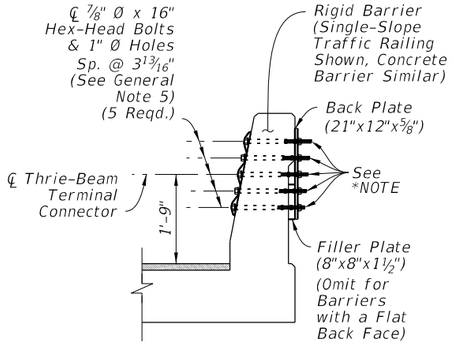
APPROACH TRANSITION CONNECTION TO RIGID BARRIER - LOW-SPEED, TL-2 CURB CONNECTIONS

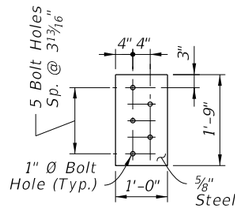


THRIE-BEAM TERMINAL CONNECTOR DETAIL

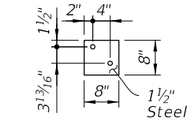


SECTION A-A RIGID BARRIER TERMINAL CONNECTOR MOUNT

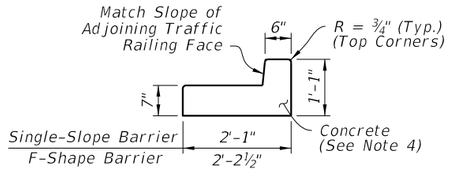
*NOTE: For locations within 4'-0" of a sidewalk or shared use path, trim bolts down to within ¼" of tightend nut. Deform exposed threads. File down sharp edges and burrs.



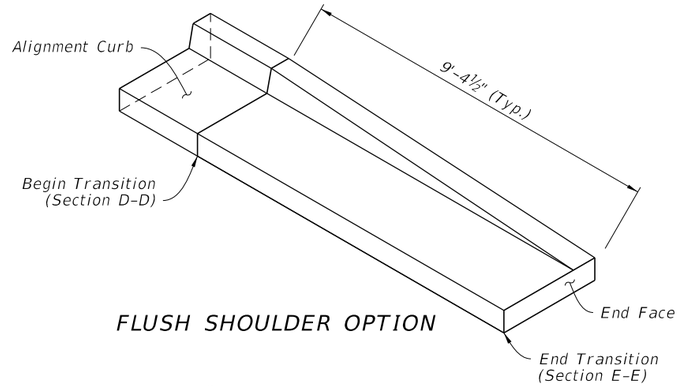
BACK PLATE



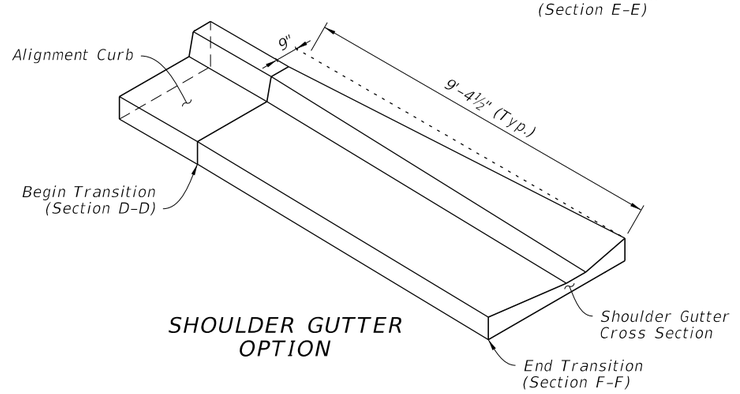
FILLER PLATE



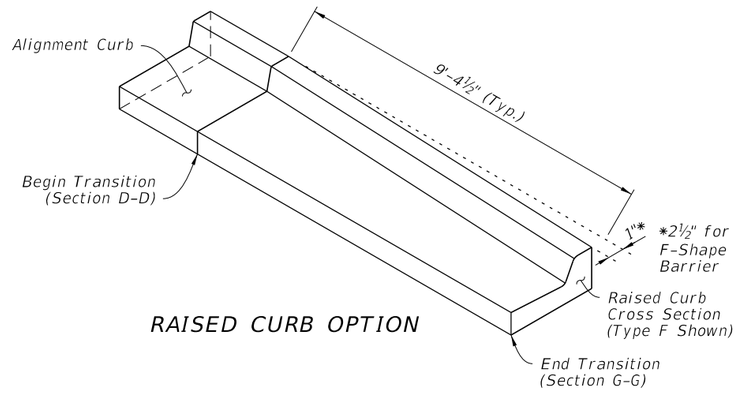
ALIGNMENT CURB SECTION



FLUSH SHOULDER OPTION

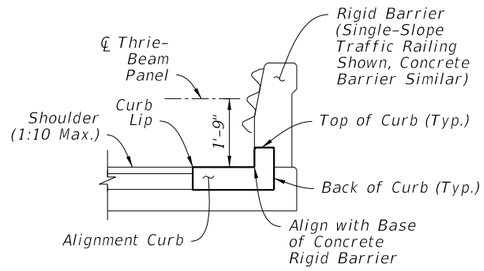


SHOULDER GUTTER OPTION

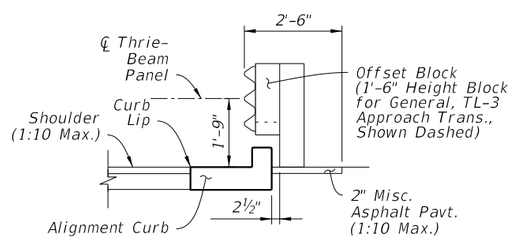


RAISED CURB OPTION

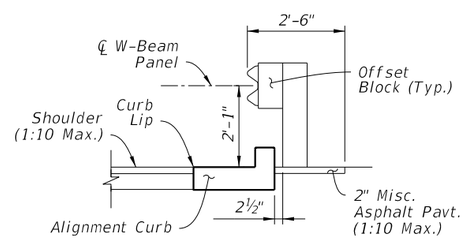
CURB TRANSITION ISOMETRIC VIEWS



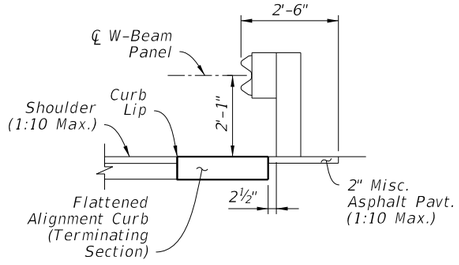
SECTION B-B BEGIN ALIGNMENT CURB (Mate to Rigid Barrier)



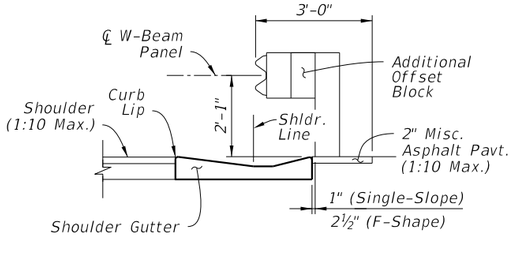
SECTION C-C ALIGNMENT CURB (Intermediate)



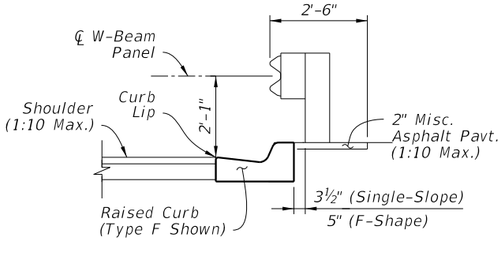
SECTION D-D BEGIN TRANSITION (End Alignment Curb)



SECTION E-E END TRANSITION FLUSH SHOULDER OPTION



SECTION F-F END TRANSITION SHOULDER GUTTER OPTION



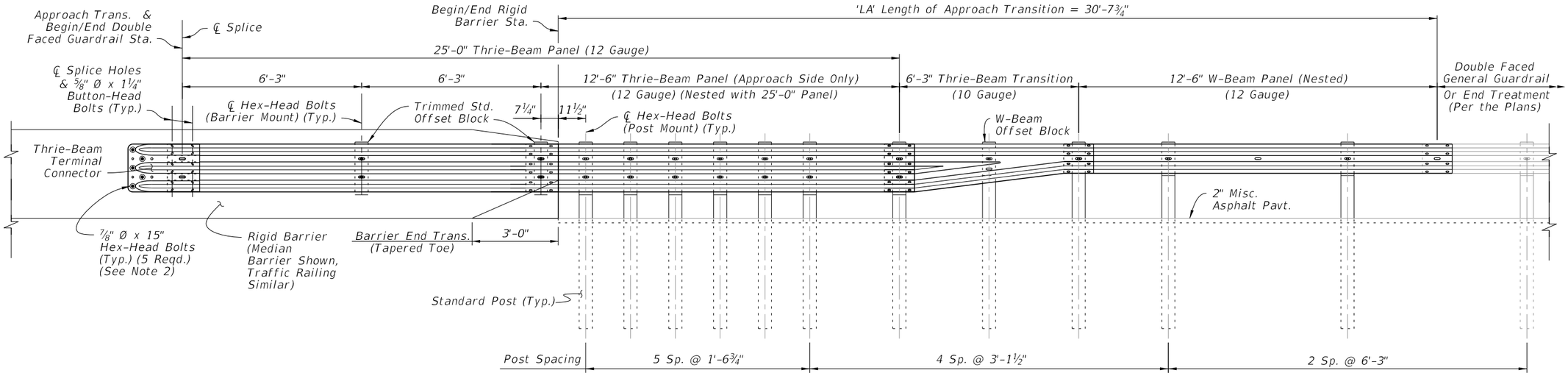
SECTION G-G END TRANSITION RAISED CURB OPTION

CURB TYPICAL SECTIONS

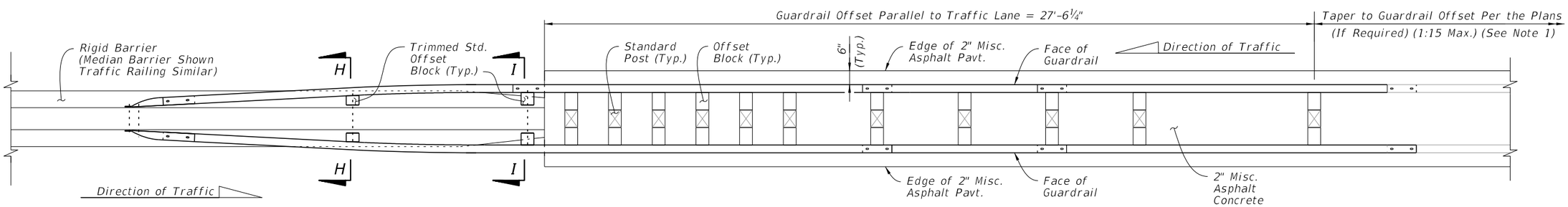
NOTES:

1. PLAN AND ELEVATION VIEWS: Work with Sheets 13 thru 16.
2. END TRANSITION OF CURB OPTION: Install one of the three End Transition types shown per Section E-E as indicated by the plans.
3. GRADING BEHIND POSTS: Place Slope Break a Min. 2'-0" behind the post, per Sheet 6.
4. MATERIALS & CONSTRUCTION: Construct the concrete Aligning Curb and Curb transition in accordance with Specification 520. Use steel Plates and Thrie-Beam Terminal Connectors in accordance with Specification 967.

APPROACH TRANSITION CONNECTION - DETAILS



TL-3 DOUBLE FACED APPROACH TRANSITION
INSTALLED ELEVATION



TL-3 DOUBLE FACED APPROACH TRANSITION
INSTALLED PLAN

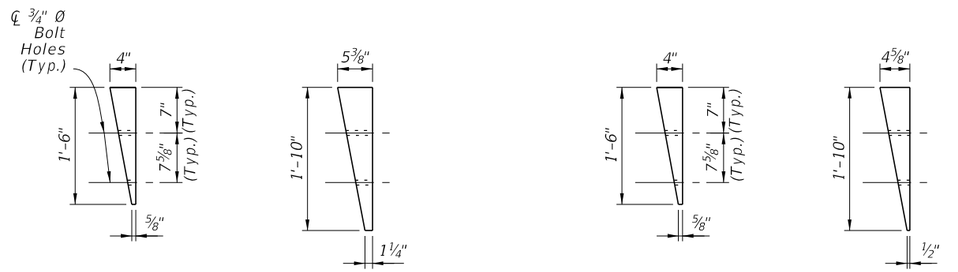
NOTES:

1. INSTALLATION: Construct the Approach Transition segment where indicated in the plans. The required offset of the connecting adjacent guardrail is shown in the plans.

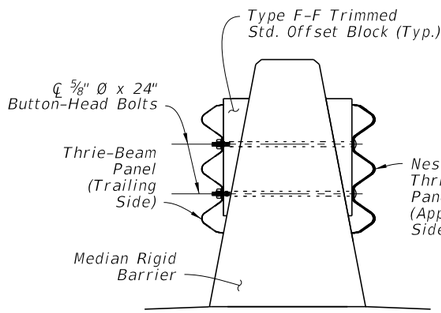
   The Layout given on Sheet 20 provides a basic scheme for connections to adjacent guardrail, where a taper to a differing guardrail offset may be required. If the adjacent guardrail has the same offset as the Approach Transition segment, then no taper is required.

2. THRIE-BEAM TERMINAL CONNECTOR: See Sheet 17 for Details. The installed bolt's threaded portion is not permitted to extend beyond 3#4" from the face of the nut; trim the threaded portion as needed and galvanize in accordance with Specification 562.

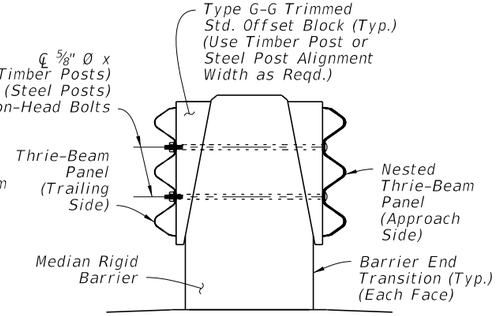
3. GENERAL GUARDRAIL: General Guardrail typically includes Panels and Post Spacing as shown on Sheet 2, including parallel and tapered segments. End Treatments or Reduced Post Spacing Guardrail segments may be substituted for the General Guardrail shown herein if indicated in the plans.



TYPE H-H SECTION | TYPE I-I SECTION | TYPE H-H SECTION | TYPE I-I SECTION



SECTION H-H



SECTION I-I

TRIMMED STD. OFFSET BLOCKS
TIMBER POST ALIGNMENT WIDTH

TRIMMED STD. OFFSET BLOCKS
STEEL POST ALIGNMENT WIDTH

APPROACH TRANSITION CONNECTION TO RIGID BARRIER WITH DOUBLE FACED GUARDRAIL

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LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
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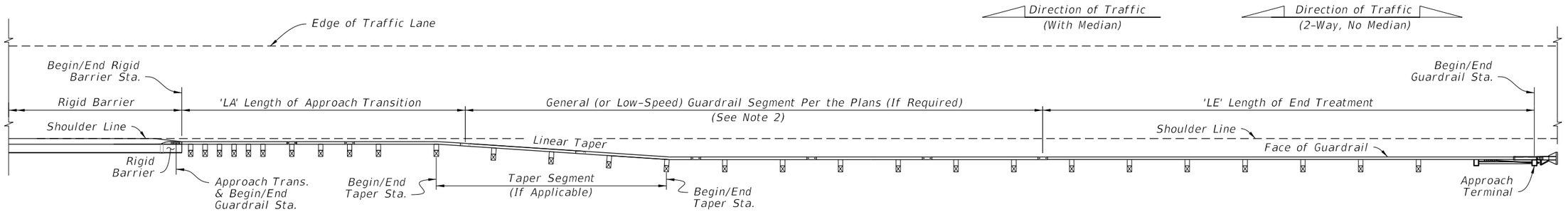
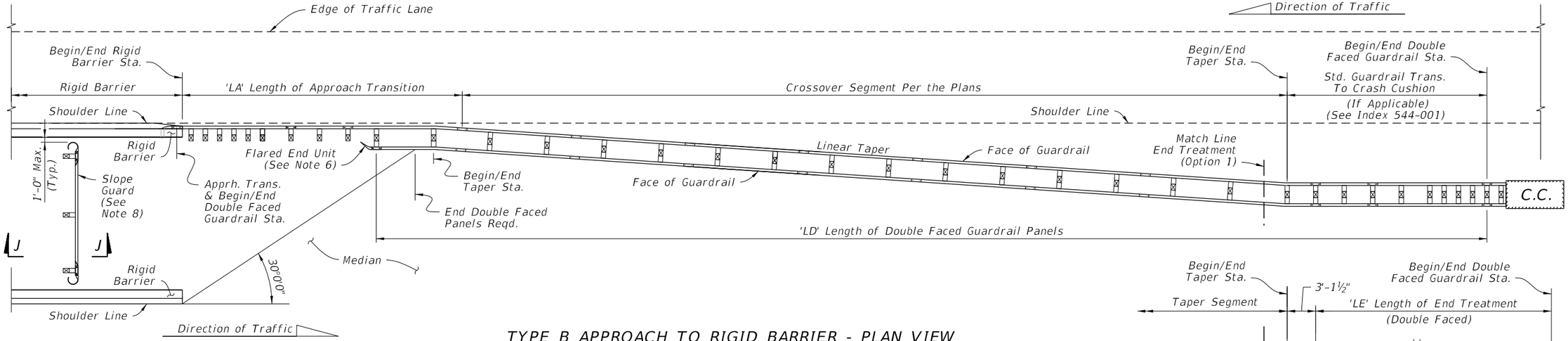
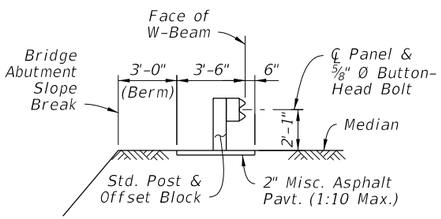


TYPE A APPROACH TO RIGID BARRIER - PLAN VIEW
MEDIAN OR OUTSIDE SHOULDERS
(Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)



TYPE B APPROACH TO RIGID BARRIER - PLAN VIEW
CROSSOVER GUARDRAIL FOR MEDIAN SHOULDERS ONLY
DUAL BRIDGE APPROACH CONFIGURATION
(Mirror Horiz. and Vert. for Opposite Direction)



SECTION J-J
BRIDGE ABUTMENT
SLOPE GUARD
(Between Bridges)

NOTES:

1. *INSTALLATION: The Plan Views shown are schematic only, showing example geometry for connecting guardrail segments including taper locations and Double Faced Guardrail requirements as applicable. Work this Sheet with the plans, where stationing and offsets for Begin/End Guardrail, Begin/End Rigid Barrier, and Begin/End Taper are specified. For existing bridge layouts, see Index 536-002, 521-404, and 521-405.*

2. *GENERAL (OR LOW-SPEED) GUARDRAIL SEGMENT: Construct this segment if shown in the plans. For the case where this segment's offset differs from the Approach Transition offset, linearly taper the guardrail between the Begin/End Taper Stations and offsets as specified in the plans.*

   For the shortest length case of a direct connection between the End Treatment and the Approach Transition, this segment may be omitted as shown in the plans.

3. *LENGTH OF APPROACH TRANSITION 'LA': Install the applicable Approach Transition as shown per Sheets 13 thru 16, where called for in the plans.*

4. *LENGTH OF END TREATMENT 'LE': Install the Approach Terminal End Treatment as shown per Sheet 7 or 8, where called for in the plans. Use the corresponding APL drawings for construction details.*

5. *CROSSOVER GUARDRAIL (FOR TYPE B APPROACH): Install the Crossover Segment tapering linearly from the Begin Taper Sta. and offset to the End Taper Sta. and offset as specified in the plans.*

6. *LENGTH OF DOUBLE FACED GUARDRAIL PANELS, 'LD' (FOR TYPE B APPROACH): Terminate the Double Faced Guardrail panels as shown (based upon the 30° line measured from the hazard on the opposite side of the median). Extend the panel segment longer than the dimension 'LD' as needed for the Panel's end Bolt Slot to align with a post Bolt hole.*

   Install a Flared End Unit where shown, as defined on Sheet 9.

7. *END TREATMENT OPTIONS (FOR TYPE B & C APPROACH): For Double Faced applications, use either a Double Faced Approach Terminal Assembly per Sheet 8 or a Crash Cushion per Index 544-001. For either Option, meet the 1:10 adjacent grading requirements for Approach Terminals as shown on Sheet 8.*

8. *SLOPE GUARD: Where indicated in the plans, install a Guardrail segment between bridge approaches and offset from the bridge abutment's Slope Break as shown. Install posts at the end bolt slots of the panel system. Use post spacing of either 3'-1½" or 6'-3", as needed to correctly fit system between barriers. The system may also be lengthened to fit by installing two Rounded End Units as defined on Sheet 9.*

LAYOUT TO RIGID BARRIER - APPROACH ENDS

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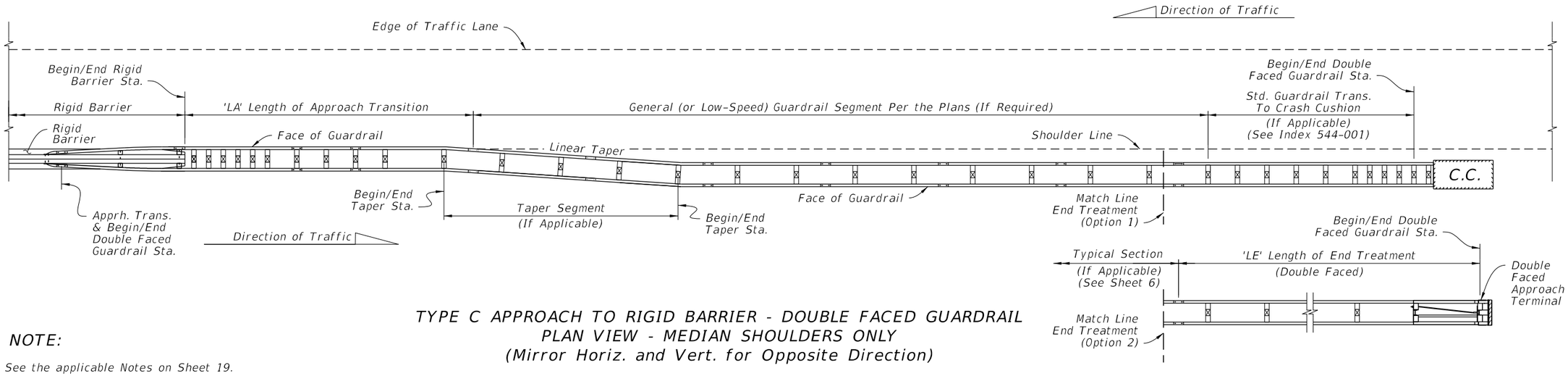
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/23			FY 2024-25 STANDARD PLANS	GUARDRAIL	536-001	19 of 25

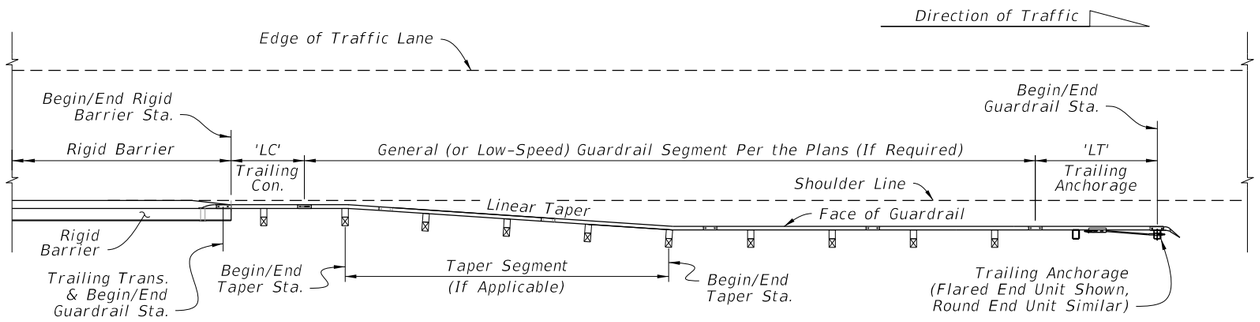


TYPE C APPROACH TO RIGID BARRIER - DOUBLE FACED GUARDRAIL
PLAN VIEW - MEDIAN SHOULDERS ONLY
(Mirror Horiz. and Vert. for Opposite Direction)

NOTE:

See the applicable Notes on Sheet 19.

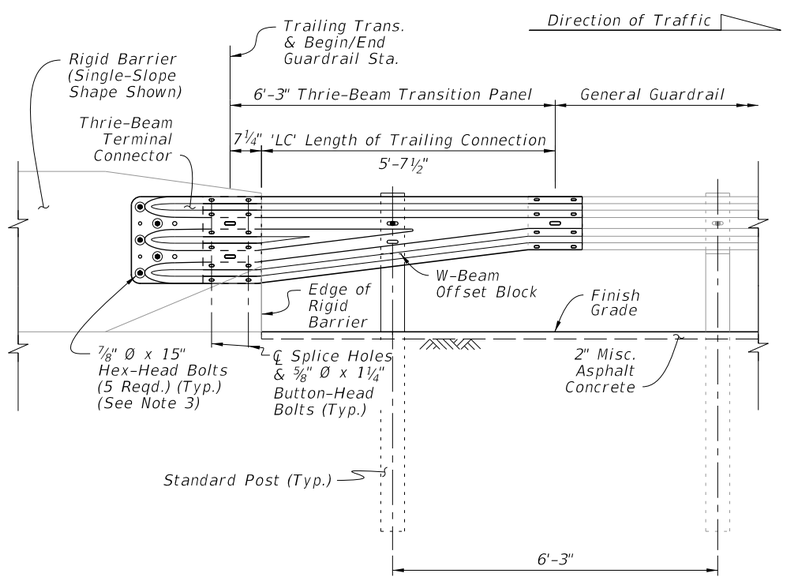
LAYOUT TO RIGID BARRIER - APPROACH ENDS WITH DOUBLE FACED GUARDRAIL



TYPE D TRAILING CONNECTION FROM RIGID BARRIER
PLAN VIEW - MEDIAN OR OUTSIDE SHOULDER
(Mirror Horiz. and/or Vert. for Opposite Direction and/or Side of Road)

NOTES:

1. *See the applicable Notes on Sheet 19. For connections with curb options, see sheet 21.*
2. *LENGTH OF TRAILING ANCHORAGE, 'LT': Install the Trailing Anchorage as shown on Sheet 9, where called for in the plans.*
3. *THRIE-BEAM TERMINAL CONNECTOR: Install connector and bolts as shown on Sheet 17.*
4. *RIGID BARRIER SINGLE SLOPE END FACE: See Concrete Barrier Wall, Index 521-001, and Traffic Railing, Indexes 521-422 and 521-423, for details.*



TRAILING END TRANSITION CONNECTION
TO RIGID BARRIER - INSTALLED ELEVATION

LAYOUT TO RIGID BARRIER - TRAILING ENDS

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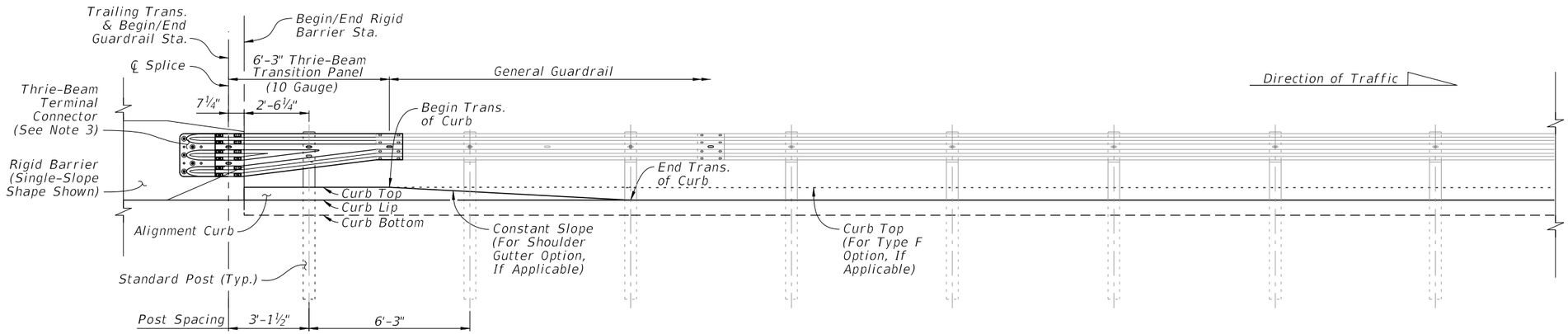
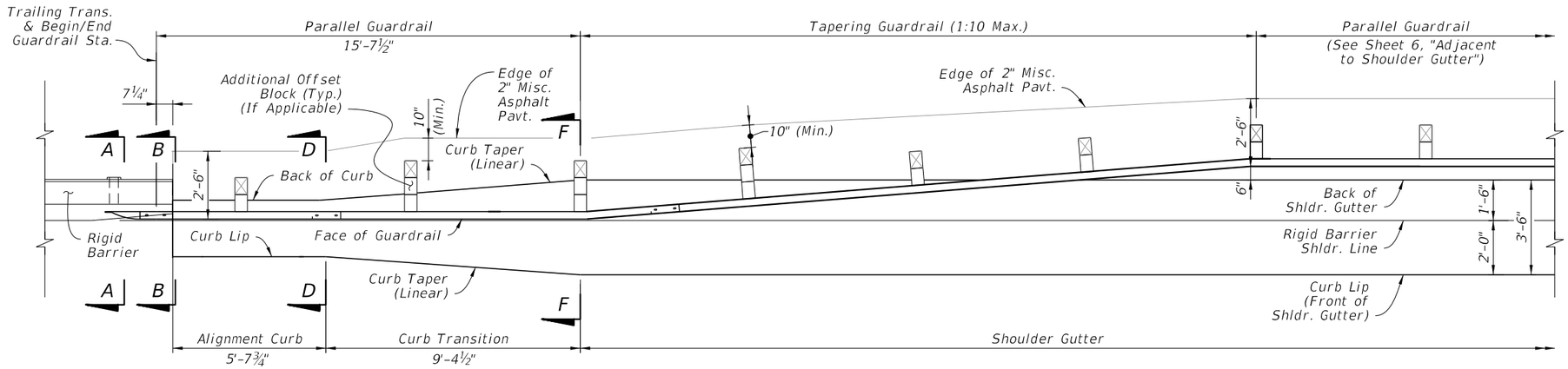
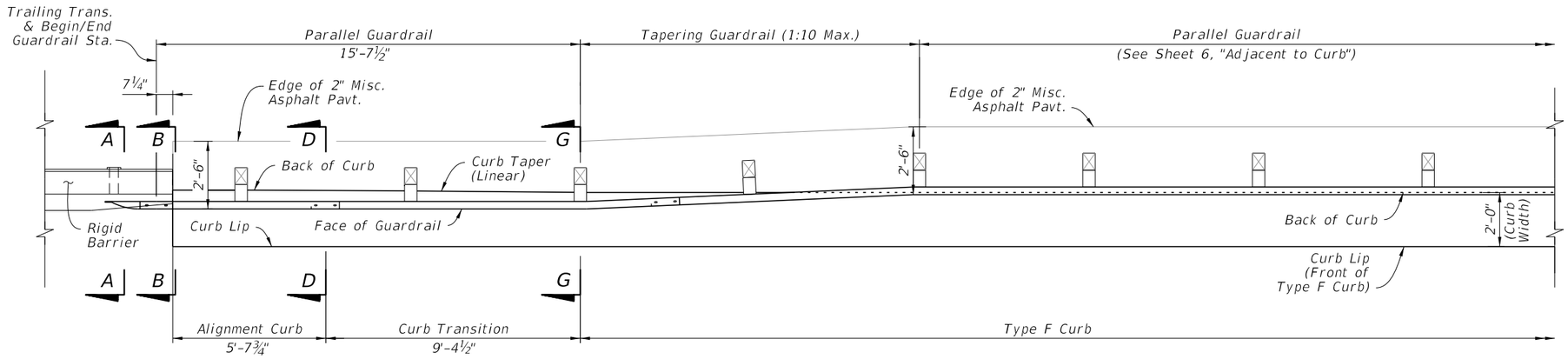
LAST REVISION	REVISION	DESCRIPTION:	FY 2024-25 STANDARD PLANS	GUARDRAIL	INDEX	SHEET
11/01/23					536-001	20 of 25



INSTALLED ELEVATION



TRAILING END TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW



TRAILING END TRANSITION WITH 'TYPE F CURB' CONNECTION - PLAN VIEW

NOTES:

1. *GENERAL: See the applicable notes and details on Sheet 15.*
2. *SECTION VIEWS AND DETAILS: For cross sections and details, including the barrier mounting hardware, curb transition, adjacent grading, and installation dimensions, see Sheet 17.*
3. *RIGID BARRIER CONNECTION: For additional connection details, see Sheet 20.*

TRAILING END TRANSITION CONNECTION TO RIGID BARRIER - CURB CONNECTIONS

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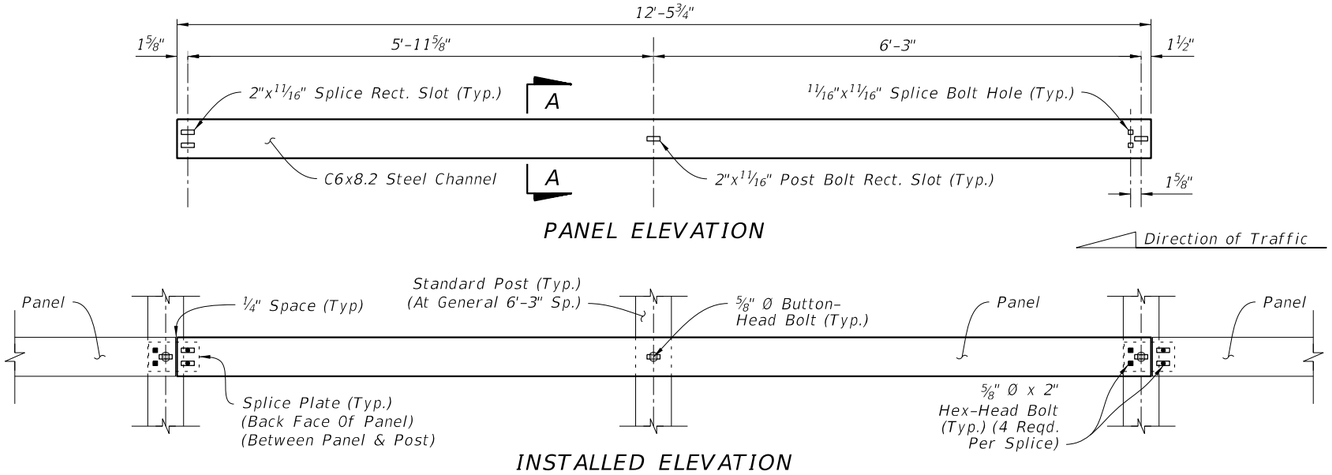
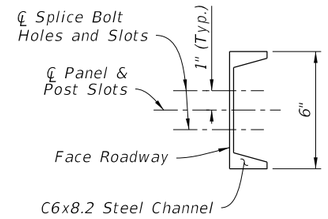
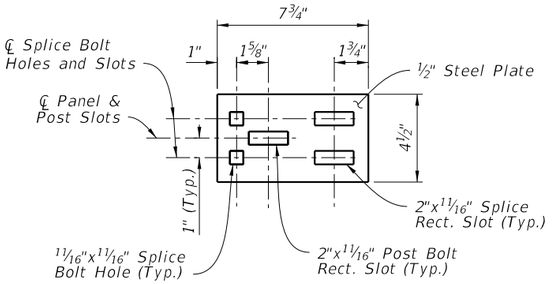


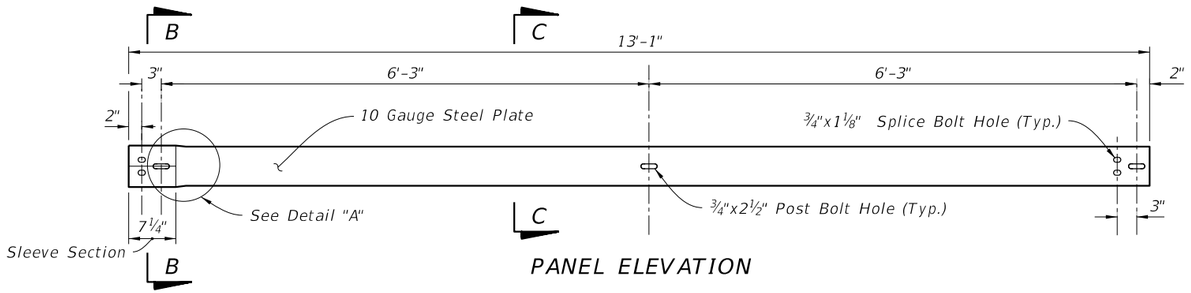


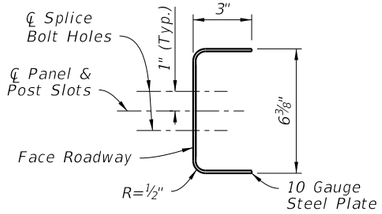
SECTION A-A
(Panel Typical)



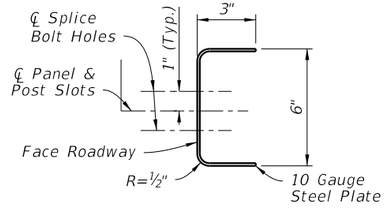
SPLICE PLATE
ELEVATION

CHANNEL SECTION RUB RAIL

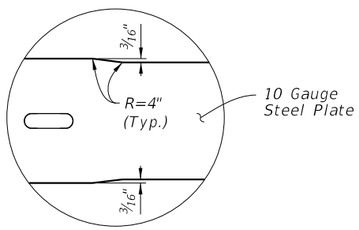




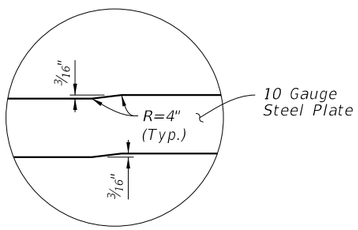
SECTION B-B
(Panel Sleeve End)



SECTION C-C
(Panel Typical)

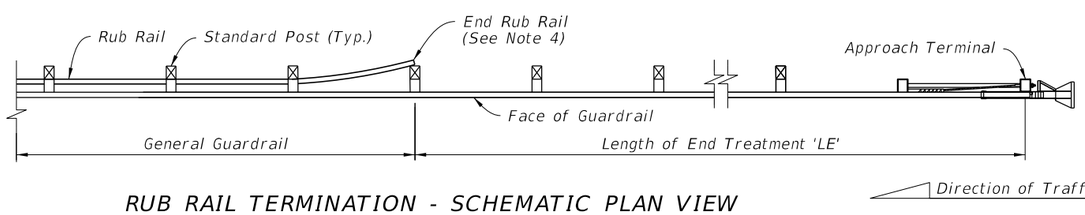


DETAIL "A"
(Sleeve Transition Elevation)



DETAIL "B"
(Sleeve Transition Plan)

BENT-PLATE PANEL RUB RAIL



RUB RAIL TERMINATION - SCHEMATIC PLAN VIEW

NOTES:

1. GENERAL: Install Rub Rail where called for in the plans. Position as shown on Sheet 6 unless otherwise shown in the plans. Install the backs of Rub Rail panels flush against Standard Posts. Either of the Channel Section or Bent-Plate Panel Rub Rail options may be used (consistent type per project). Where Double Sided Rub Rail is called for, thread the Button-Head Bolt through the Post Bolt Hole(s) and the panels on either side, and tighten the nut against the face of the panel farthest from adjacent traffic lanes. Trim the bolt's threaded portion in accordance with Note 4 on Sheet 5.
2. MOUNTING HEIGHT: Mount to the Standard Post's Rub Rail Bolt Hole as defined on Sheet 5.
3. MATERIALS: Use steel components in accordance with Specification 967.
4. END RUB RAIL: For Single Sided Rub Rail, terminate the run of Rub Rail by bending the panel behind the post and securing in place (as shown). For Double Sided Rub Rail, terminate the runs of Rub Rail on their respective front face of the post and secure with the typical Button-Head bolt.

RUB RAIL DETAILS

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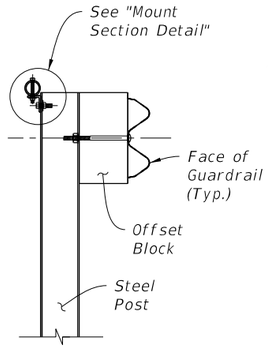
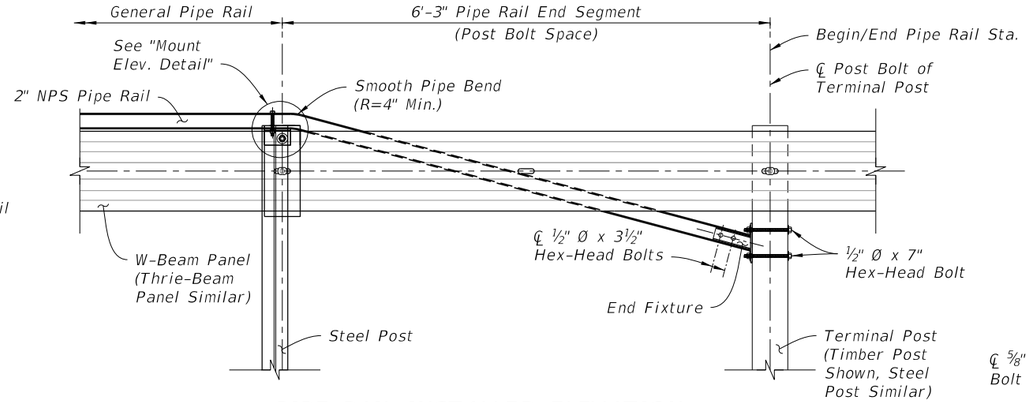
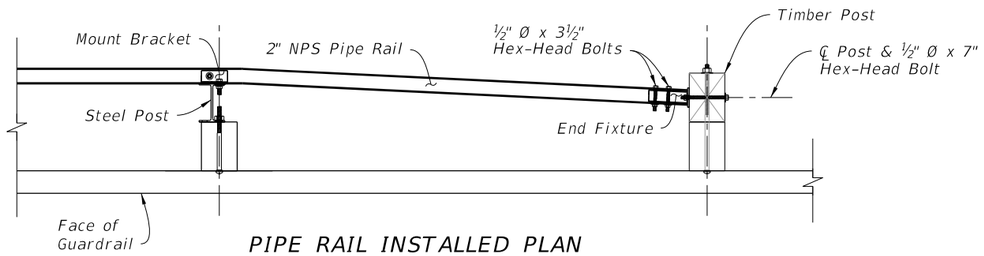


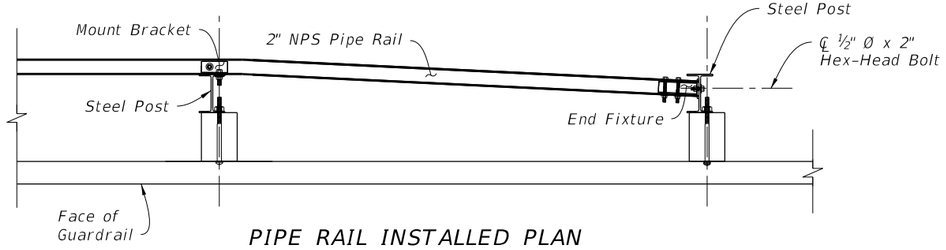
GENERAL PIPE RAIL SECTION



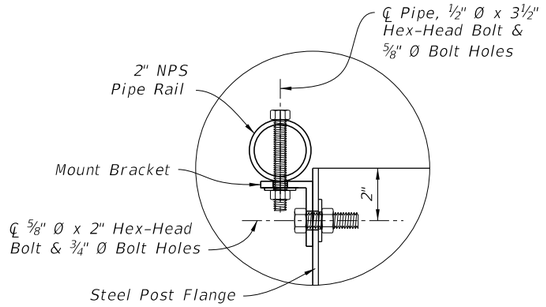
PIPE RAIL INSTALLED ELEVATION
(End Segment Shown)



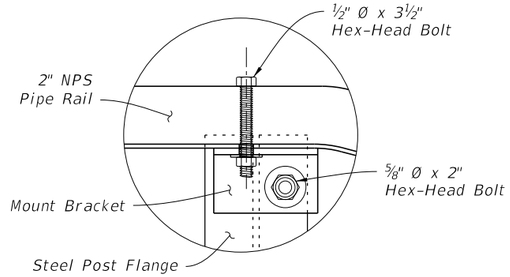
PIPE RAIL INSTALLED PLAN
END AT TIMBER POST OPTION



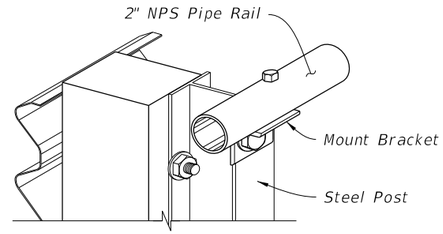
PIPE RAIL INSTALLED PLAN
END AT STEEL POST OPTION



MOUNT SECTION DETAIL



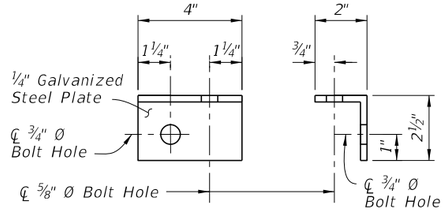
MOUNT ELEVATION DETAIL
(Back View - Mirrored)



MOUNT ISOMETRIC
CUT-AWAY

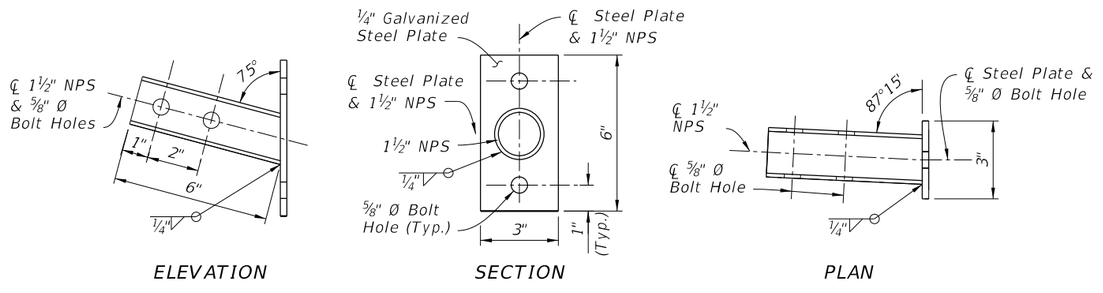
NOTES:

1. GENERAL: Install General Pipe Rail where indicated in the plans or when existing sidewalks or shared use paths are located less than 4'-0" from the back of Steel Posts as shown on Sheet 6.
2. PIPE RAIL END SEGMENTS: Place End Segments on both ends of General Pipe Rail runs, with End Fixtures mounted to Terminal Posts located outside of Approach Terminal Assembly ('LE'), Trailing Anchorage Assembly ('LT'), and Approach Transition ('LA') segments.
3. MATERIALS: Use steel brackets, fixtures, and pipes in accordance with Specification 967.
4. RAIL SPLICES: Install Rail Splices to join pieces of 2" NPS Pipe Rail into a continuous system. Place splices as needed, at a spacing of 18'-0" or greater. Orient the head of bolt on the top of the pipe.



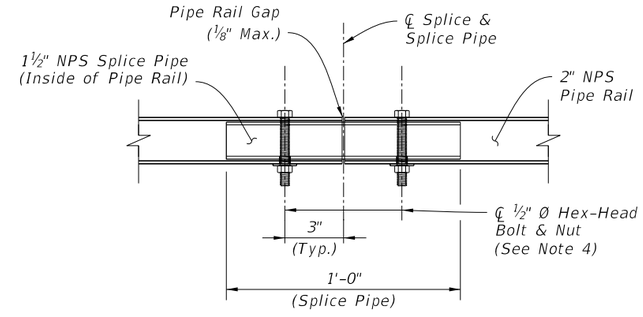
ELEVATION SECTION

MOUNT BRACKET DETAIL



ELEVATION SECTION PLAN

END FIXTURE DETAIL



RAIL SPLICE DETAIL

PEDESTRIAN SAFETY TREATMENT - PIPE RAIL

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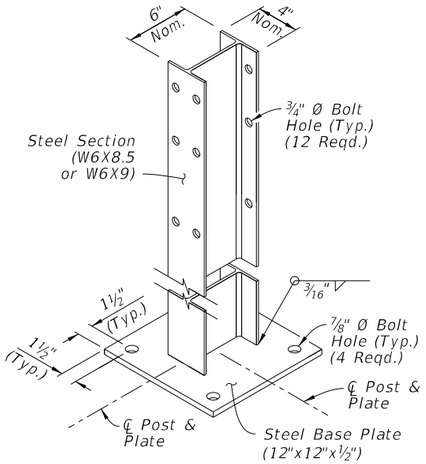
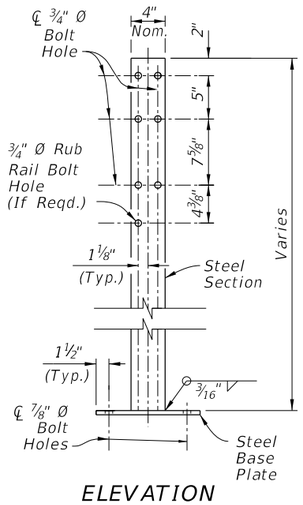
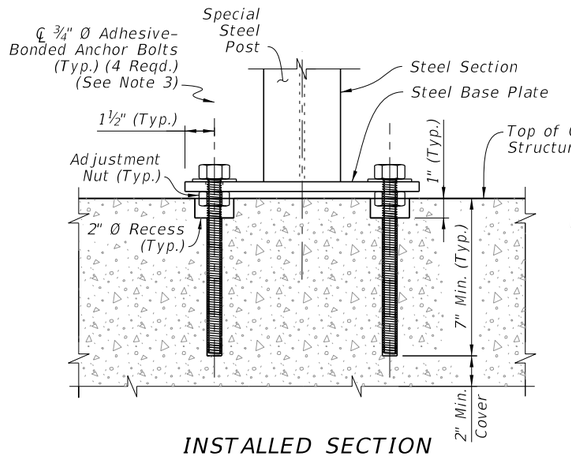


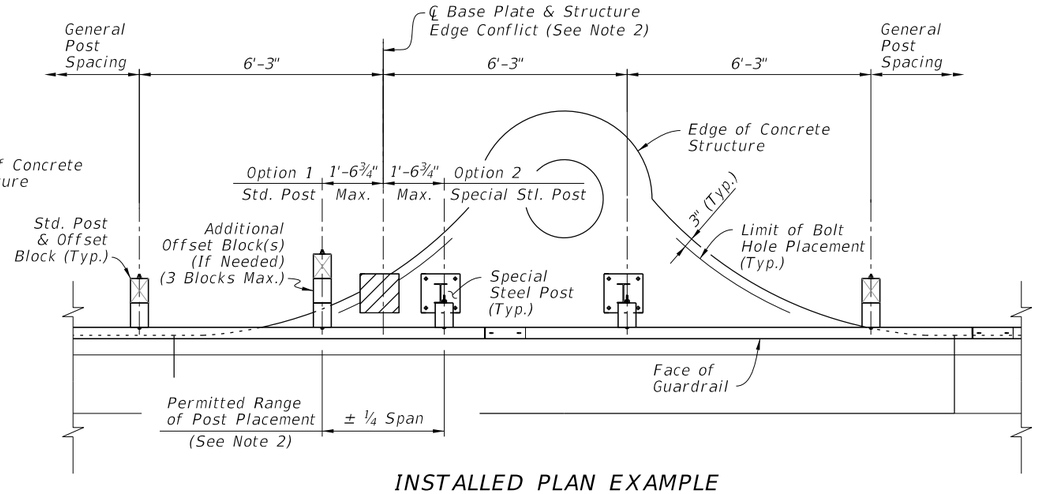
ISOMETRIC VIEW



ELEVATION



INSTALLED SECTION
(Option 2, Special Post)



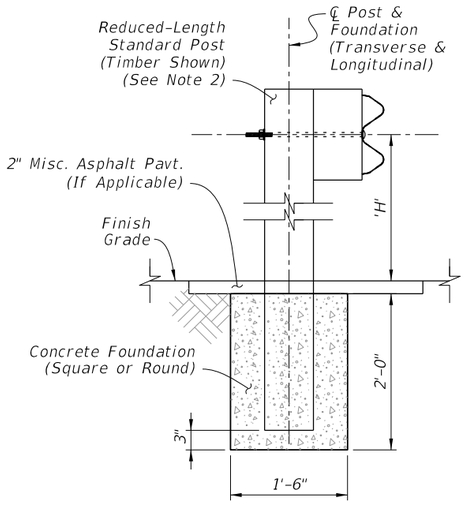
INSTALLED PLAN EXAMPLE
(Curb Inlet Top Type 2 Shown)

SPECIAL STEEL POST STRUCTURE MOUNTING

NOTES:

1. *INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) located atop culverts, inlets, pier footings, or similar concrete structures, a Special Steel Post may be substituted for a Standard Post. Install where shown in the plans and/or as-needed, in accordance with Specification 536.*
2. *EDGE CONFLICT: When a required post location causes an Edge Conflict with the structure, where the Steel Base Plate is not located entirely on the structure at least 3" from the Edge of Concrete, the longitudinal post location may be altered by up to 1'-6¾" (Quarter Span) from the original required spacing location to prevent the Edge Conflict. With the post location adjusted, use a Std. Post mounted in soil (Option 1) or a Special Steel Post with its Base Plate mounted entirely on the structure (Option 2). Maintain the original required spacing locations upstream and downstream of the structure.*
3. *BASE PLATE MOUNT: Install Special Steel Posts as shown using steel Adhesive-Bonded Anchor Bolts in accordance with Specification 536. Use ¾" Hex-Head Bolts for structures less than 9" deep as defined in the Specification.*
4. *PANEL MOUNT TO ADJUSTED POST: Punch additional ¾"x2½" Post Bolt Slot(s) in the W-Beam or Thrie-Beam Panel only where needed to mount the panel to a post in an adjusted location. Meet the Panel Post Bolt Slots requirements of Specification 536.*
5. *MATERIALS: Use steel base plates in accordance with Specification 536.*

SPECIAL STEEL POST FOR CONCRETE STRUCTURE MOUNT

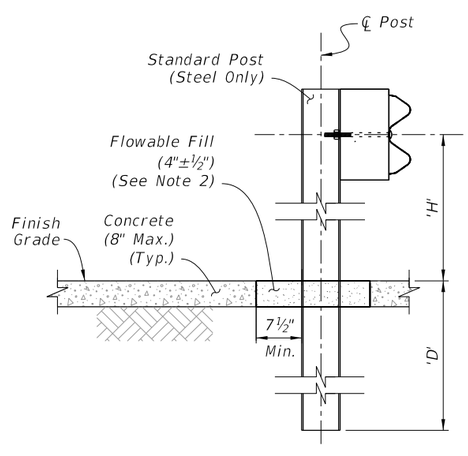


INSTALLED SECTION

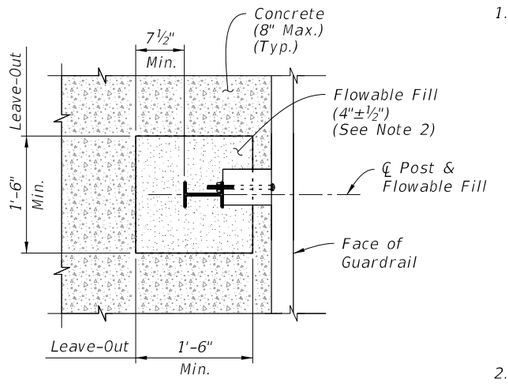
NOTES:

1. *INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) conflicting with underground utilities or other underground obstructions, an Encased Post may be used where a 2'-0" depth will avoid the conflict. Install where shown in the plans and/or as-needed, in accordance with Specification 536.*
2. *REDUCED-LENGTH STANDARD POST: Use a Standard Post with reduced Length such that the Panel Height 'H' is maintained while the post bottom terminates 3" from the bottom of the Concrete Foundation. Typically, the Post Length 'L' is 4'-7" for W-Beam Guardrail.*
3. *FOUNDATION: Use non-reinforced Class NS Concrete material in accordance with Specification 347. After casting the concrete, ensure the surrounding soil material is completely backfilled and tamped to provide full passive resistance.*
4. *LIMIT: Encased Posts are not permitted for more than 3 consecutive posts.*

ENCASED POST FOR SHALLOW MOUNT



INSTALLED SECTION



INSTALLED PLAN

NOTES:

1. *INSTALLATION: When the construction of Guardrail at the required post spacing results in post(s) placed within a concrete surface (typically a sidewalk), use a Frangible Leave-Out around the post base as shown. Install where shown in the plans and/or as-needed, in accordance with Specification 536.*

   Use Standard steel posts. Timber posts are not permitted for frangible leave-outs.

   For the required 1'-6" x 1'-6" Leave-Out, smoothly cut the existing concrete surface or form-up the square shape when an application has new surrounding concrete.

   Ensure Flowable Fill surface is smooth and even with the adjacent concrete surface.
2. *MATERIALS: Use Non-Excavatable Flowable Fill in accordance with Specification 121, not to exceed 150 psi.*

FRANGIBLE LEAVE-OUT FOR CONCRETE SURFACE MOUNT

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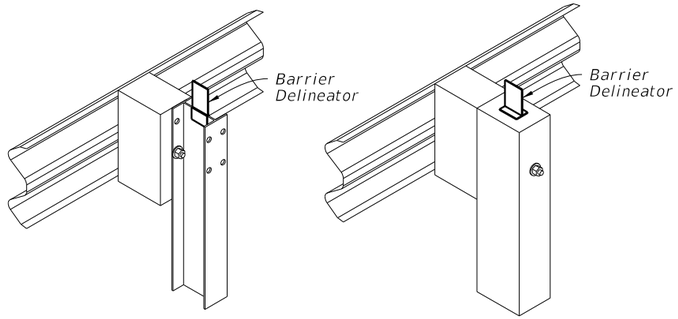
NOTES:

1. INSTALLATION: Install Barrier Delineators as shown in accordance with the plans, with Specifications 536 and 705, and with the manufacturer's design as approved on the APL.
2. MATERIALS: Use materials of the size and type defined for Barrier Delineators in Specification 993.
3. COLOR: Use either white or yellow retroreflective sheeting to match the color of the nearest lane's edgeline.
4. MOUNT LOCATIONS: Mount Barrier Delineators atop posts as shown, starting with Post (3) of Approach Terminals and incrementally increasing spacing towards the downstream direction. Install the Barrier Delineators at the following spacing:

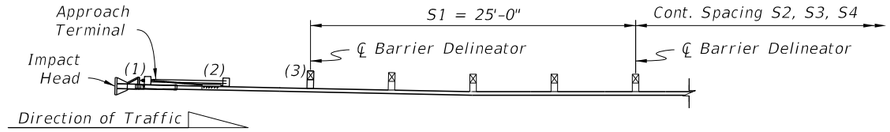
   S1 = 25' x 1 Space
   S2 = 50' x 1 Space
   S3 = 75' x 1 Space
   S4 = 100' x for the Remaining Run

   Additionally, place a Barrier Delineator on Post (2) of the Trailing Anchorage or on the post nearest the Rigid Barrier.
5. MEDIAN GUARDRAIL: Install retroreflective sheeting on both sides of the barrier delineator for Guardrail on medians.



STEEL POSTS TIMBER POSTS

MOUNT LOCATION - ISOMETRIC VIEWS



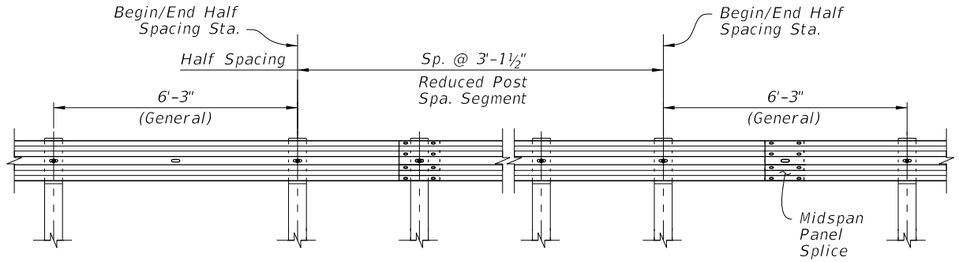
MOUNT LOCATION - PLAN VIEW

BARRIER DELINEATORS

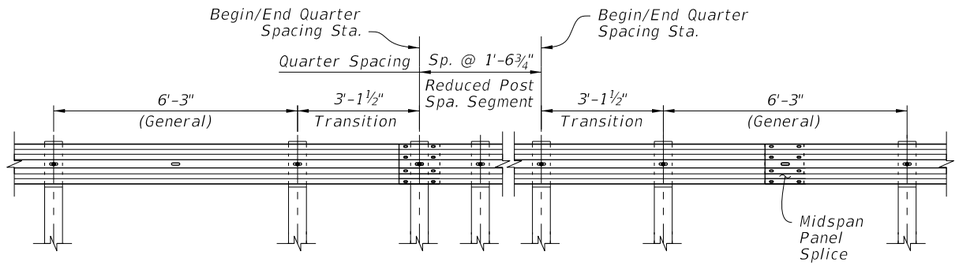
NOTES:

1. INSTALLATION: Work these details with the plans, where Stationing for Begin/End Half Spacing and Begin/End Quarter Spacing are indicated if required.

   Where the Begin/End Stations indicated in the plans do not correspond exactly to post locations in construction, extend the Reduced Post Spacing segment to the nearest post(s) before the Begin Station and/or after the End Station called for.
2. PANEL SPLICES: Midspan Panel Splices are not required in Transition and Reduced Post Spacing segments, however they are required for General segments. To place midspan splices in General segments, use one Non-General panel length (9'-4½" or 15'-7½") or add an additional Transition spaced post where required.
3. LOW-SPEED GUARDRAIL: For Reduced Post Spacing with Low-Speed Guardrail (12'-6" post spacing), the Reduced Spacing pattern requires a 6'-3" space between the 12'-6" and 3'-1½" spaces.
4. PANEL POST BOLT SLOTS: For Quarter Spacing configurations, punch additional ¾"x2½" Post Bolt Slots in the panels only where required for mounting and in accordance with Specification 536.

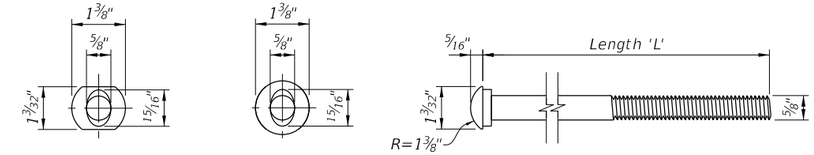


DETAIL 'S' - HALF SPACING ELEVATION
(AS REQD. PER THE PLANS)



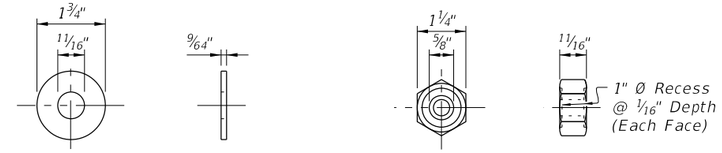
DETAIL 'S' - QUARTER SPACING ELEVATION
(AS REQD. PER THE PLANS)

REDUCED POST SPACING FOR HAZARDS



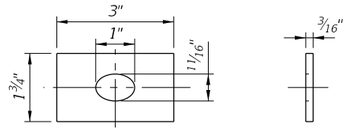
ELEVATION OPTION 1 ELEVATION OPTION 2 PROFILE (Option 1 Shown)

BUTTON-HEAD BOLT



ELEVATION PROFILE ELEVATION PROFILE

WASHER HEX-NUT



ELEVATION PROFILE

RECTANGULAR WASHER
(For CRT & Terminal Connectors Where Shown - Install Over Panel Face)

BUTTON-HEAD BOLT LENGTHS:

Application(s):	Length 'L':	Min. Thread Length:
Panel Splice	1¼"	Full Length
Steel Post Mount – Single Faced Guardrail	10"	4"
Timber Post Mount – Single Faced Guardrail	18"	4"
Steel or Timber Post Mount – Double Faced Guardrail	25"	4"

NOTES:

1. Use nuts, bolts, and washers in accordance with Specification 967.
2. For Steel Posts with Double Faced Guardrail, the single 25" Length bolt (one bolt thru both post flanges) may be replaced with two 10" Length bolts (one bolt per post flange).
3. Use bolts listed in Table 2 in corresponding locations shown in this Index.

5/8" BUTTON-HEAD BOLT

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