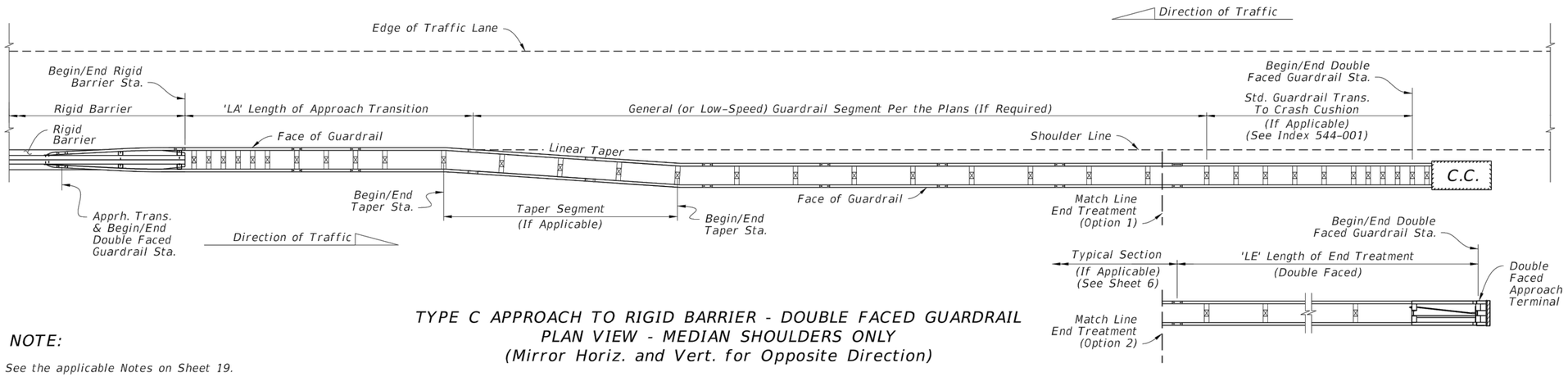
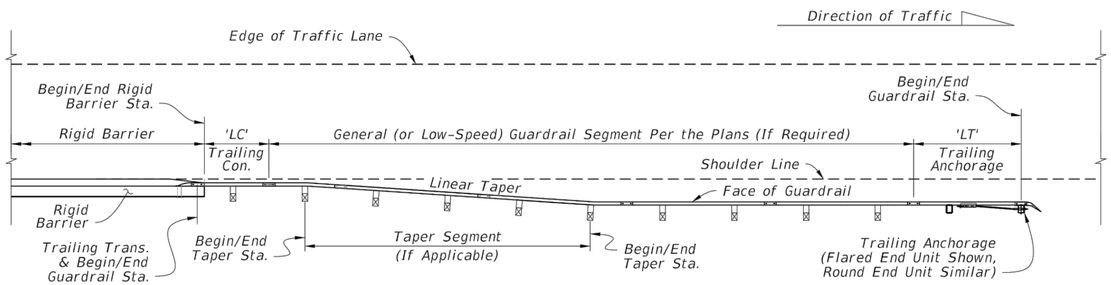


TYPE C APPROACH TO RIGID BARRIER - DOUBLE FACED GUARDRAIL
PLAN VIEW - MEDIAN SHOULDERS ONLY
(Mirror Horiz. and Vert. for Opposite Direction)

NOTE:

See the applicable Notes on Sheet 19.

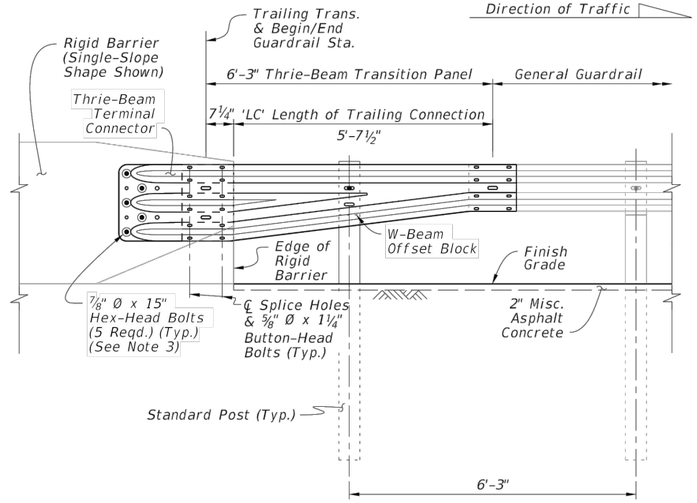
LAYOUT TO RIGID BARRIER - APPROACH ENDS WITH DOUBLE FACED GUARDRAIL



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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GUARDRAIL

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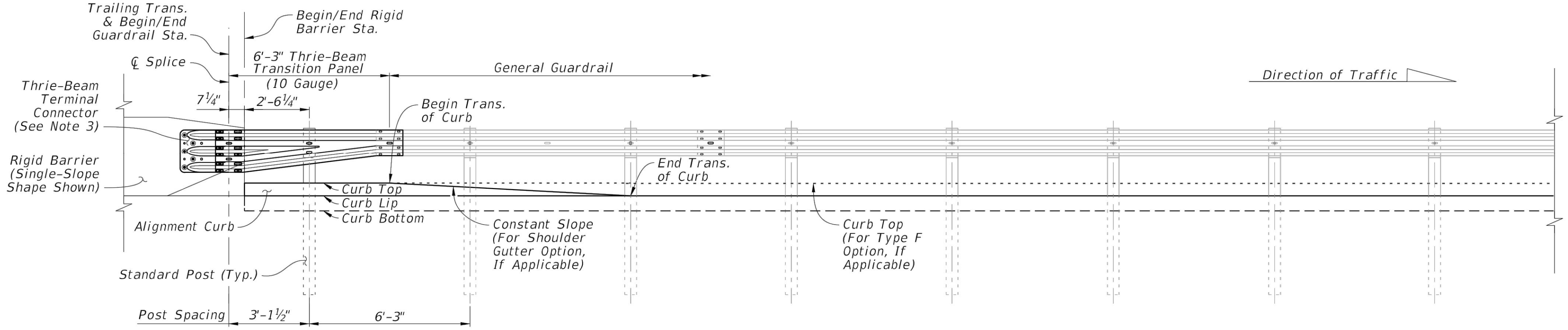

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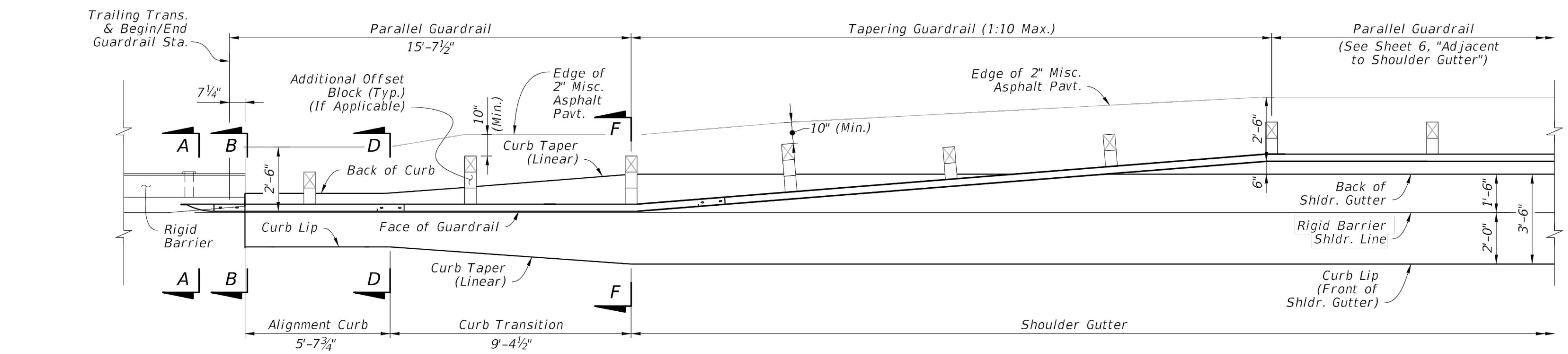
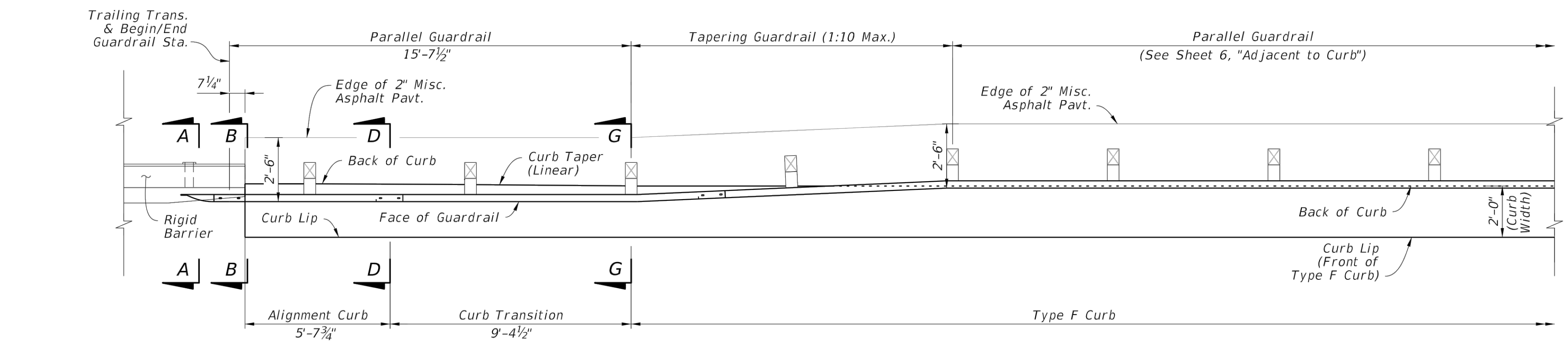


TRAILING END TRANSITION WITH 'SHOULDER GUTTER' CONNECTION - PLAN VIEW

Direction of Traffic



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

Direction of Traffic

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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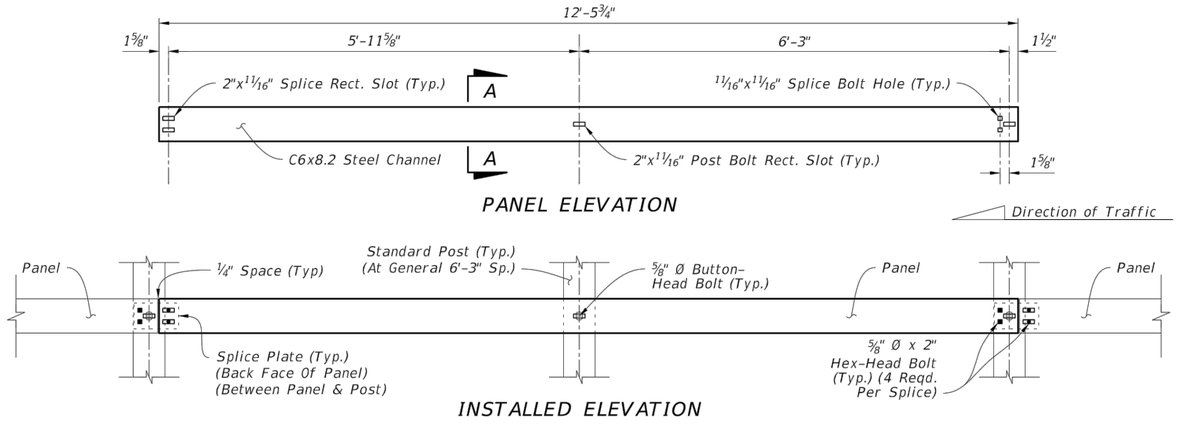
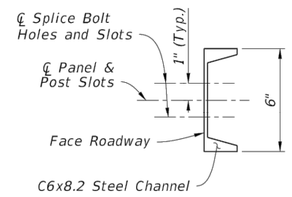
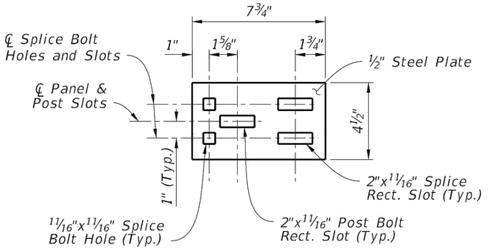


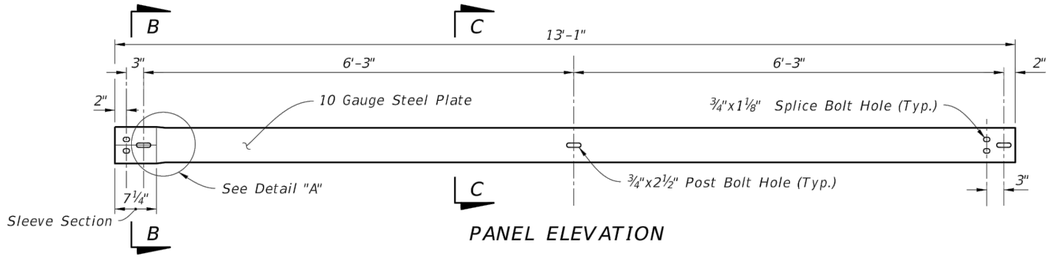


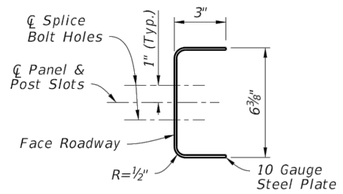
SECTION A-A
(Panel Typical)



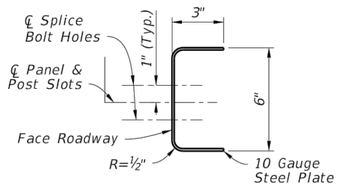
SPLICE PLATE
ELEVATION

CHANNEL SECTION RUB RAIL

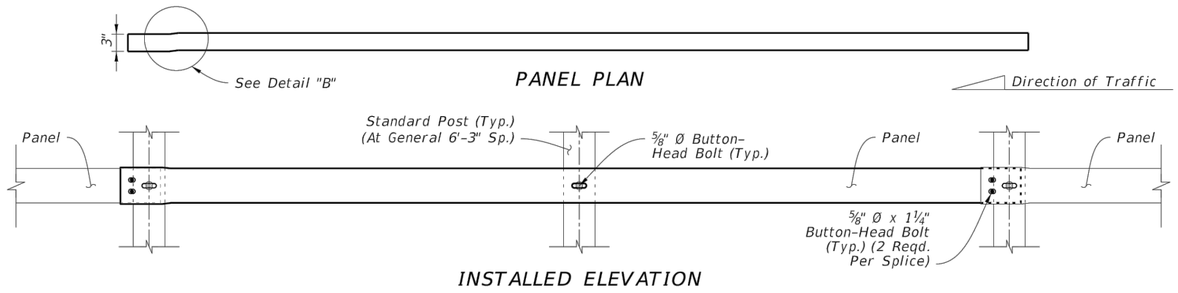


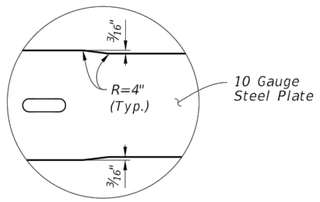


SECTION B-B
(Panel Sleeve End)

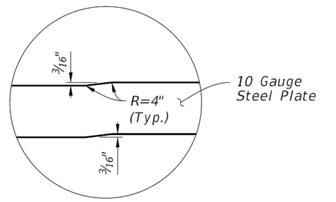


SECTION C-C
(Panel Typical)



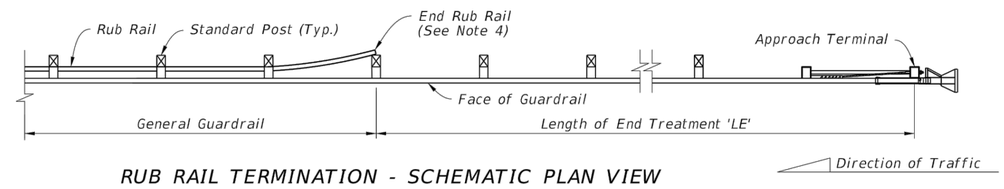


DETAIL "A"
(Sleeve Transition Elevation)



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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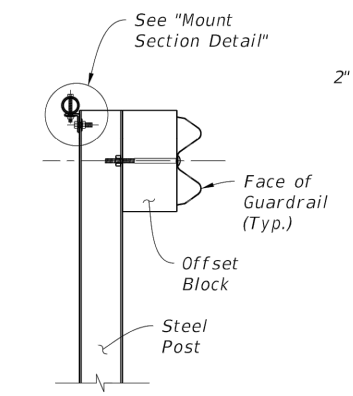
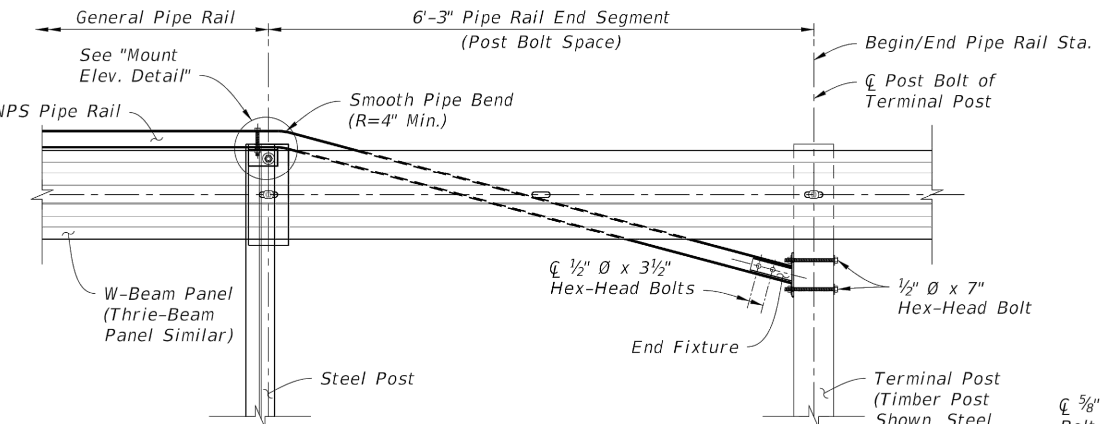
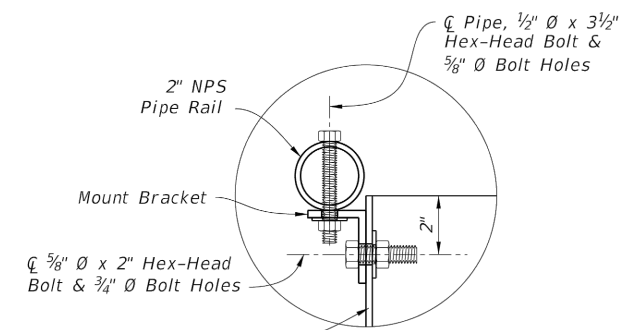


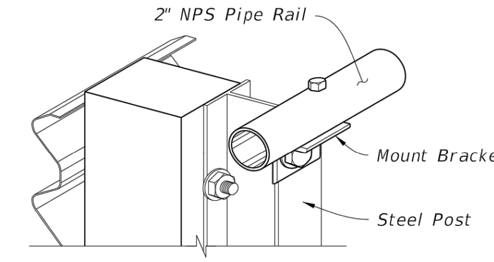
GENERAL PIPE RAIL SECTION



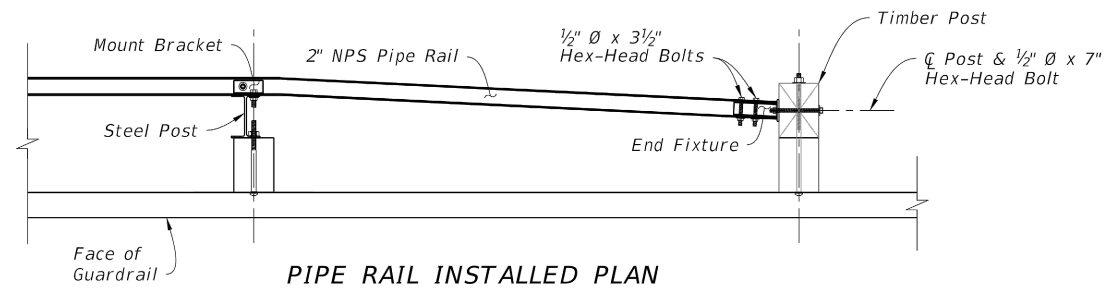
PIPE RAIL INSTALLED ELEVATION
(End Segment Shown)



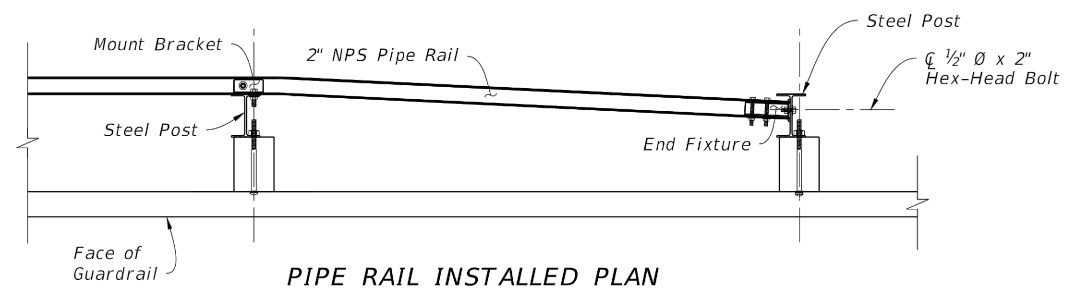
MOUNT SECTION DETAIL



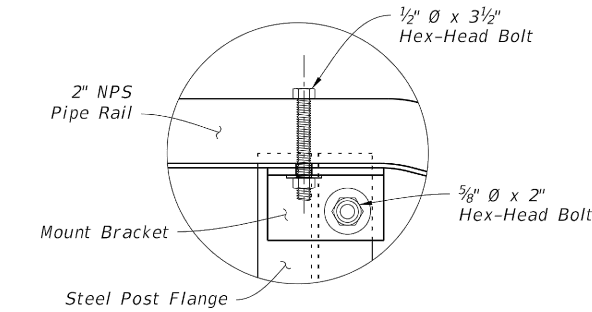
MOUNT ISOMETRIC CUT-AWAY



PIPE RAIL INSTALLED PLAN
END AT TIMBER POST OPTION



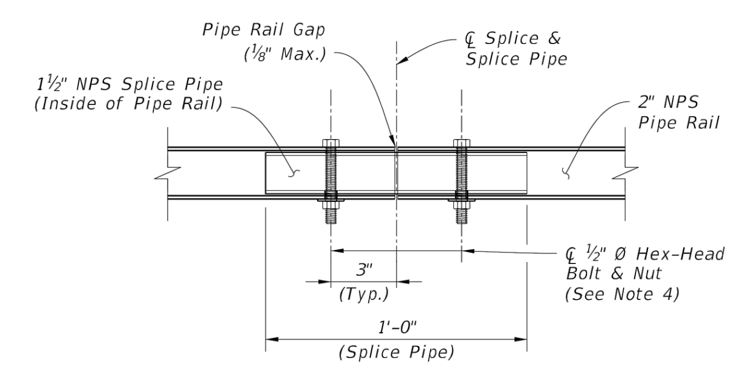
PIPE RAIL INSTALLED PLAN
END AT STEEL POST OPTION



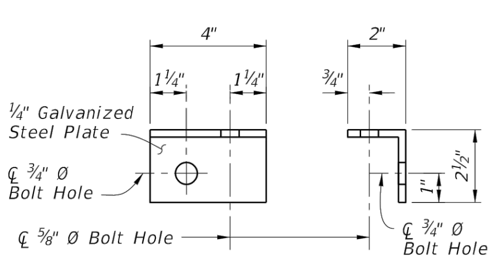
MOUNT ELEVATION DETAIL
(Back View - Mirrored)

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.

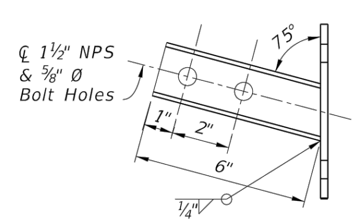


RAIL SPLICE DETAIL

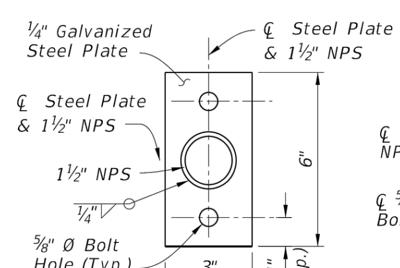


ELEVATION SECTION

MOUNT BRACKET DETAIL



ELEVATION



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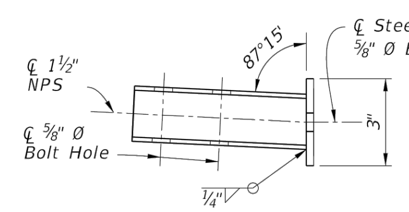

PLAN

END FIXTURE DETAIL

PEDESTRIAN SAFETY TREATMENT - PIPE RAIL

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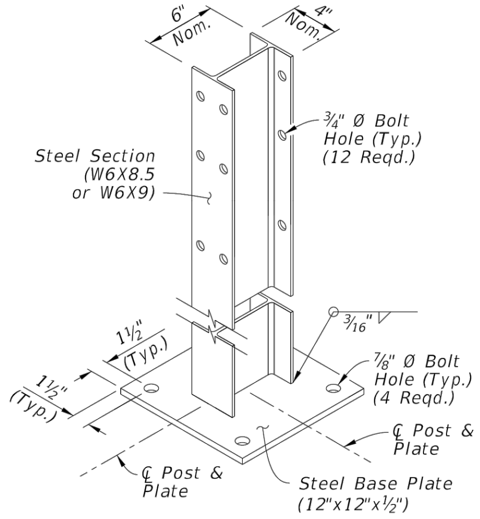
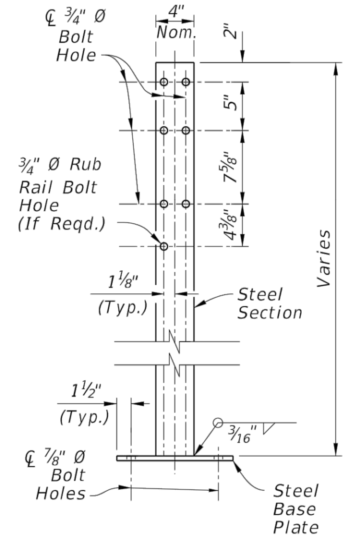
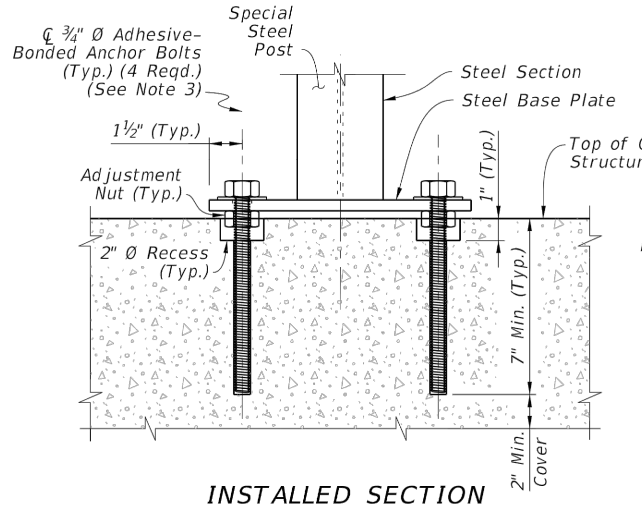


ISOMETRIC VIEW

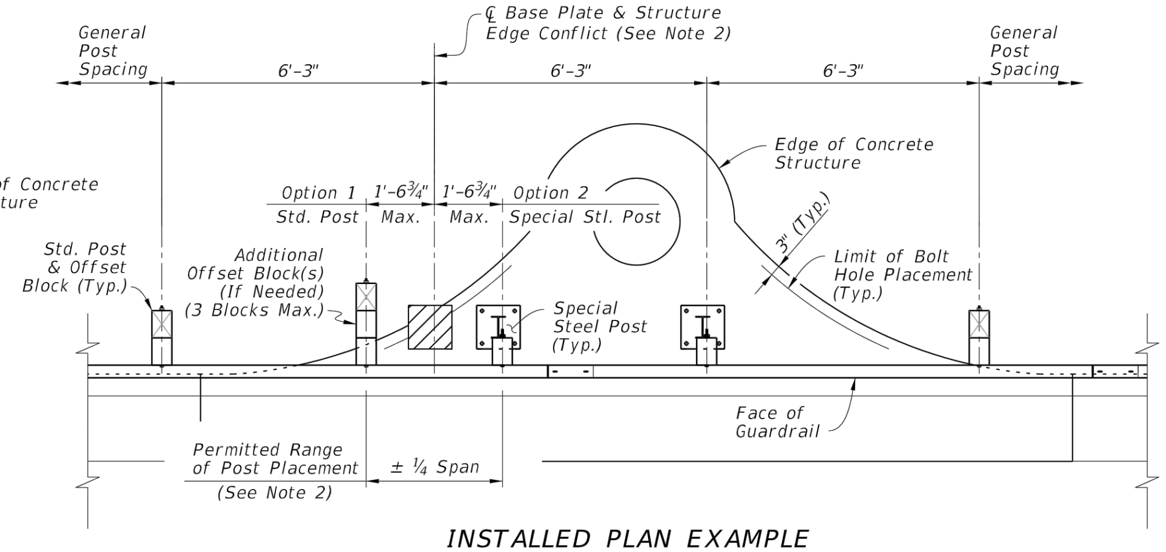


ELEVATION

SPECIAL STEEL POST



INSTALLED SECTION
(Option 2, Special Post)



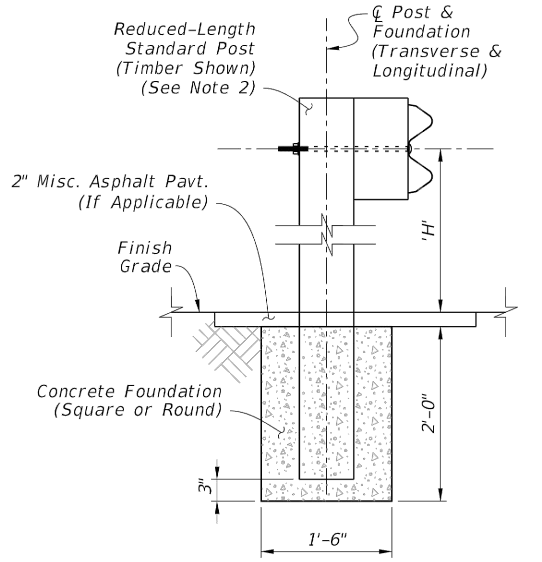
INSTALLED PLAN EXAMPLE
(Curb Inlet Top Type 2 Shown)

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

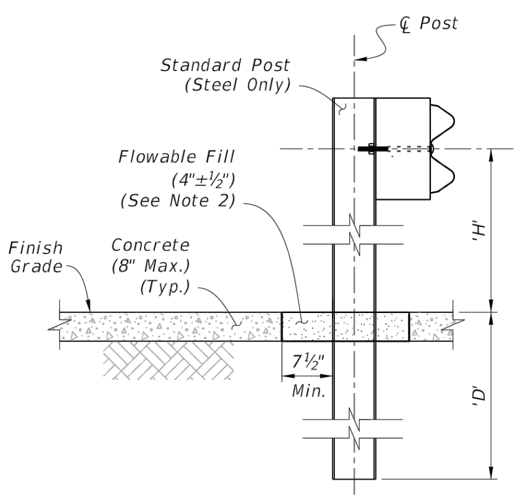


INSTALLED SECTION

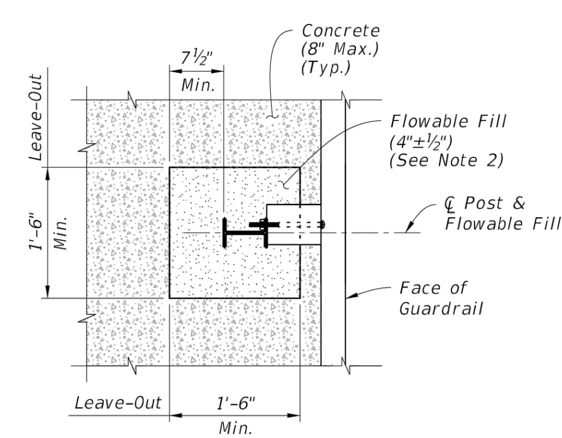
NOTES:

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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City Of Arcadia
P.O. Drawer 1000
Arcadia, Florida, 34265
(863) 494-4114

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Arcadia Stormwater and Flood Control
Special Details
INCLUDES PORTIONS OF:
SECTIONS 25, 26, 31, 36, TOWNSHIP 37S., RANGE 24, 25E.

JOB NO. 21Y01018LC
SHEET NO. SD65

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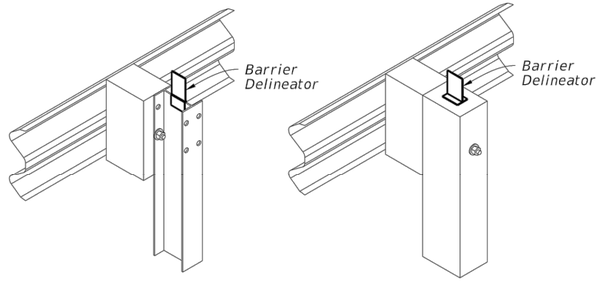
PLOTTED: 4/24/2025 Smith, Philip FILE: C:\Users\psmith\George F. Young, Inc\PG Team - General\21Y01018LC SA 29 Arcadia Stormwater and Flood Control\Dwg\CDs\21Y0108LC-SP-DET.dwg

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:*

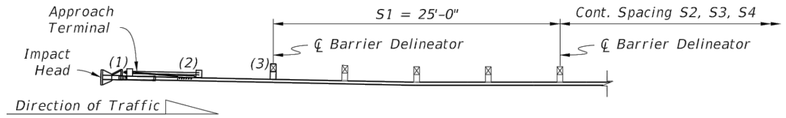
   S1 = 25' x 1 Space
   S2 = 50' x 1 Space
   S3 = 75' x 1 Space
   S4 = 100' x for the Remaining Run

   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



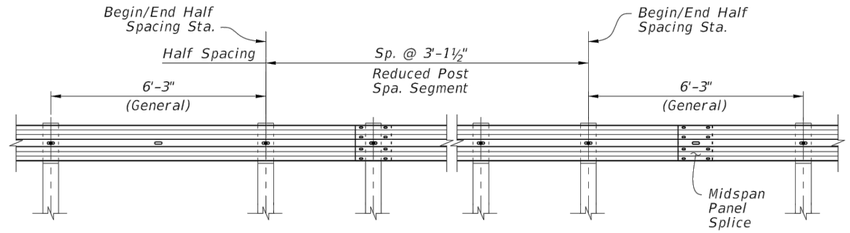
MOUNT LOCATION - PLAN VIEW

BARRIER DELINEATORS

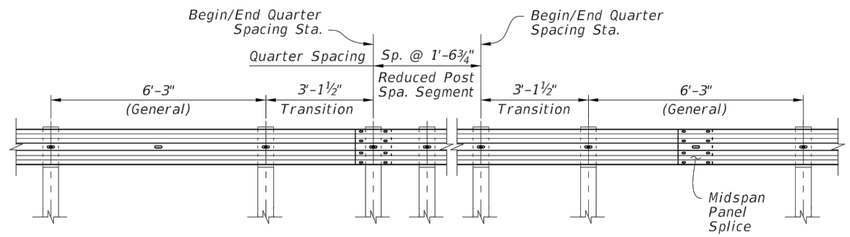
NOTES:

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.*

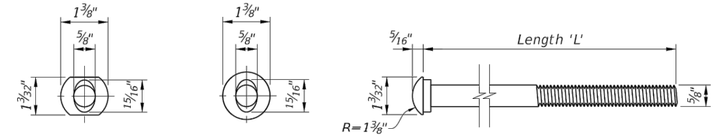


DETAIL 'S' - HALF SPACING ELEVATION
(AS REQD. PER THE PLANS)



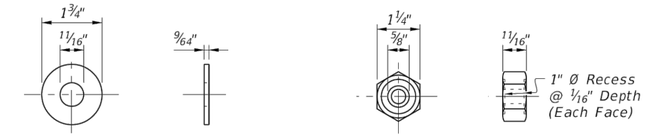
DETAIL 'S' - QUARTER SPACING ELEVATION
(AS REQD. PER THE PLANS)

REDUCED POST SPACING FOR HAZARDS



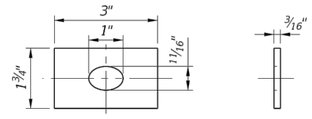
ELEVATION OPTION 1 *ELEVATION OPTION 2* *PROFILE (Option 1 Shown)*

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.*

⅝" BUTTON-HEAD BOLT

LAST REVISION	*REVISION*	*DESCRIPTION:*	FDOT	*FY 2025-26 STANDARD PLANS*	GUARDRAIL	*INDEX*	*SHEET*
11/01/23						*536-001*	*25 of 25*

REVISED	NO.	BY	DATE	DESCRIPTION

	INITIALS	DATE
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DRAWN	PCS	
CHECKED	MP	
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SCALE		

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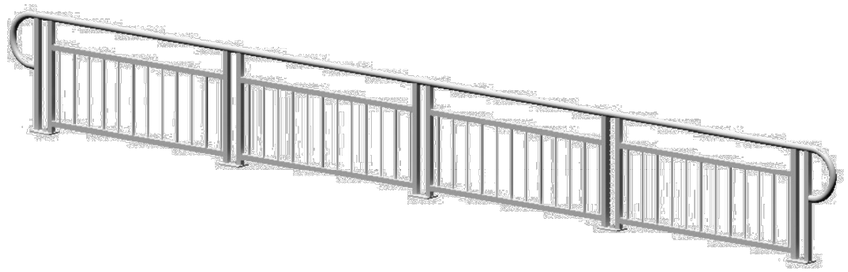


3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL
(42" Height shown, 48" Height Similar)

TABLE 1 - RAILING MEMBERS

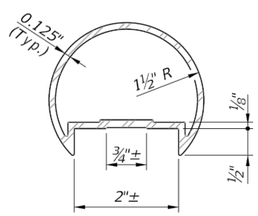
MEMBER	ALLOY(1)	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Posts (Type "A" & "B")	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250"
Posts (Type "C")	6061-T6	Extrusion 1½x2½x0.125	1.50" x 2.50"	0.125"
Top Plate (Type "C")	6061-T6	Extrusion (See Details)	2¾" x 7"	Varies
Top Rail	6061-T6	2½" NPS (Sch. 10)	2.875"	0.120"
		3" Round Top Cap Rail	3.000"	0.125"
End Hoops	6063-T5	2½" NPS (Sch. 10)	2.875"	0.120"
		3.00 OD x 0.125 Wall	3.000"	0.125"
Top Rail Joint/Splice Sleeves	6063-T5	2.50 OD x 0.125 Wall	2.500"	0.125"
		Top Cap Rail Inner Sleeve	2.800"	0.090"
Intermediate & Bottom Rail	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250" (2)
Int. & Bottom Rail Post Connection Sleeve	6063-T5	1.50 OD x 0.125 Wall (3)	1.500"	0.125"
Handrail Joint/Splice Sleeves	6063-T5	1" NPS (Sch. 40)	1.315"	0.133"
	6063-T5	1.50 OD x 0.125 Wall	1.500"	0.125"
Handrails	6061-T6	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	6061-T6	¾" Ø Round Bar	0.750"	N/A
Pickets (Type 1 Infill Panel)	6061-T6	¾" Ø Round Bar	0.750"	N/A
Infill Panel Members (Types 2 - 5)	6063-T5	Varies (See Details)	Varies	Varies

TABLE 1 NOTES:
(1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.
(2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
(3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded connection Detail "K" is utilized.

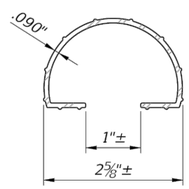
NOTES

1. Shop Drawings are required, see Specification Section 515.
2. For bridge mounted railings, work this Index with Index 515-061 Bridge Bicycle/Pedestrian Railing (Aluminum)
3. Materials:
   - A. Structural Extrusions, Tube, Pipe and Bars: Table 1 and ASTM B221 or ASTM B429
     - a. Top, bottom and intermediate rail corner bends with maximum 4'-0" post spacing may be Alloy 6063-T6
   - B. Base Plates and Rail Caps: ASTM B209 Alloy 6061-T6
   - C. Perforated panels (Type 5) Alloy 3003-H14
   - D. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
   - E. Aluminum screws: Alloy 2024-T4 or 7075-T73
   - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
     - a. Hex Head Bolts: ASTM A 307
       1. ⅞" diameter single bolt option, Grade 36
       2. 7/16" diameter four bolt option, Grade 55
     - b. Adhesive Anchors: ASTM F1554 fully threaded rods, Grade 55
     - c. Hex Nuts: ASTM A563
     - d. Flat Washers: ASTM F436
     - e. Plate Washers: ASTM A36 or ASTM A706 Grade 36.
   - G. Shims: ASTM B209 Alloy 6061 or 6063
   - H. Bearing Pads: Provide ⅛" thick Plain, Fabric Reinforced or Fabric Laminated Bearing Pads meeting the requirements of Specification Section 932 for Ancillary Structures.
4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5⅞" for standard installations and 3⅞" when a 4" sphere requirement is indicated in the Data Tables.
5. Locate railing expansion Joints between the posts on either side of the deck expansion joint. Maximum spacing between expansion joints is 35'-0".
6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K" for Post Type "A" & "B".
8. Make corners and changes in tangential longitudinal alignment with a 9" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
9. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
11. Handrails are required and must be continuous at landings for:
    - A. Grades Steeper than 5%,
    - B. Three or more steps
12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.

CROSS REFERENCES:
Detail "A", Sheet 4
Detail "B", Sheet 4
Detail "K", Sheet 3

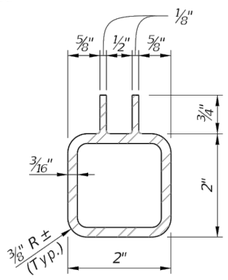


3" ROUND TOP CAP RAIL

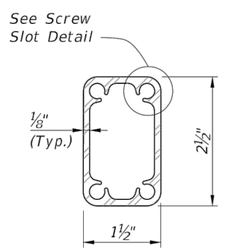


TOP CAP RAIL INNER SPLICE SLEEVE

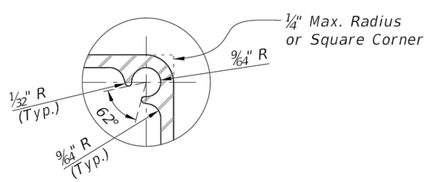
ALTERNATE TOP RAIL SECTION



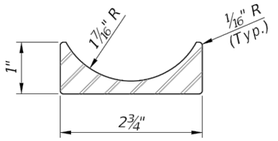
ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS



POST TYPE "C" SCREW SLOT SECTION



SCREW SLOT DETAIL



OPTIONAL TOP PLATE EXTRUSION SECTION (POST TYPE "C")

LAST REVISION	REVISION DESCRIPTION:		INDEX	SHEET
11/01/18		FY 2025-26 STANDARD PLANS — PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	1 of 9

REVISED NO.	BY	DATE	DESCRIPTION

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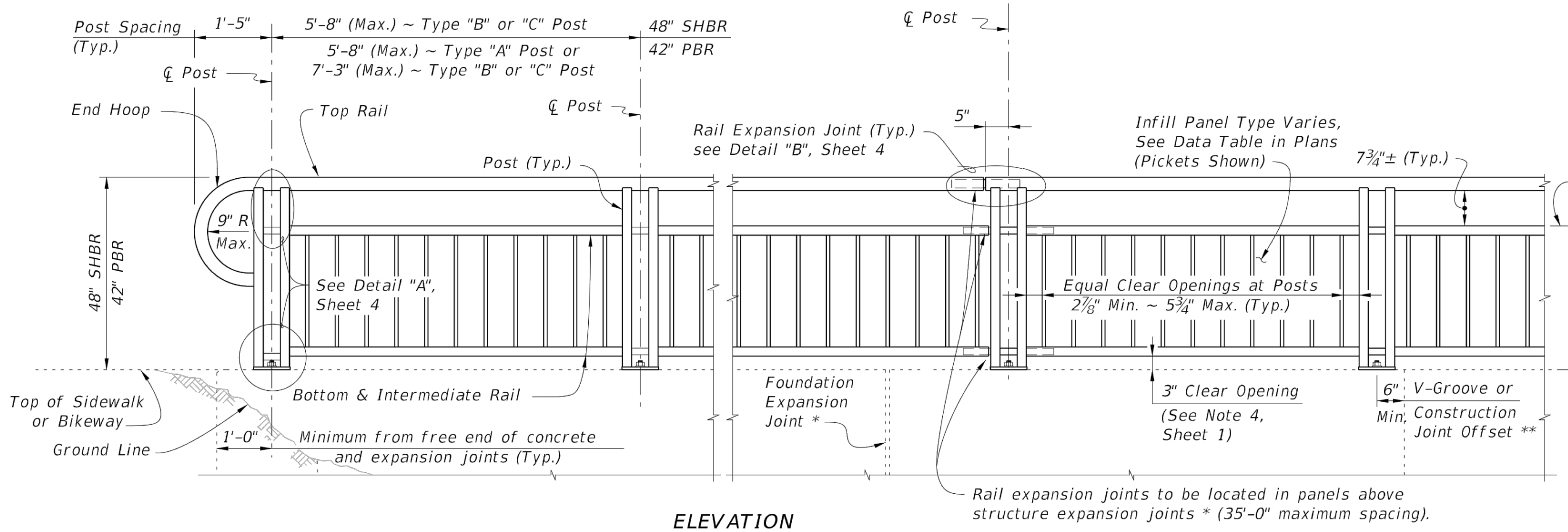
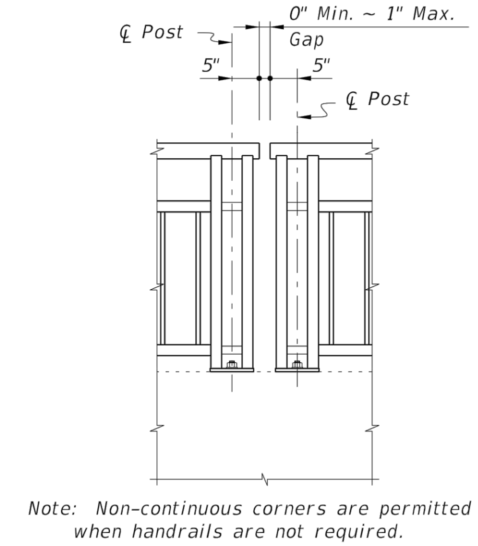


ELEVATION
(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%
(Type 1 - Picket Railing Shown, Other Types Similar)

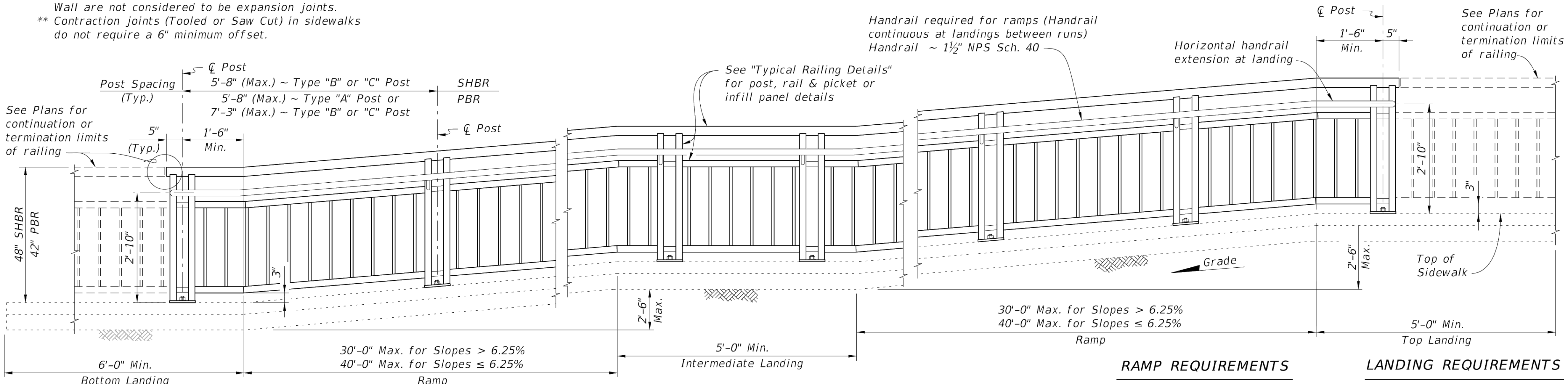


Note: Non-continuous corners are permitted when handrails are not required.

EXPANDED ELEVATION AT CORNERS

DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS

NOTES:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.
** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.



RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

ELEVATION
(Showing Inside Face of Railing with Type "A" Posts)

RAILINGS ON GRADES STEEPER THAN 5%
(Type 1 - Picket Railing Shown, Other Types Similar)

LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2025-26 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX	SHEET
11/01/15						515-062	2 of 9

REVISED NO.	BY	DATE	DESCRIPTION		INITIALS	DATE
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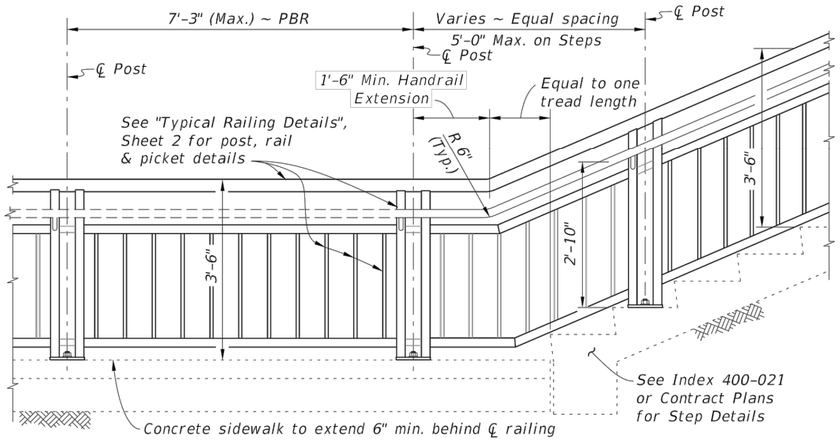
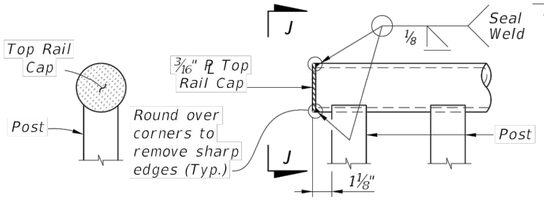
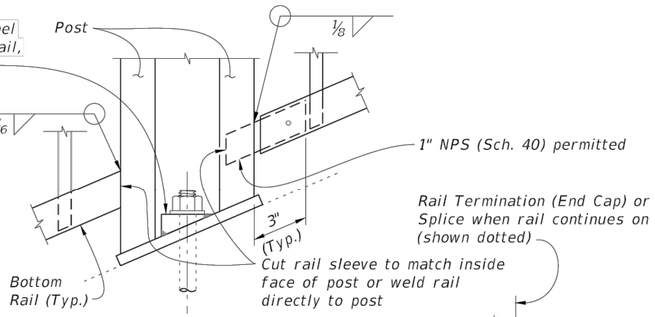


RAILING CONTINUATION BEYOND STEPS OR STAIRS
(Bottom shown, Top similar)



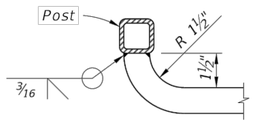
VIEW J-J

DETAIL "J" - ELEVATION VIEW
TOP RAIL TERMINATION



DETAIL "K" - ELEVATION VIEW
BOTTOM RAIL CONNECTION
(Intermediate Rail Similar)

RAIL TERMINATION DETAILS



DETAIL "L" - PLAN VIEW
HANDRAIL TERMINATION

ELEVATION
(At-Grade Steps shown,
Elevated Stairs similar)

ALTERNATE HANDRAIL END TREATMENT OR
MOUNTING LOCATION FOR SLOPED WALLS

RAILINGS ON STEPS & STAIRS

LAST REVISION	REVISION	DESCRIPTION:		INDEX	SHEET
11/01/16			FY 2025-26 STANDARD PLANS	515-062	3 of 9

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

REVISED	NO.	BY	DATE	DESCRIPTION

	INITIALS	DATE
DESIGN	JV	
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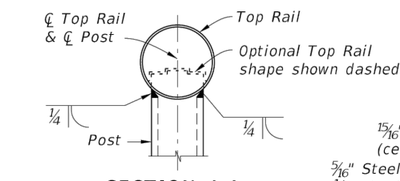


SECTION A-A
(Top Rail Connection)

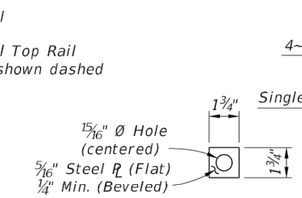
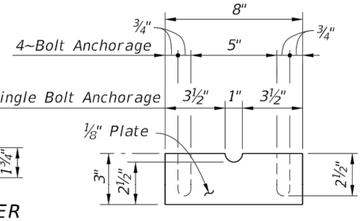
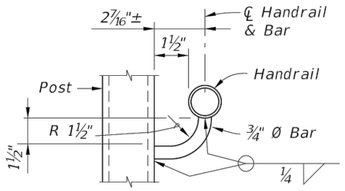


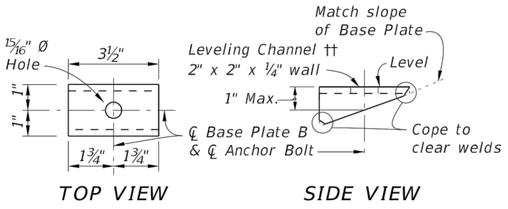
PLATE WASHER
DETAIL



SHIM PLATE DETAIL

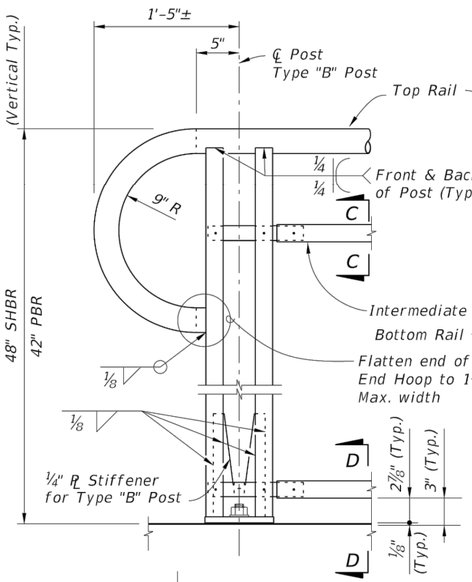


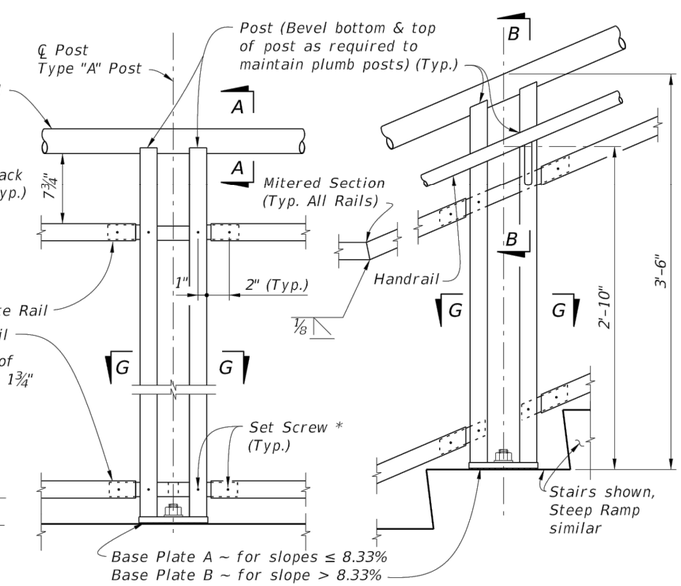
SECTION B-B
(Handrail Connection)



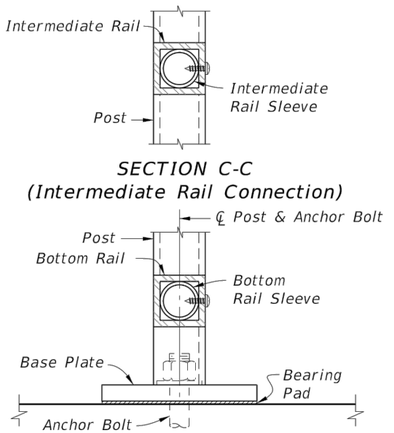
TOP VIEW SIDE VIEW

LEVELING CHANNEL DETAIL



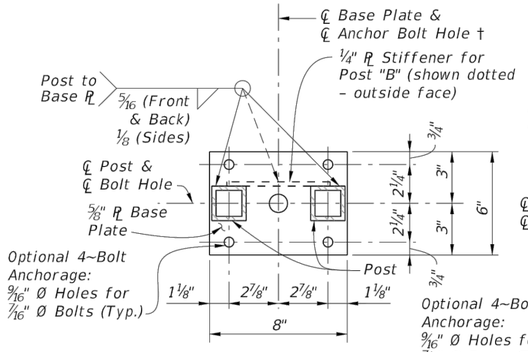


DETAIL "A" - RAIL CONNECTIONS
(Showing Inside Face of Railing)
(Pickets/Panels and 4~Bolt Anchorage Not Shown for Clarity)

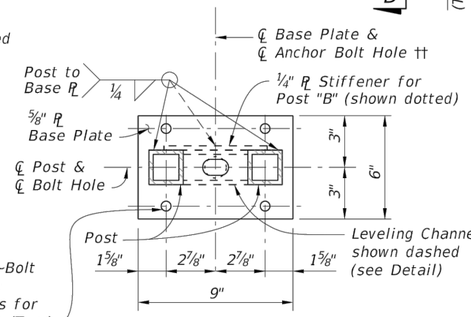


SECTION C-C
(Intermediate Rail Connection)

SECTION D-D
(Bottom Rail Connection -
Single Anchor Bolt Shown)

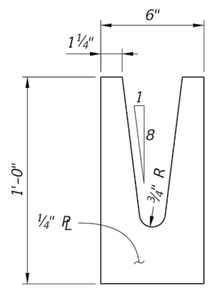


BASE PLATE A



BASE PLATE B

SECTION G-G - BASE PLATE DETAILS



POST "B" STIFFENER
DETAIL

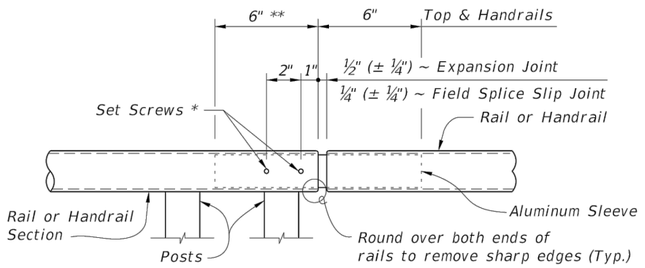
NOTES:

† Base Plate A (Ramps – Bolts normal) use 1¹⁄16" Ø Holes for Single Anchor Bolts with Flat Washers for slopes ≤ 8.33%.

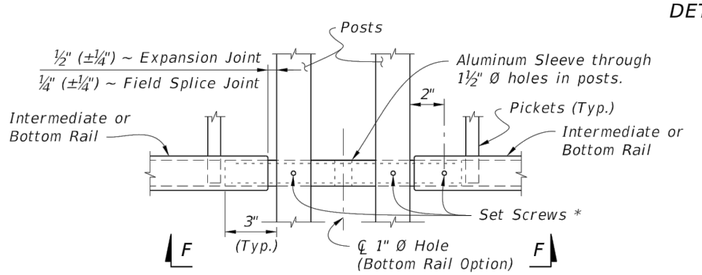
†† Base Plate B (Stairs – Bolts plumb) use 1¼" Ø Holes for Single Anchor Bolts with Beveled Plate and Washers for slopes > 8.33% to ≤ 15%; use 15⁄16" x 1½" Slotted Holes with Leveling Channel for slopes > 15%.

* ¼" Ø x ¾" Pan Head Aluminum or Stainless Steel Set Screws. Screws must be set flush against the outside face of rails & posts and underside of handrails. A single tack weld (½" max. length) at top of the sleeve for each post may be substituted for the Set Screws. Do not provide Set Screws for Rails at free end of Expansion Joints.

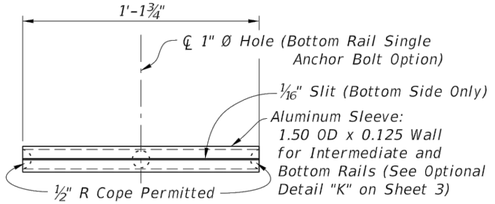
** Embedded length may be 4" for plug welded connection.



ROUND RAILS - TOP RAIL OR HANDRAIL
(Top Rail at Expansion Joint Shown)



SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL
(Bottom Rail Shown at Expansion Joint Shown)



VIEW F-F
INTERMEDIATE OR BOTTOM RAIL -
ALUMINUM SLEEVE DETAIL (Bottom Side Shown)

DETAIL "B" - EXPANSION JOINT (FIELD SPLICE SLIP JOINT SIMILAR)

CROSS REFERENCE:
For location of Details "B", See Sheet 2.

LAST REVISION	REVISION	DESCRIPTION:
11/01/16		

FDOT FY 2025-26 STANDARD PLANS

PEDESTRIAN/BICYCLE RAILING (ALUMINUM)

INDEX	SHEET
515-062	4 of 9

REVISED	NO.	BY	DATE	DESCRIPTION

	INITIALS	DATE
DESIGN	JV	
DRAWN	PCS	
CHECKED	MP	
QUALITY CHK		
SCALE		

PREPARED FOR:
City Of Arcadia
P.O. Drawer 1000
Arcadia, Florida, 34265
(863) 494–4114

Since 1919

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ENGINEERING CERTIFICATE OF AUTHORIZATION NUMBER 21
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ST. PETERSBURG ▪ LAKEWOOD RANCH ▪ TAMPA ▪ GAINESVILLE ▪ LAKE WALES ▪ PUNTA GORDA

---- No.
DATE

Arcadia Stormwater and Flood Control
Special Details
INCLUDES PORTIONS OF:
SECTIONS 25, 26, 31, 36, TOWNSHIP 37S., RANGE 24, 25E.

JOB NO. 21Y01018LC
SHEET NO. SD70

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