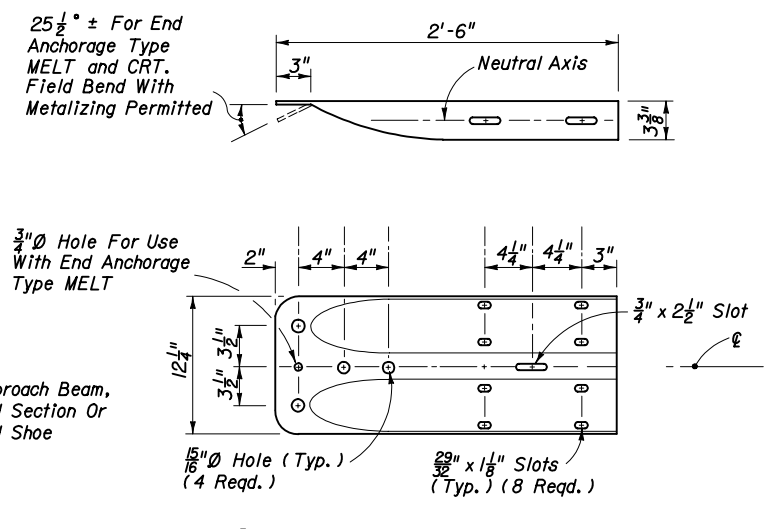
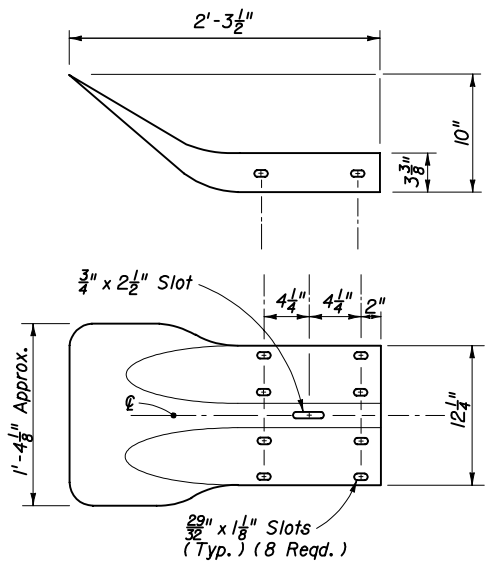


**W-BEAM RAIL SPLICE**

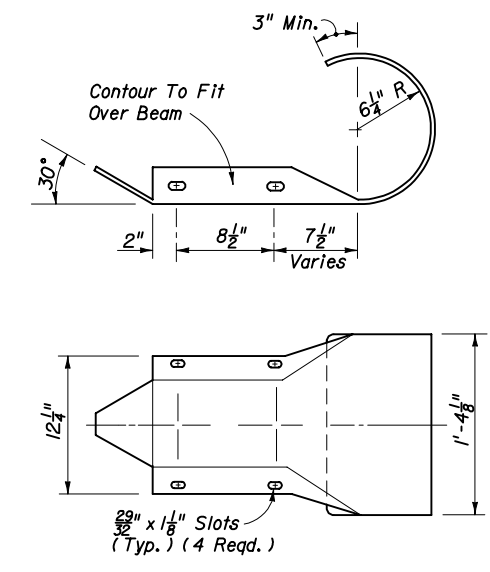


Note: 5/8" Ø Steel washer required with splice bolts

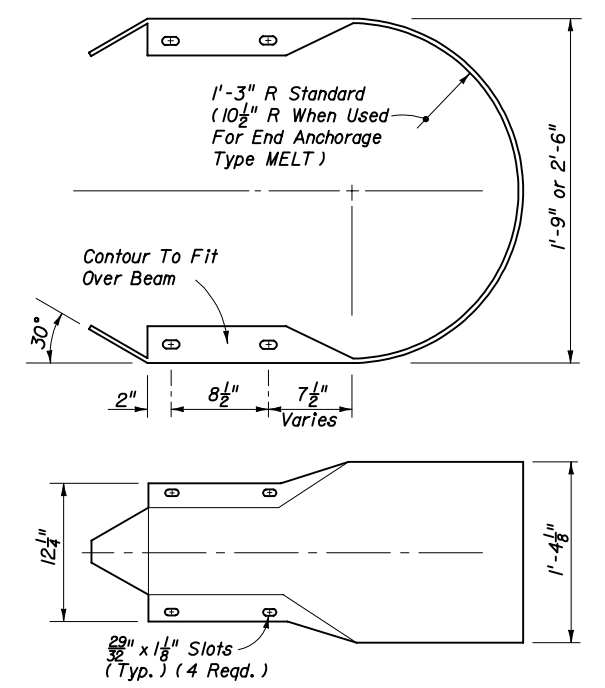
**SPECIAL END SHOE**



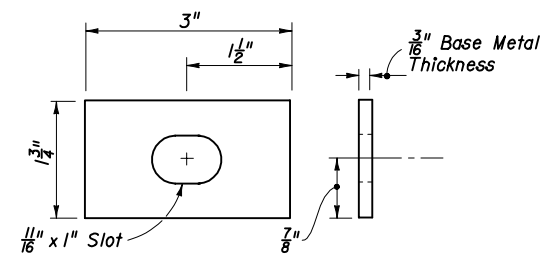
**FLARED END SECTION**



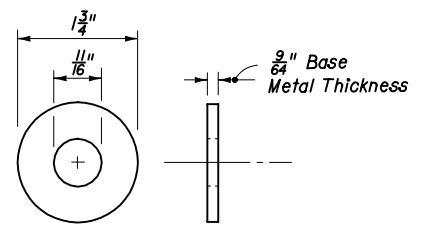
**ROUNDED END SECTION**



**BUFFER END SECTION**



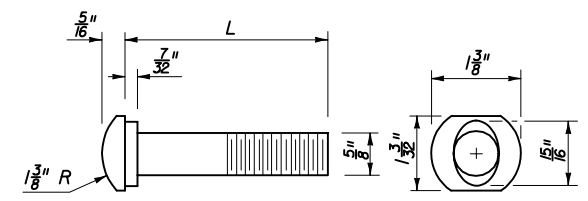
**(RECTANGULAR PLATE WASHER) BEAM WASHER**



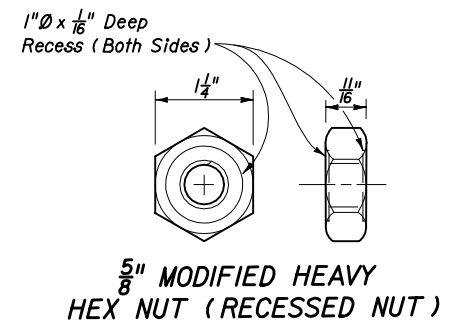
**5/8" STEEL WASHER**

Note: For beam washer requirements on end terminals, see individual end anchorage assembly details. Washers are to be used where necessary to accomplish alignment or where the posts bolt head shows tendency to pull through the rail slot. Washers installed on guardrail, between end anchorages, prior to July 1, 1990 may remain in place until the guardrail is relocated or until repairs require removal and reinstallation of a post bolt.

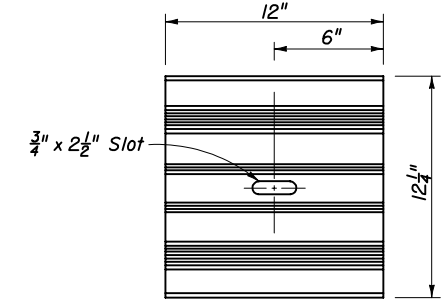
Note: The round washer is not intended for use under the recess nut for the beam to beam rail splice. The washer is required under the recess nut for connecting the beam to the special end shoe; under the post bolt nut for connecting the beam to the timber post and offset blocks; for connecting the beam to steel posts with timber offset blocks; under the hex bolt head for securing the beam anchor plate to the beam; and, for general guardrail connections by 5/8" Ø hex bolts and nuts. For supplemental information see BEAM ANCHOR PLATE, PERMISSIBLE POST AND OFFSET BLOCK COMBINATIONS, individual end anchorage assembly details, SPECIAL STEEL GUARDRAIL POSTS, SPECIAL END SHOE, W-BEAM RAIL SPLICE, THRIE-BEAM RAIL SPLICE, and THRIE-BEAM TERMINAL CONNECTOR details.



**5/8" OVAL SHOULDER BUTTON HEAD BOLT**

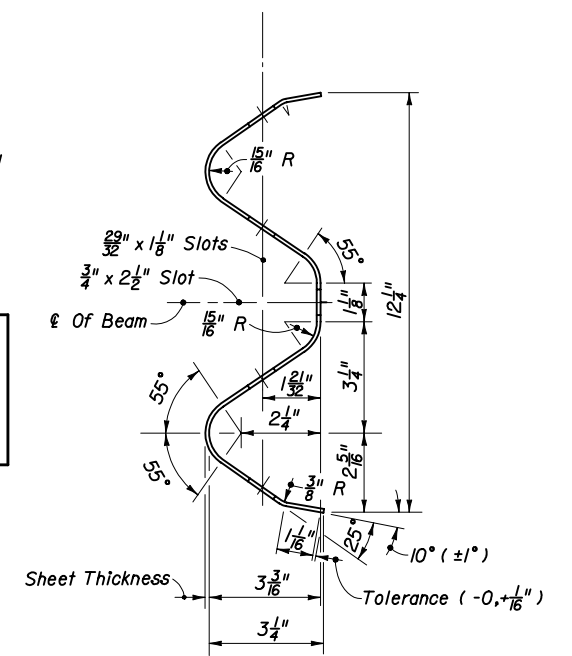


**5/8" MODIFIED HEAVY HEX NUT (RECESSED NUT)**



**W-BEAM BACK-UP PLATE**

Note: For application information see individual end anchorage assembly details.



**W-BEAM**

L (In.)	THREAD LENGTH (Min.) (In.)	APPLICATION
1 1/4"	Full Length	Rail Splice Bolt
10"	4"	Single Or Double Faced Guardrail Timber Or Recycled Plastic Offset Block(s) On Steel Post
18"	4"	Post Bolt - Single Faced Guardrail Timber Posts
25"*	4"	Post Bolt - Double Faced Guardrail Timber Posts

Special bolts having lengths of 10" or greater shall have a thread length of not less than 4".

For applications where special bolts having lengths greater than 25" are required, the Contractor may use a 5/8" Ø threaded rod (field cut to length). A hex nut and beam washer shall be used at the guardrail face with no more than 3/4" of the threaded rod projecting beyond the top of the nut. The projecting thread on both ends shall be distorted to secure the nuts, and both ends of the threaded rod metalized with organic zinc-rich coating.

\* Use of the 25" AASHTO-AGC-ARTBA standard length post bolt on double faced guardrail that results in the bolt projecting more than 3/4" beyond the face of the nut after pull-up shall be trimmed to 3/4" reveal and metalized with organic zinc-rich coating.

HS Hex bolts for THRIE-BEAM TERMINAL CONNECTORS shall conform to the requirements of ASTM A449 (Type 1) with heavy hex nuts and washers. All other hex bolts shall conform to the requirements of ASTM A563. Bolts, nuts and washers shall be hot dip galvanized. Heavy hex nut may be used in lieu of hex nuts and hex nuts used for jam nuts.

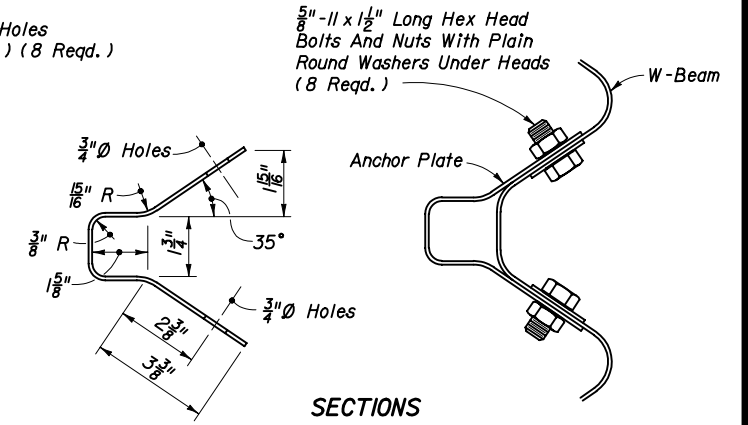
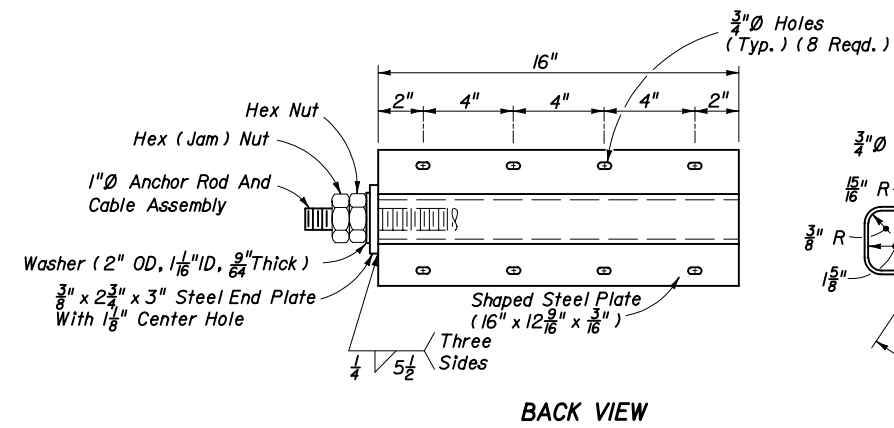
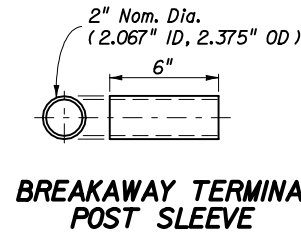
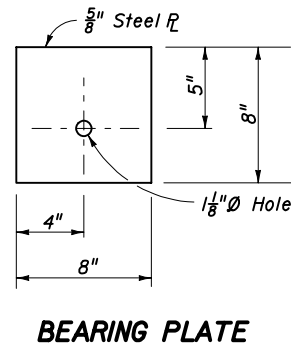
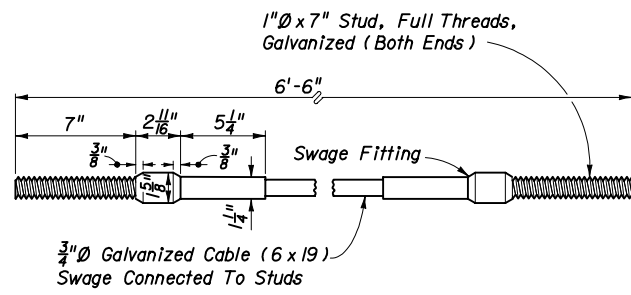
**HEX BOLTS AND NUTS**

POST SPACING (Ft.)	OFFSETS (Ft.) Measured From Face Of Guardrail To Front Of Above Ground Rigid Hazard			
	SINGLE BEAM W-Beam	THRIE-BEAM Thrie-Beam	NESTED BEAMS W-Beam	NESTED BEAMS Thrie-Beam
6'-3"	4'	3'-3"	N/A	N/A
3'-1 1/2"	3'	2'-8"	2'-8"	2'-4"
1'-6 3/4"	N/A	N/A	2'-4"	2'

Note: The values shown should be utilized unless changes are supported by imperial validation. Those desiring to develop offset values from the simulated deflection values shown in Table 5.4 of the AASHTO Roadside Design Guide are cautioned to proceed only if back-ground in the table development is understood.

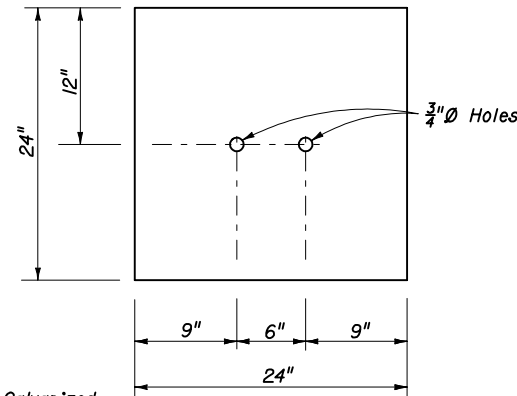
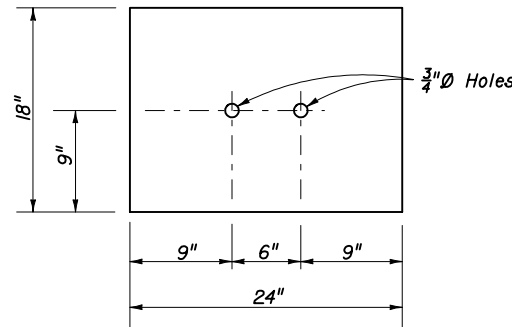
**MINIMUM OFFSET FOR SINGLE FACED GUARDRAIL (Ft.)**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Names	Dates	Approved By		
Designed By		<i>Signature</i> Roadway Design Engineer		
Drawn By	HSD 8/81	Revision	Sheet No.	Index No.
Checked By	JBW/JVG 8/81	04	17 of 31	400

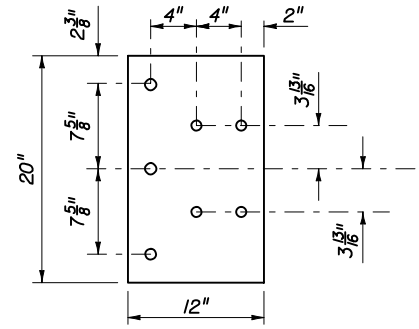


Note: Cable assemblies shall be in accordance with the specifications of AASHTO-AGC-ARTBA 'A Guide To Standardized Highway Barrier Hardware' Cable Anchor Assembly FCAOI. An additional cable assembly 9' in length with a swaged fitting on one (1) end is required for each end anchorage assembly Type CRT.

CABLE ASSEMBLY

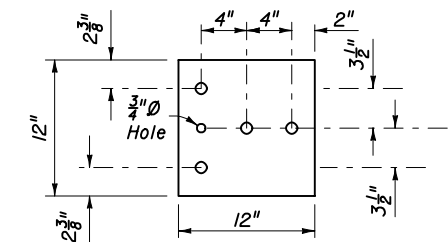


1/4" Steel Plate, Galvanized  
SOIL PLATES

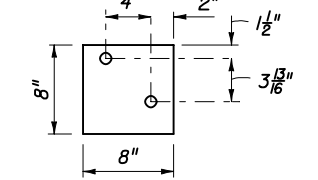


5/8" Plate For Bridge Traffic Railing Barrier  
1/4" Plate For Barrier Walls  
THRIE-BEAM TERMINAL CONNECTOR

BEAM ANCHOR PLATE

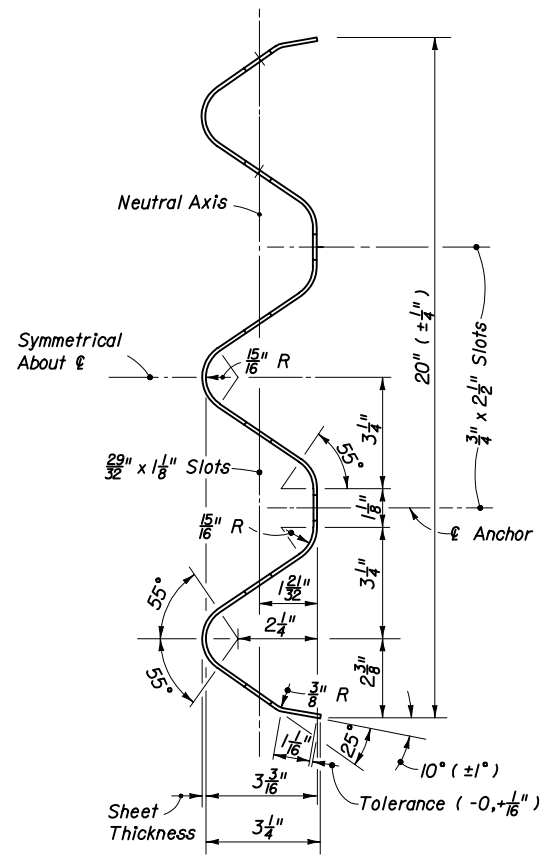


1/4" Plate For All Applications  
SPECIAL END SHOE  
All Holes 1" Diameter Except As Shown

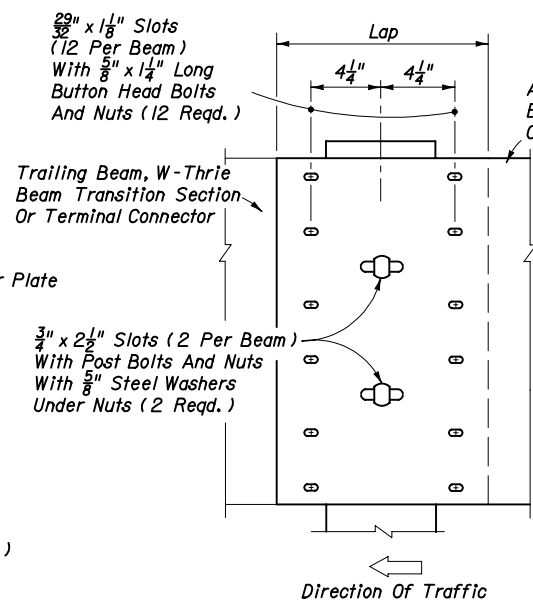


1/4" Plate  
See Detail J For Application  
FILLER PLATE

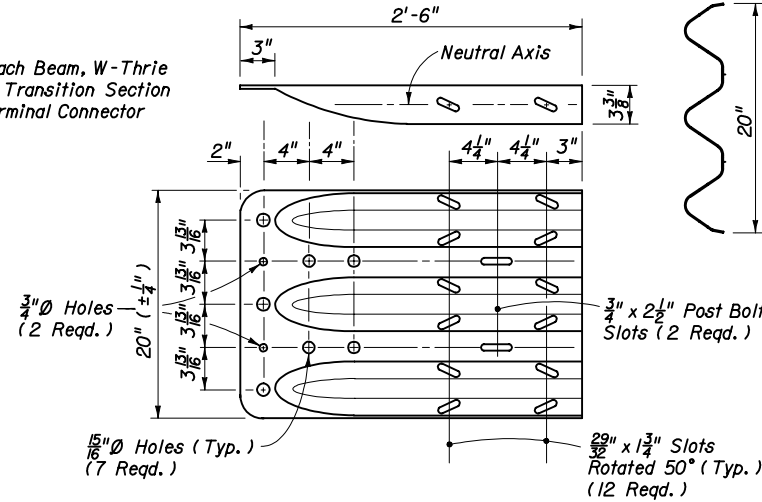
GALVANIZED STEEL BACK-UP PLATES FOR CONNECTING SPECIAL END SHOES AND TERMINAL CONNECTORS TO CONCRETE BRIDGE TRAFFIC RAILING BARRIERS AND CONCRETE BARRIER WALLS



THRIE-BEAM

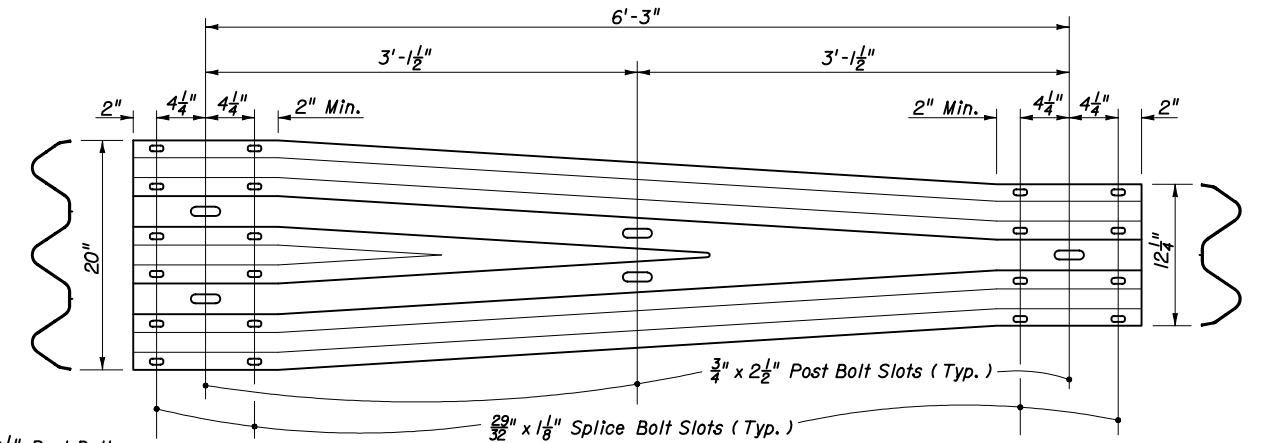


THRIE-BEAM RAIL SPLICE



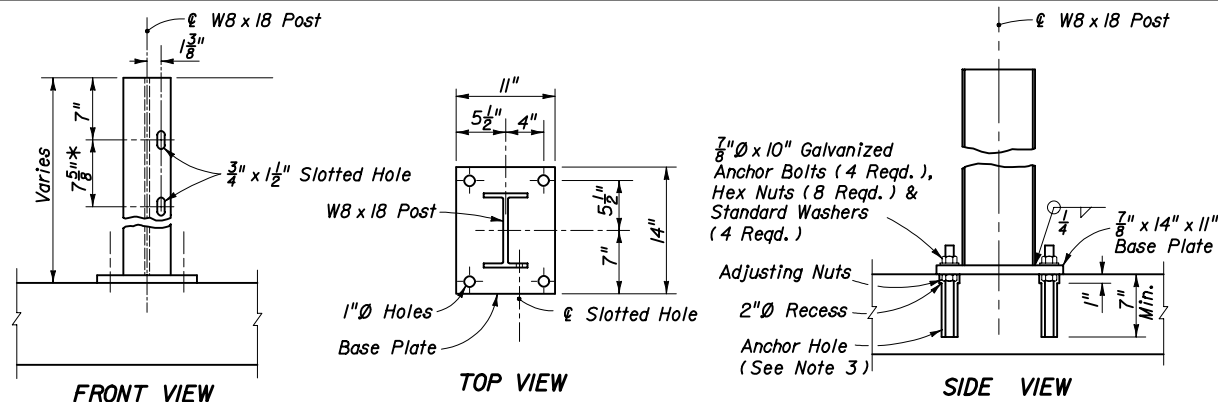
Note: 5/8 inch diameter steel washer required with splice bolts

THRIE-BEAM TERMINAL CONNECTOR



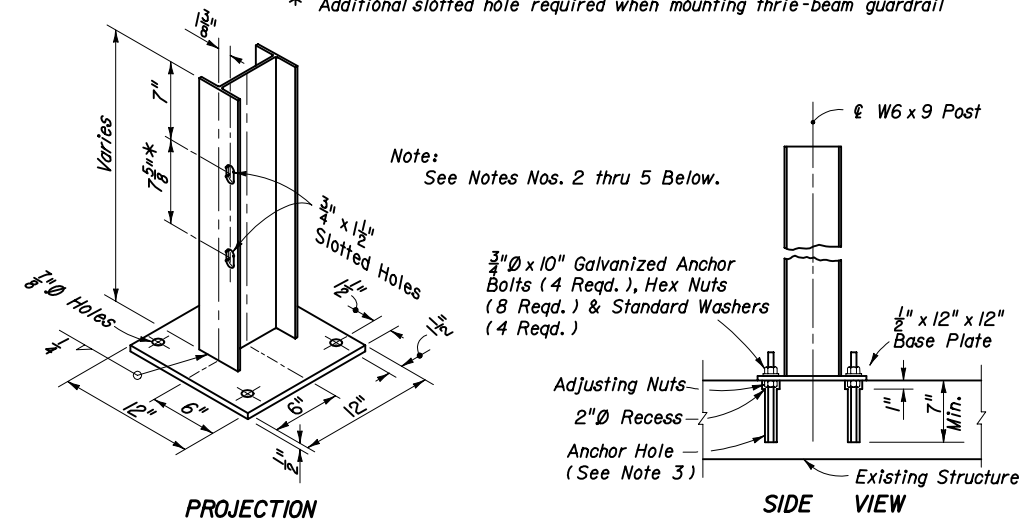
W-THRIE BEAM TRANSITION SECTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
GUARDRAIL				
Names	Dates	Approved By		
Designed By		Roadway Design Engineer		
Drawn By		Revision	Sheet No.	Index No.
Checked By		04	18 of 31	400



**FOR REPLACEMENT OF EXISTING W8 x 18 GUARDRAIL POSTS ON APPROACH SLABS AND BRIDGES**

\* Additional slotted hole required when mounting three-beam guardrail

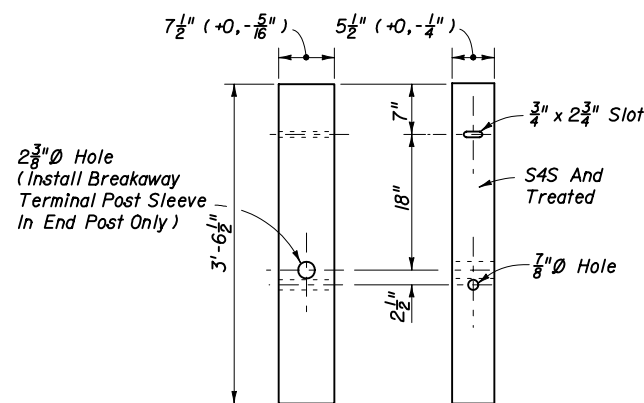


**FOR CONSTRUCTION OF GUARDRAIL WHERE CULVERT, PIER FOOTING OR OTHER STRUCTURE PRECLUDES DRIVEN POST INSTALLATION**

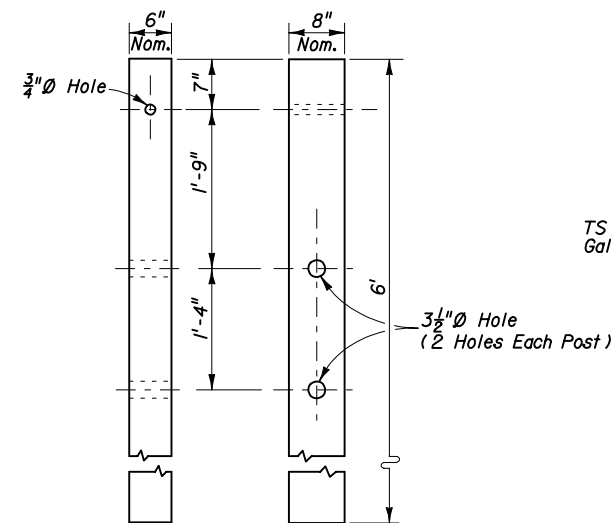
NOTES: (SPECIAL STEEL POST)

- See Index No. 402 for special steel posts required for construction and repair of guardrail transitions to bridge traffic railing barrier retrofits on existing bridges. See Structures Index Nos. 771 through 777 for steel posts required to construct traffic railing barrier retrofits on existing bridges.
- Either anchor bolts, concrete wedge anchors or approved Adhesive-Bonded Anchors for Structural Applications may be used.  
Anchor bolts, wedge anchors and adhesive anchors shall have a minimum tensile strength of 60,000 psi and galvanized in accordance with ASTM A153 (stainless steel components may be substituted but components plated in accordance with ASTM B-633 are not acceptable). Adhesive anchor rods shall be equal in diameter to that detailed for anchor bolts. Wedge anchors are to be installed in accordance with the manufacturer's recommendations, assuming 3,000 psi compressive strength for concrete. Wedge anchors shall also meet the following requirements: (a) tensile load each anchor: approach slabs 14,000 lbs.; other structures 8,000 lbs. (b) shear load each anchor: approach slabs 15,000 lbs.; other structures 7,800 lbs.
- Posts are to be plumbed by adjusting nuts or mortar seating. Posts installed using anchor bolts and adhesive anchors are to be set with adjusting nuts as detailed, unless the Engineer approves the use of mortar seating in lieu of adjusting nuts. Posts installed using wedge anchors are to be set with mortar seating. Base plates shall be grouted with neat finish.
- Adhesive-Bonded Anchors for Structural Applications shall comply with Section 937 and be installed in accordance with Section 416. Drilled hole diameter shall be in accordance with the manufacturer's instructions.
- Anchor holes and recesses shall be drilled; wedge anchor holes are to be drilled in accordance with the manufacturer's specifications. Encountered reinforcing steel shall be drilled through. Holes shall be thoroughly cleaned when setting bolts and anchors and dry when setting wedge anchors.
- Steel post and base units shall be galvanized in accordance with ASTM A123. Any damaged galvanized areas are to be metalized in accordance with Section 562 of the Standard Specifications.

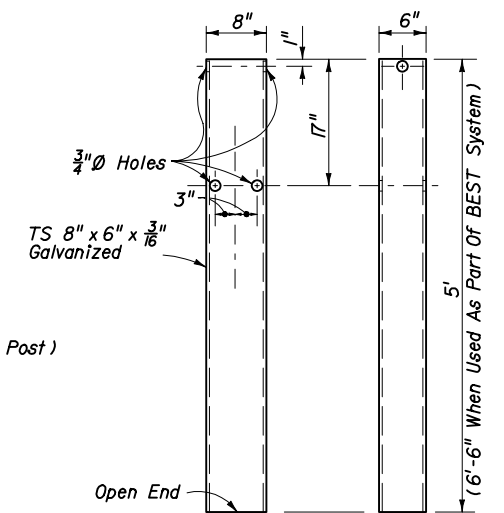
**SPECIAL STEEL GUARDRAIL POSTS**



**SHORT TIMBER BREAKAWAY POST**

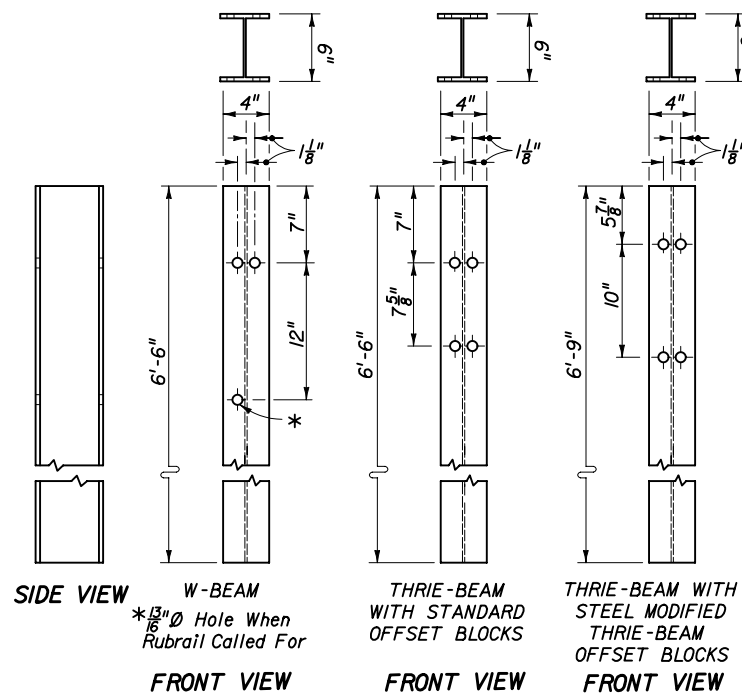


**CRT TIMBER POST**



**STEEL TUBE**

**SPECIAL TIMBER GUARDRAIL POSTS**



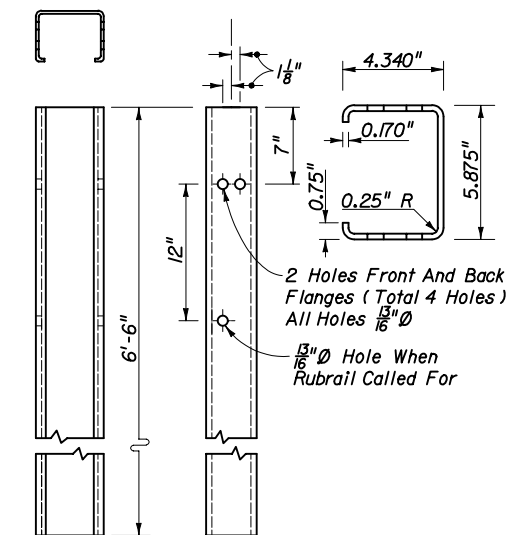
**W-BEAM THRIE-BEAM WITH STANDARD OFFSET BLOCKS THRIE-BEAM WITH STEEL MODIFIED THRIE-BEAM OFFSET BLOCKS**

All Holes Shall Be 1/8 inch Diameter Identical Front And Back Flanges

Note: W6 x 8.5 or W6 x 9 steel posts may be either rolled or welded structural shapes conforming to or exceeding the design properties of ASTM A6/A6M. Welding shall be in accordance with the requirements of ASTM A769/A769M. Posts shall be cut to length and the ends seal welded between web and flange before galvanizing. Posts to be galvanized in accordance with ASTM A123.

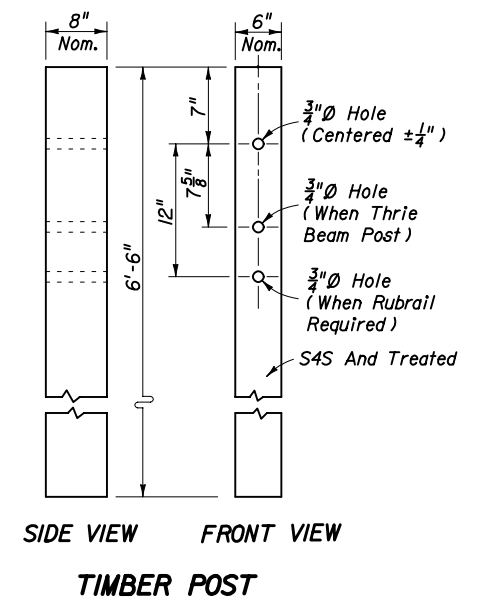
**W6 x 8.5 OR W6 x 9 STEEL POST**

**STANDARD TIMBER AND STEEL GUARDRAIL POSTS**



**6'-C STEEL POST**

Note: 6'-C steel posts are to face the same direction in any continuous run of guardrail. Posts to be galvanized in accordance with ASTM A123.



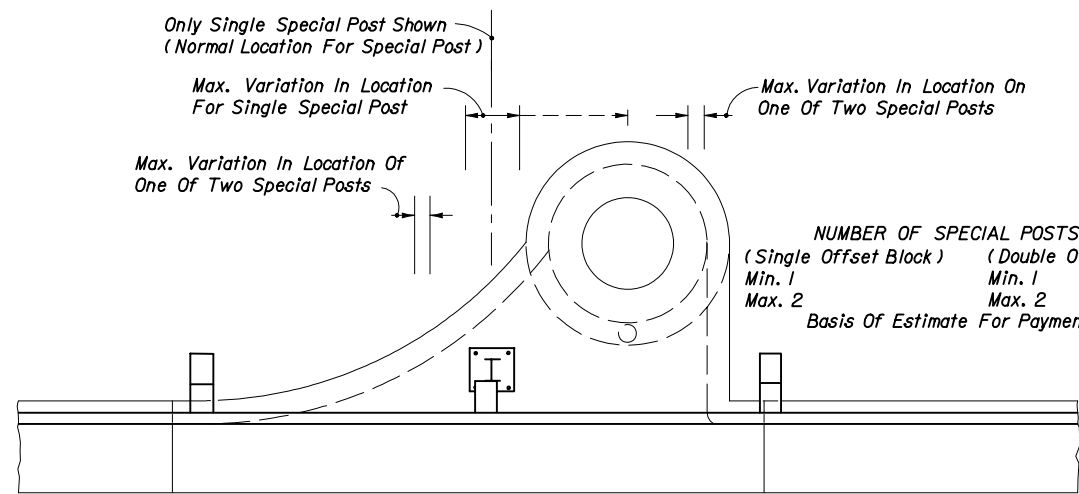
**TIMBER POST**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

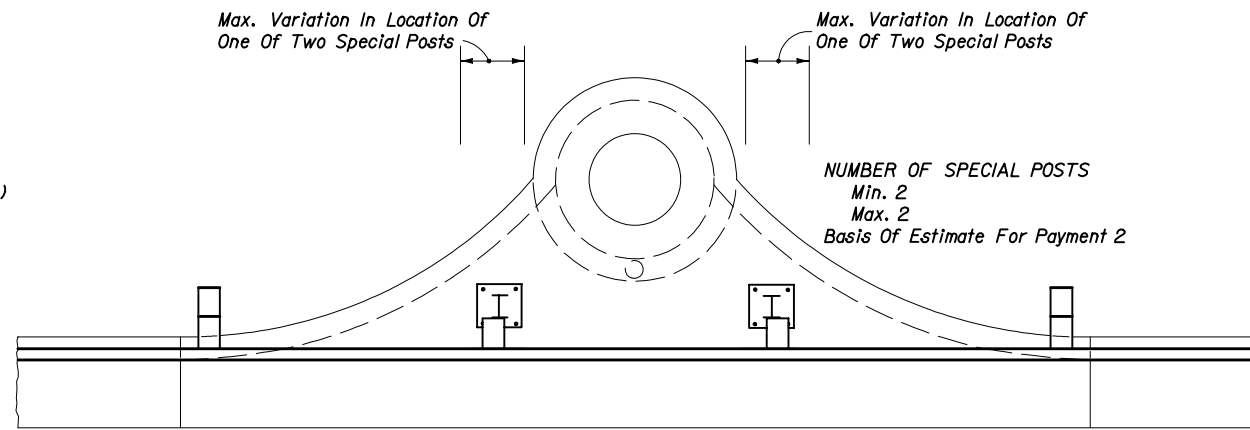
**GUARDRAIL**

Designed By	Names	Dates	Approved By		
Drawn By	JM	08/81	 Roadway Design Engineer	Revision	Sheet No.
Checked By	JVG/JBW	08/81		04	19 of 31

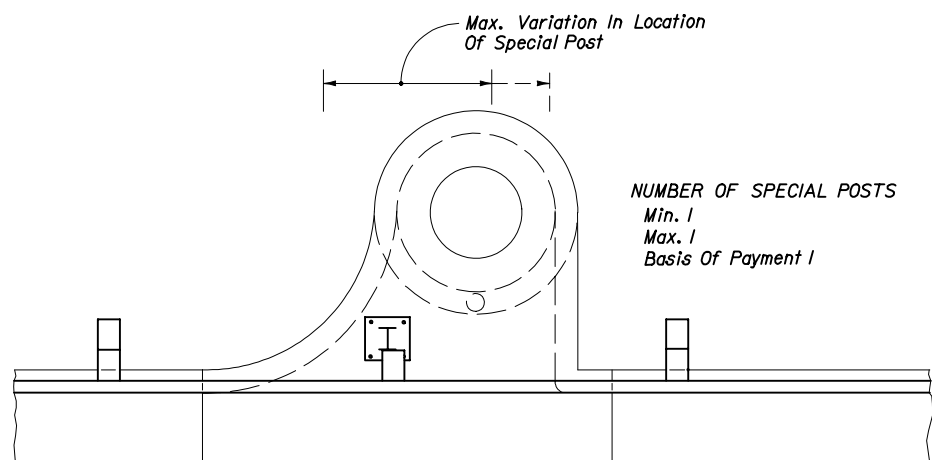
**GUARDRAIL POSTS**



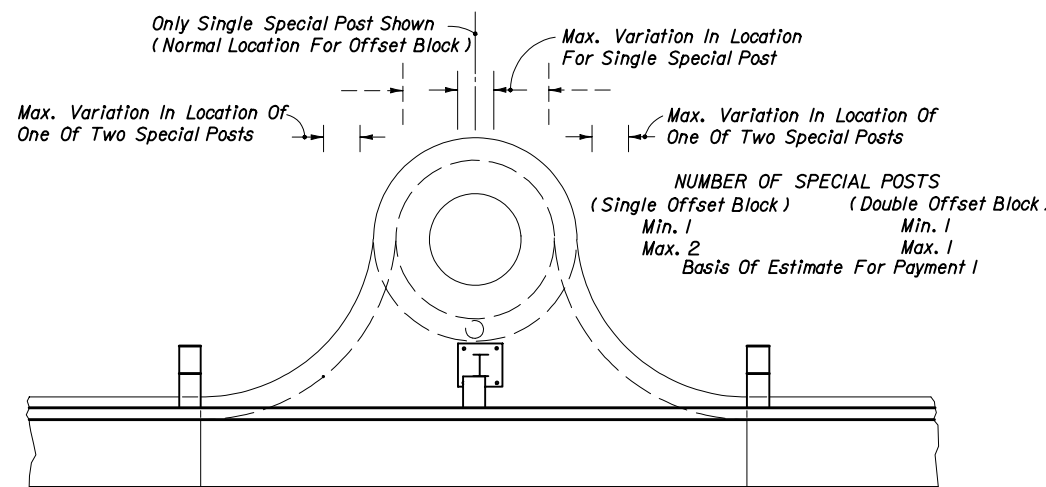
**CURB INLET TYPE 1**



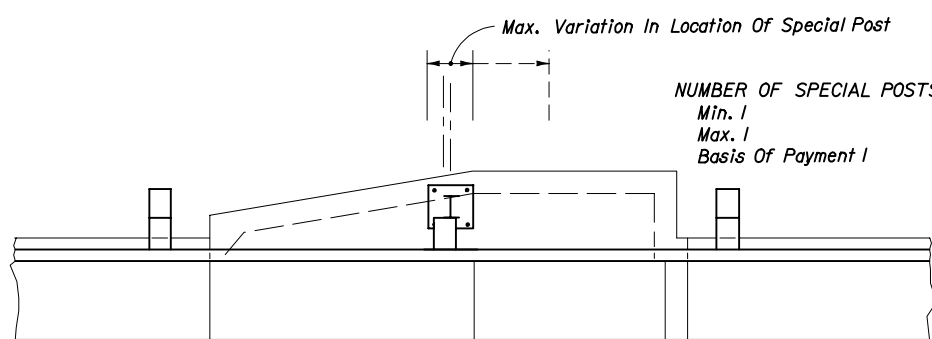
**CURB INLET TYPE 2**



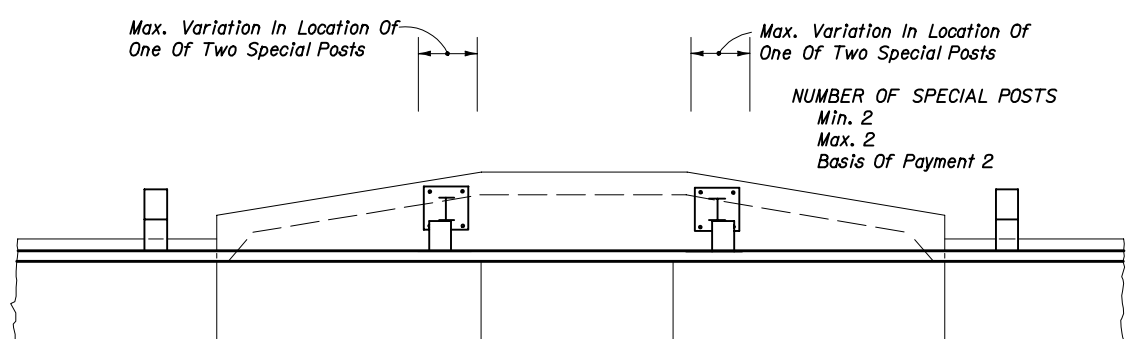
**CURB INLET TYPE 3**



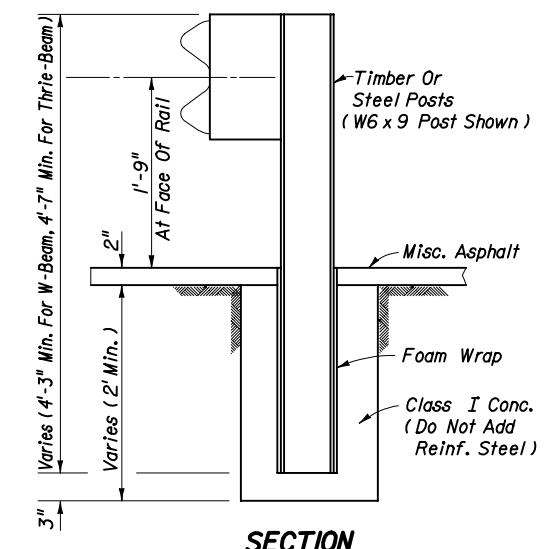
**CURB INLET TYPE 4**



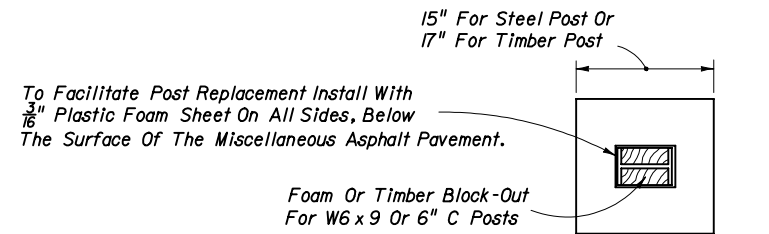
**CURB INLET TYPE 5**



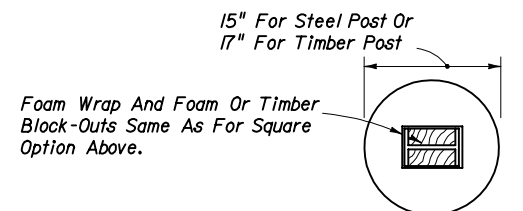
**CURB INLET TYPE 6**



**SECTION**



**PLAN (SQUARE OPTION)**



**PLAN (ROUND OPTION)**

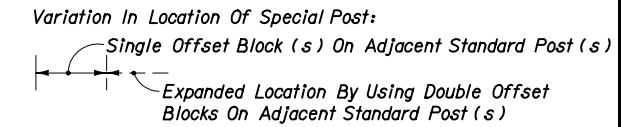
Note: For line post applications only, i.e., not to be used with breakaway post applications nor be used to modify End Anchorage Assemblies Type II.

**TO BE USED PRINCIPALLY OVER SHALLOW UTILITIES  
ENCASED GUARDRAIL POST**

**Notes:**

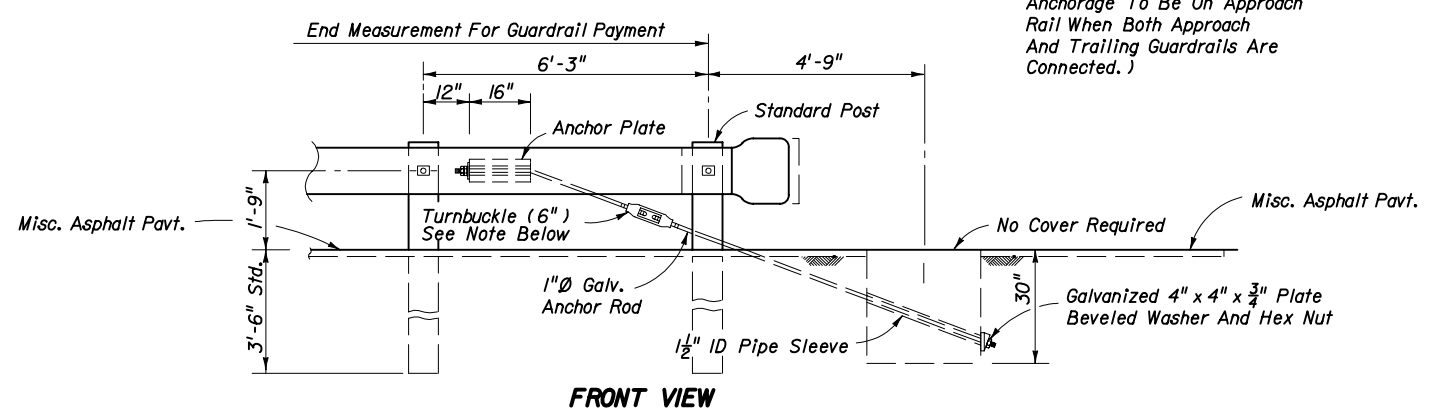
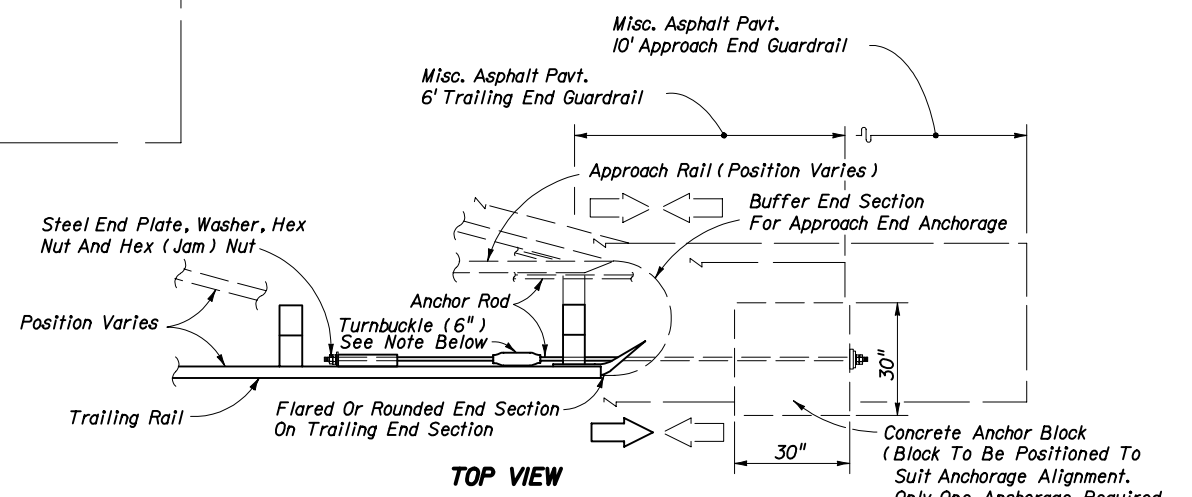
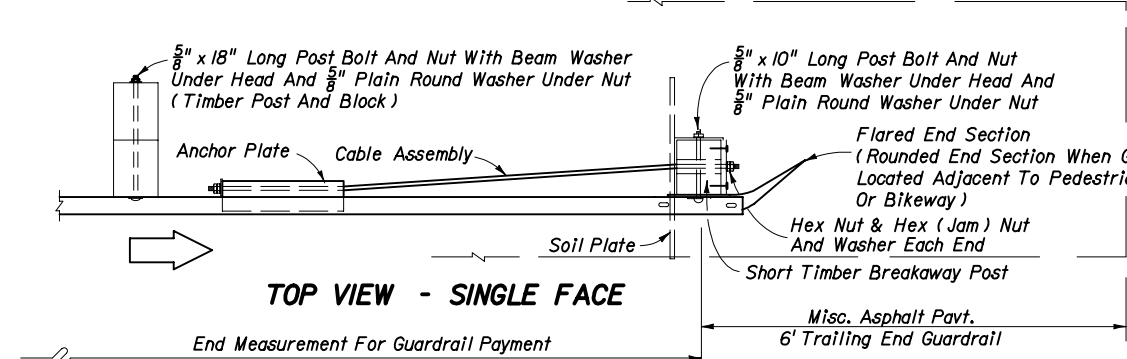
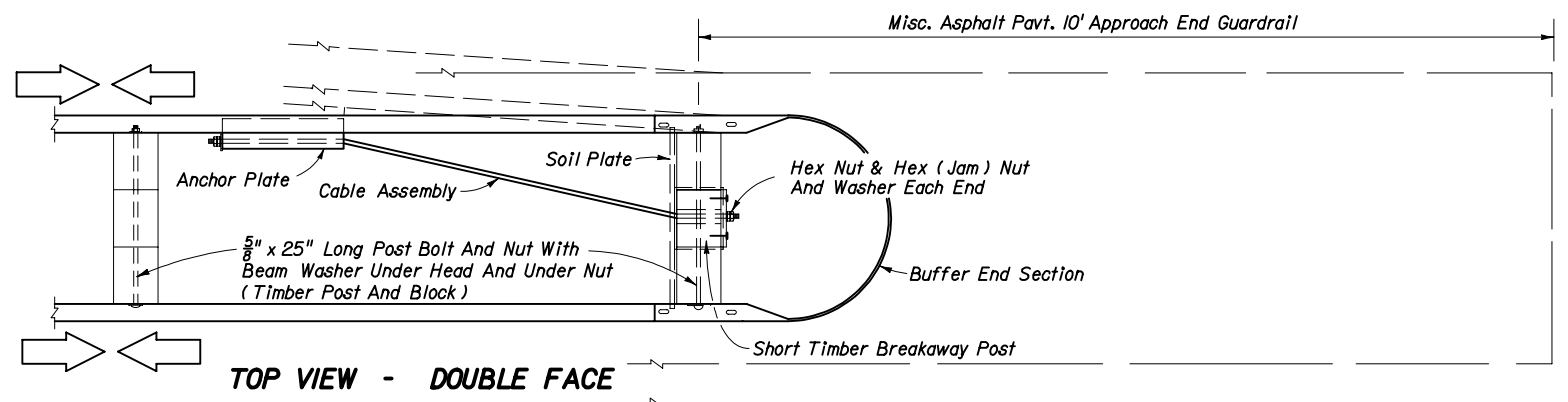
- The locations shown for special posts mounted on inlets are to be used as guidelines for positioning the posts and for estimating the number of required posts.
- Special posts and their anchorages mounted on curb inlets shall be in accordance with special steel guardrail posts Sheet 19, and paid for under the contract unit price for Special Guardrail Post, EA.
- Variations shown for the locations of special posts mounted on inlets are established from standard post spacing (6'-3"); clearance of standard posts from inlets (4" min.); use of single and double offset blocks on standard posts adjacent to the inlets; optional flange mountings; and, concrete anchor edge distances (2" for grouted and 3 3/4" for expansion anchors). The number of posts and their locations may vary by reducing post spacing and adjusting the length of rail panel (s).
- Encased guardrail posts shall conform in section to standard timber and steel posts, and be paid for under the contract unit price for Special Guardrail Post, EA. Payment shall include cost of foam wrap and concrete encasement.

**LEGEND**



**SPECIAL POST LOCATIONS ON CURB INLETS**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	Names	Dates	Approved By <i>[Signature]</i>	
Drawn By	HSD	08/83	Revision	Sheet No. Index No.
Checked By	JVG	08/83	00	20 of 31 400



Turnbuckle to be used only for guardrail that is reset vertically. The existing anchor rod (1" or 1/4" Dia.) shall be field cut, threaded 4" on each end, and metalized in accordance with Sections 562 and 971 of the Standard Specifications. The cost for cutting, threading, metalizing and the turnbuckle shall be included in the contract unit price for Reset Guardrail, LF.

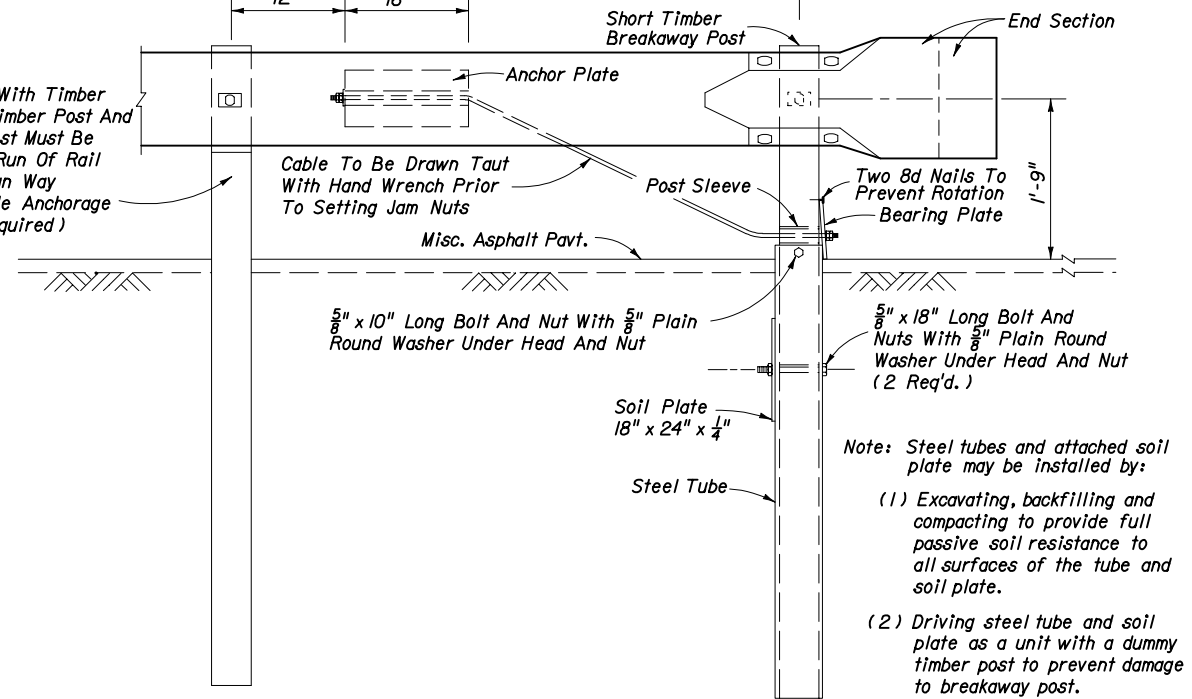
The payment for the items of End Anchorage Assembly Type II (Concrete Anchor Block Option) shall be full compensation for furnishing and installing the Beam Anchor Plate, Anchor Rod, Pipe Sleeve, Anchor Block, either Flared, Rounded or Buffer End Section, and the necessary hardware.

**CONCRETE ANCHOR BLOCK OPTION**

**TYPE II NOTES**

1. Unless specified in the plans, the contractor can supply either the cable anchor option or the concrete anchor block option.
2. Type II end anchorage assemblies are approved for all speeds and are intended for use as:
  - (a) trailing end anchorages for single face free standing guardrail systems;
  - (b) approach end anchorages for single face free standing guardrail systems when end anchorage is located outside of the clear zone; and,
  - (c) both approach and trailing ends of double face guardrail systems.
 Crash cushions shall be constructed at or in lieu of approach Type II end anchorages located inside the clear zone.
3. These end anchors are to be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Type II), EA as called for in the plans or by permit.

Timber Or Steel Post With Timber Block May Be Used, Timber Post And Block Shown (This Post Must Be Timber In Steel Post Run Of Rail Adjacent To Pedestrian Way Or Bikeway, To Provide Anchorage For Pipe Rails As Required)



The payment for the items of End Anchorage Assembly Type II (Cable Option) shall be full compensation for furnishing and installing either the Round or the Buffer End Section, the Beam Anchor Plate, Cable Assembly, Pipe Sleeve, Soil Plate, Steel Tube, Bearing Plate, Short Timber Breakaway Post, Offset Blocks and the necessary hardware.

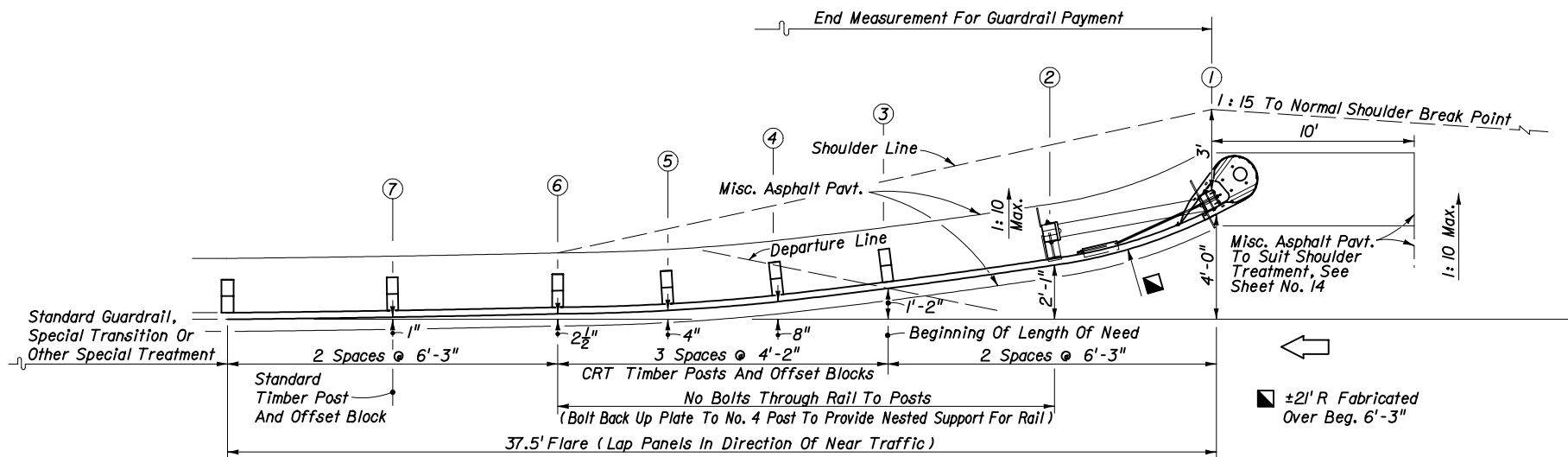
**CABLE ANCHOR OPTION**

Note: Steel tubes and attached soil plate may be installed by:

- (1) Excavating, backfilling and compacting to provide full passive soil resistance to all surfaces of the tube and soil plate.
- (2) Driving steel tube and soil plate as a unit with a dummy timber post to prevent damage to breakaway post.

**END ANCHORAGE ASSEMBLY TYPE II**

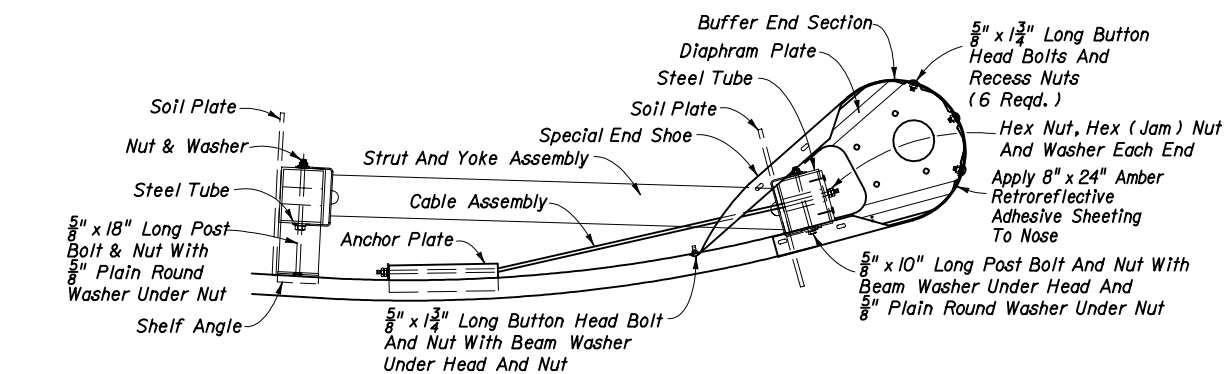
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	Names	Dates	Approved By	
Drawn By	JM	01/81	Revision	Sheet No. 21 of 31
Checked By	JGV	01/81	00	Index No. 400



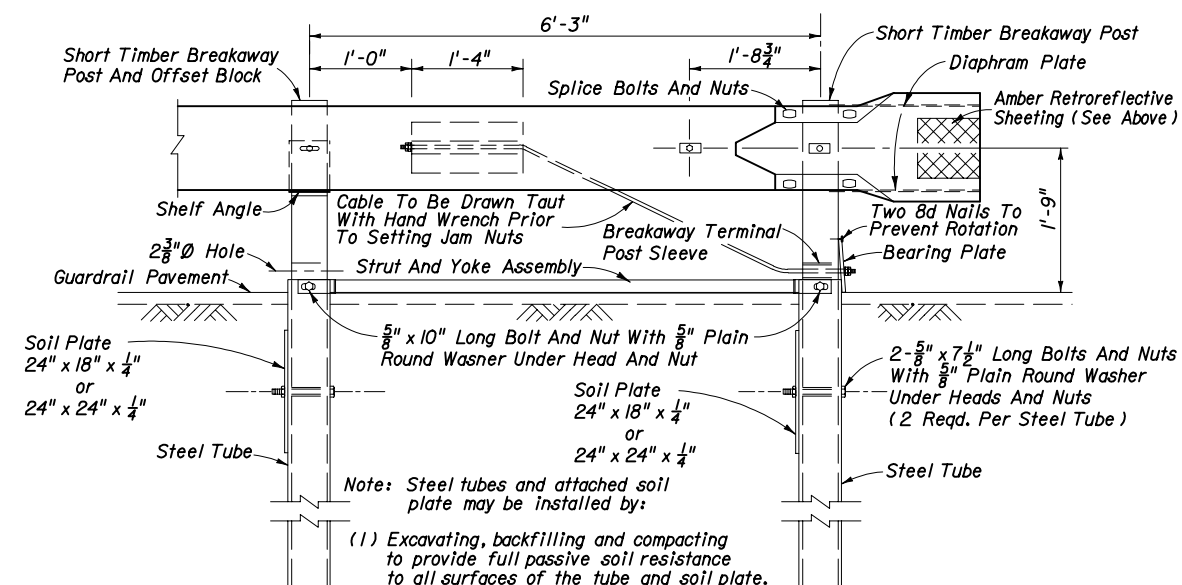
**PLAN**  
**MODIFIED ECCENTRIC LOADER TERMINAL (MELT)**

**MODIFIED ECCENTRIC LOADER TERMINAL NOTES**

1. The MELT is applicable for design speeds up to 45 mph. The MELT is intended for use as an approach end guardrail anchorage for shoulder guardrail. Its alignment is a flare from the normal guardrail alignment with an effective length of 37.5' including three standard W-beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the MELT and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the MELT when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The MELT shall be assembled in accordance with the distributor's detailed drawings, procedures and specifications.
4. The first two post must be short timber breakaway posts with steel foundation tubes and soil plates, post Nos. 3 thru 6 must be CRT timber posts and post No. 7 must be a standard timber post.
5. The MELT can not be used in medians where horizontal clearance requires the use of a backrail.
6. See the General Notes for galvanizing requirements of metallic components.
7. If the plans call for the MELT at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly that meet the applications for that location. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
8. The MELT shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans, the distributor's detailed drawings, procedures and specifications and this Index.

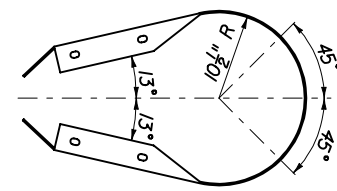


**TOP VIEW**

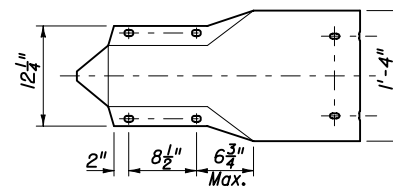


**FRONT VIEW**

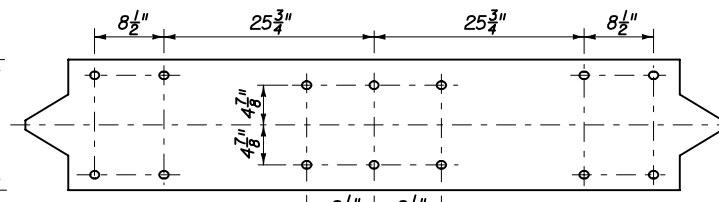
- Note: Steel tubes and attached soil plate may be installed by:
- (1) Excavating, backfilling and compacting to provide full passive soil resistance to all surfaces of the tube and soil plate.
  - (2) Driving steel tube and soil plate as a unit with a dummy timber post to prevent damage to breakaway post.



**PLAN**

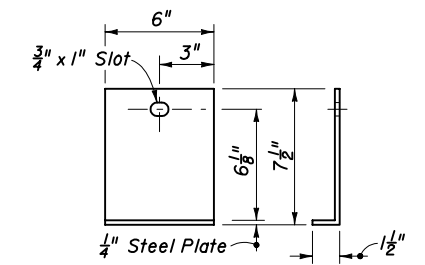


**ELEVATION**

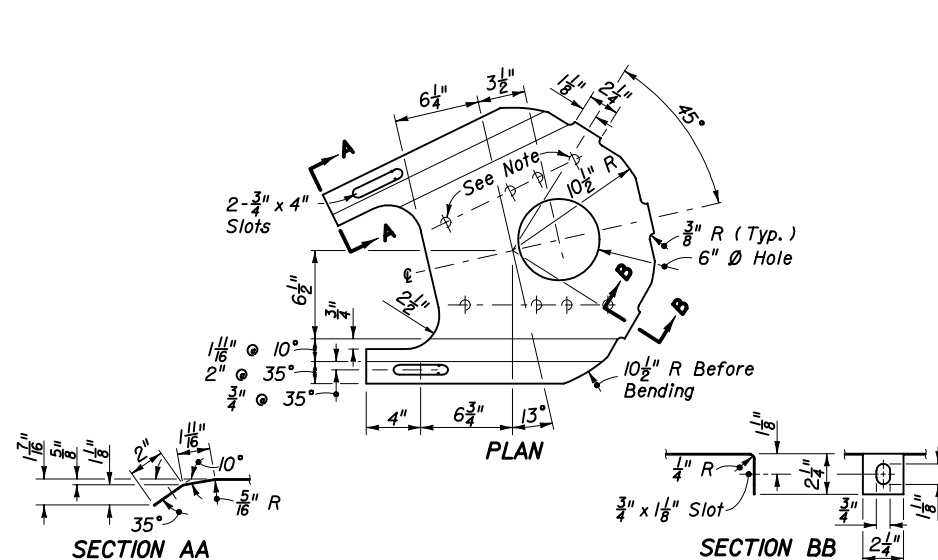


**FLAT PLATE LAYOUT**

**BUFFERED END SECTION**  
All Slots Shall Be 3/32" x 1 1/8"

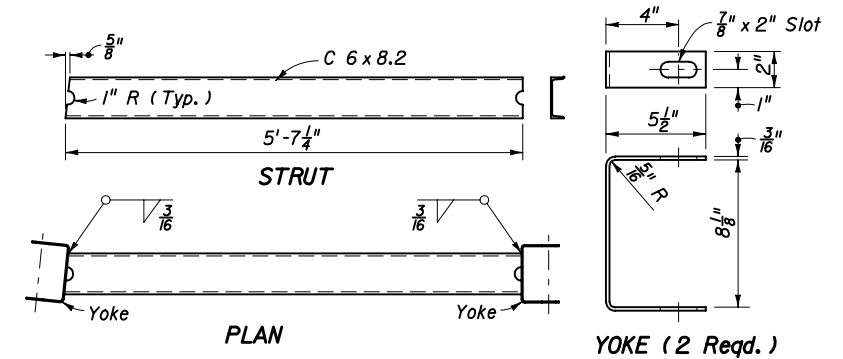


**SHELF ANGLE**



**DIAPHRAGM PLATE (2 Req'd.)**

Note: Bolt holes are not required, but, diaphragms with either manufacturer produced two or three hole in line patterns are acceptable.



Note: Assembly installed with channel turned down for right side guardrail and turned up for left side guardrail.

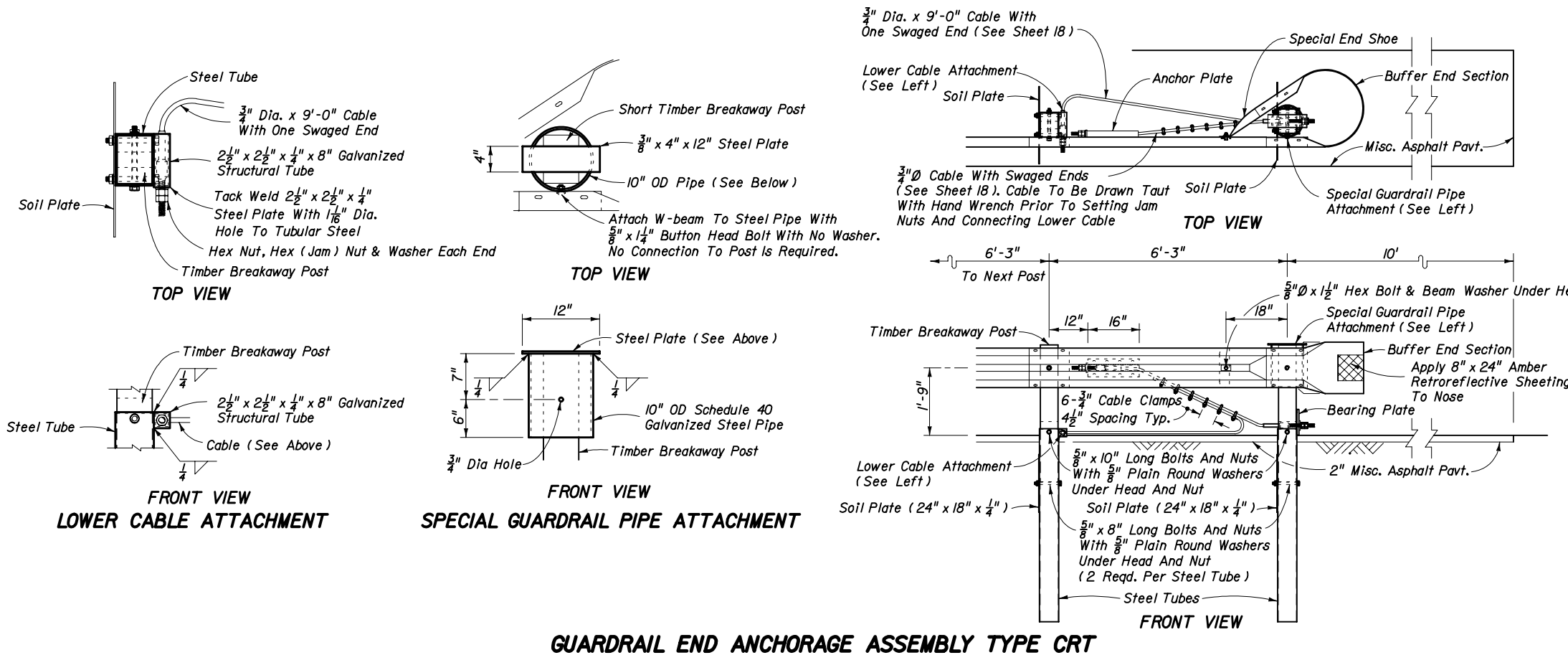
**STEEL STRUT AND YOKE ASSEMBLY**

**END ANCHORAGE ASSEMBLY TYPE MELT**

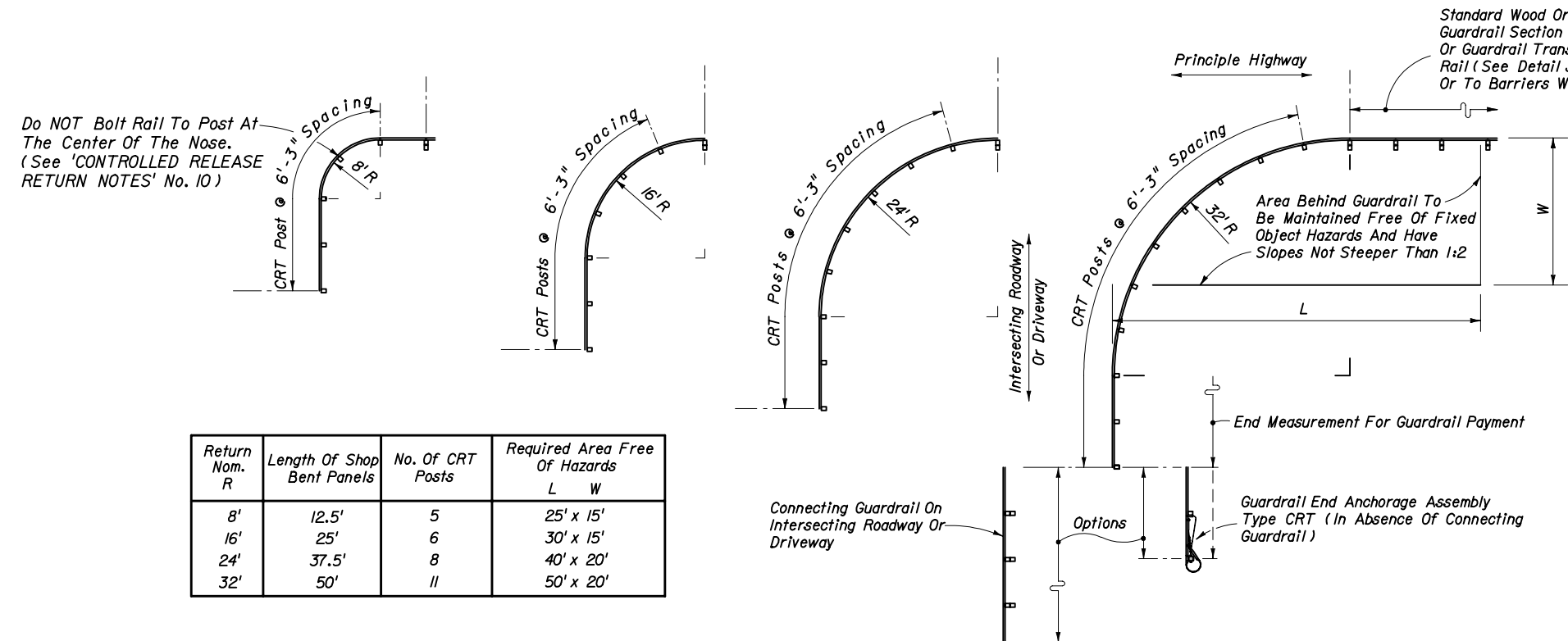
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	FHWA	3/95	Approved By <i>[Signature]</i>	
Drawn By	HKH	3/95	Revision	Sheet No.
Checked By	JVG	3/95	02	22 of 31
				Index No. 400

**CONTROLLED RELEASE RETURN NOTES**

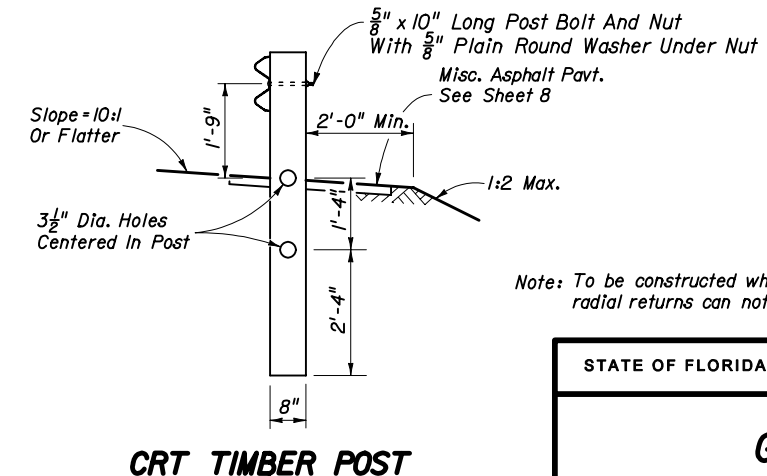
- Controlled release returns are intended for use (a) in openings in continuous guardrail for driveway and side road access when flares and transitions or standard radial returns can not be applied (Sheet II); and, (b) for shielding the ends of bridge traffic rails and barrier walls where the driveway and side road access is in close proximity to the structure and space does not permit the proper use of approved flared and parallel types of Guardrail End Anchorage Assemblies.
- Controlled release returns are not intended as a substitute or replacement for the appropriate use of approved vehicle impact attenuators.
- Controlled release returns with either 8', 16' or 24' radii are designed for highway speeds of 60 mph or less; the 32' radius return is to be used only for highway speeds of 45 mph or less.
- The controlled release returns shown are designed as full returns based on an intersection angle of 90°. The return can be terminated with the Guardrail End Anchorage Assembly Type CRT or connected to standard guardrail as shown or as otherwise detailed in the plans.
- The Guardrail End Anchorage Assembly Type CRT is to be used only for the controlled release returns with 8', 16', 24' and 32' radii as shown; the assembly is not to be used in any tangent rail or flared rail applications. Other types of end anchorage assemblies are not to be used in the controlled release returns.
- The area immediately behind the control release return shall have slopes not steeper than 1:2 and be maintained free of fixed objects in accordance with the area limits tabulated in the plan below.
- The surface approaching the controlled release return shall have a transverse slope not exceeding 1:10. The effective width of the transverse surface is to be based on standard vehicle departure, return radii and preceding shielding; the width (beyond shoulder) shall be not greater than the corresponding 15' and 20' W values tabulated below.
- The curved guardrail portion of the controlled release return shall be full section shop bent panels (12.5' or 25' panels).
- Washers are not to be used between the guardrail beam and the head of the button head post bolts at any controlled release terminal (CRT) post or at any Guardrail End Anchorage Assembly Type CRT breakaway timber post.
- The guardrail beam of the 8' radius return is not bolted to the center control release post.
- See the General Notes for galvanizing requirements of metallic components.
- Controlled release return systems shall be paid for under the contract unit prices for Guardrail (Roadway), LF, Guardrail (Shop-bent Panels), LF, and Guardrail, End Anchorage Assembly (Type CRT), EA as called for in the plans or by permit and shall be full compensation for furnishing and installing all components in accordance with the plans and with this index. CRT posts are included in the cost for guardrail.



**GUARDRAIL END ANCHORAGE ASSEMBLY TYPE CRT**



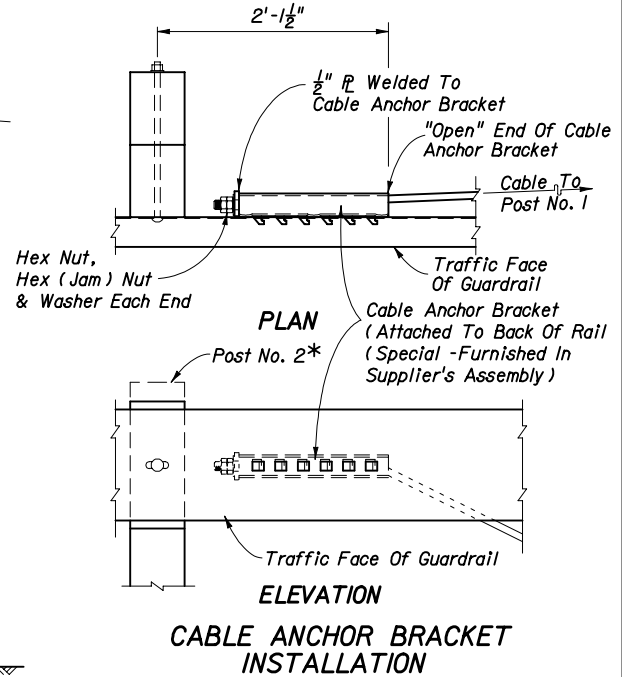
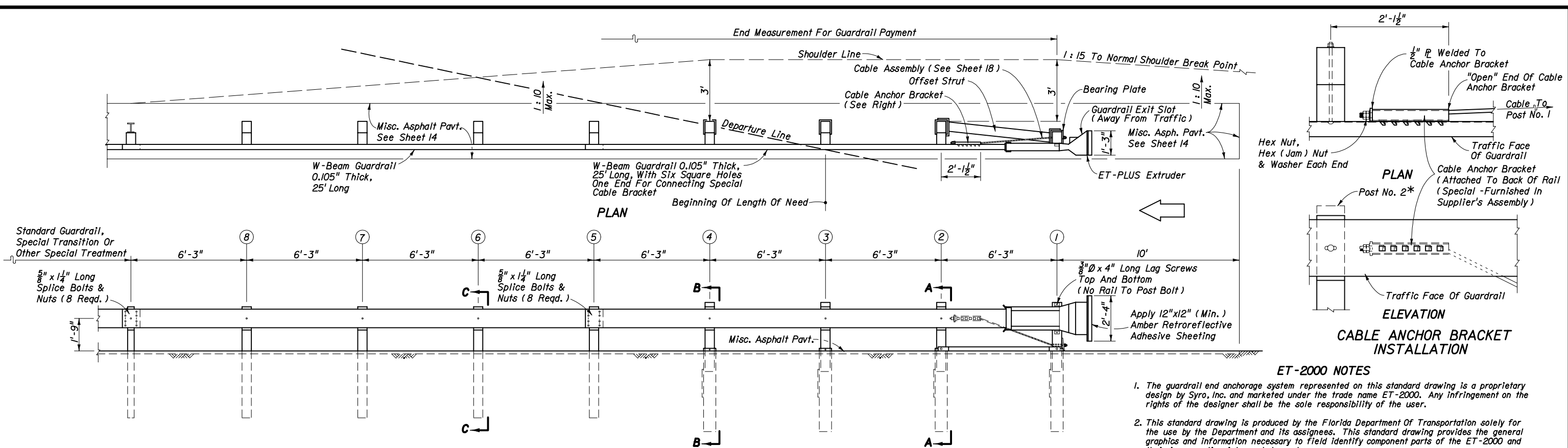
Return Nom. R	Length Of Shop Bent Panels	No. Of CRT Posts	Required Area Free Of Hazards L W
8'	12.5'	5	25' x 15'
16'	25'	6	30' x 15'
24'	37.5'	8	40' x 20'
32'	50'	11	50' x 20'



Note: To be constructed when flares and transitions or standard radial returns can not be applied. See Sheet II.

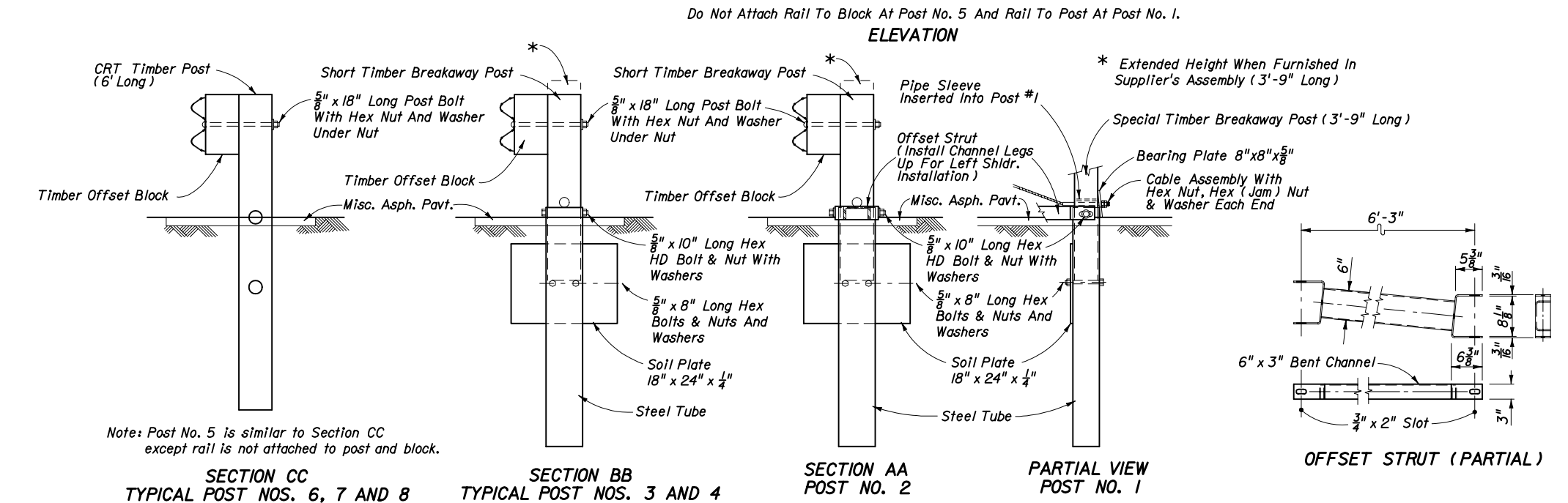
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	FHWA	Dates	Approved By <i>[Signature]</i>	
Drawn By	HSD	1/93	Revision	Sheet No. Index No.
Checked By	JVG	1/93	04	23 of 31 400

**CONTROLLED RELEASE RETURN FOR SIDE ROAD AND DRIVEWAY ACCESS**

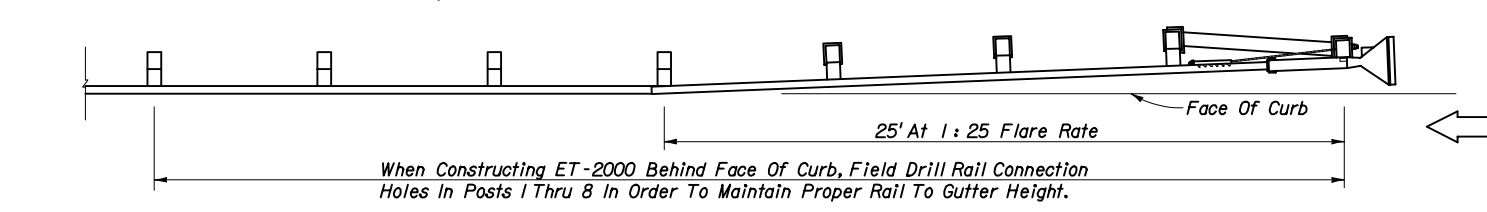


**ET-2000 NOTES**

- The guardrail end anchorage system represented on this standard drawing is a proprietary design by Syro, Inc. and marketed under the trade name ET-2000. Any infringement on the rights of the designer shall be the sole responsibility of the user.
- This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the ET-2000 and their incorporation into a whole system.
- This standard drawing is sufficient for plan details for the ET-2000 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The ET-2000 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
- The ET-2000 is intended for use as an approach end guardrail anchorage for shoulder guardrail located parallel to traffic lanes. The effective length of the ET-2000 is 50' including two 25' W-Beam panels of guardrail. The effective length is outside of any standard guardrail, guardrail transitions or other special treatments. The ET-2000 alignment is an extension of the normal guardrail alignment, except when constructed with curb the alignment of the ET-2000 will be flared over the first 25' at a rate of 1:25.
- The ET-2000 can not be used in medians where horizontal clearance requires the use of a backrail.
- Post Options:  
 (a) Posts at location Nos. 1, 2, 3 and 4 are timber breakaway posts with steel foundation tubes. The breakaway posts at location Nos. 5, 6, 7 and 8 may be constructed as shown in Section CC or may utilize timber breakaway posts with steel foundation tubes as shown in Section BB.  
 (b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by two parallel 3" x 3" x 1/4" steel angles, one angle each side between Posts No. 1 and No. 2. Post No. 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification of HBA Post Type J2.
- See the General Notes for galvanizing requirements of metallic component.
- If the plans call for the ET-2000 at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'parallel' at a specific location the contractor has the option to construct any FDOT approved parallel assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
- The ET-2000 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Parallel), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.



**OFFSET STRUT (PARTIAL)**



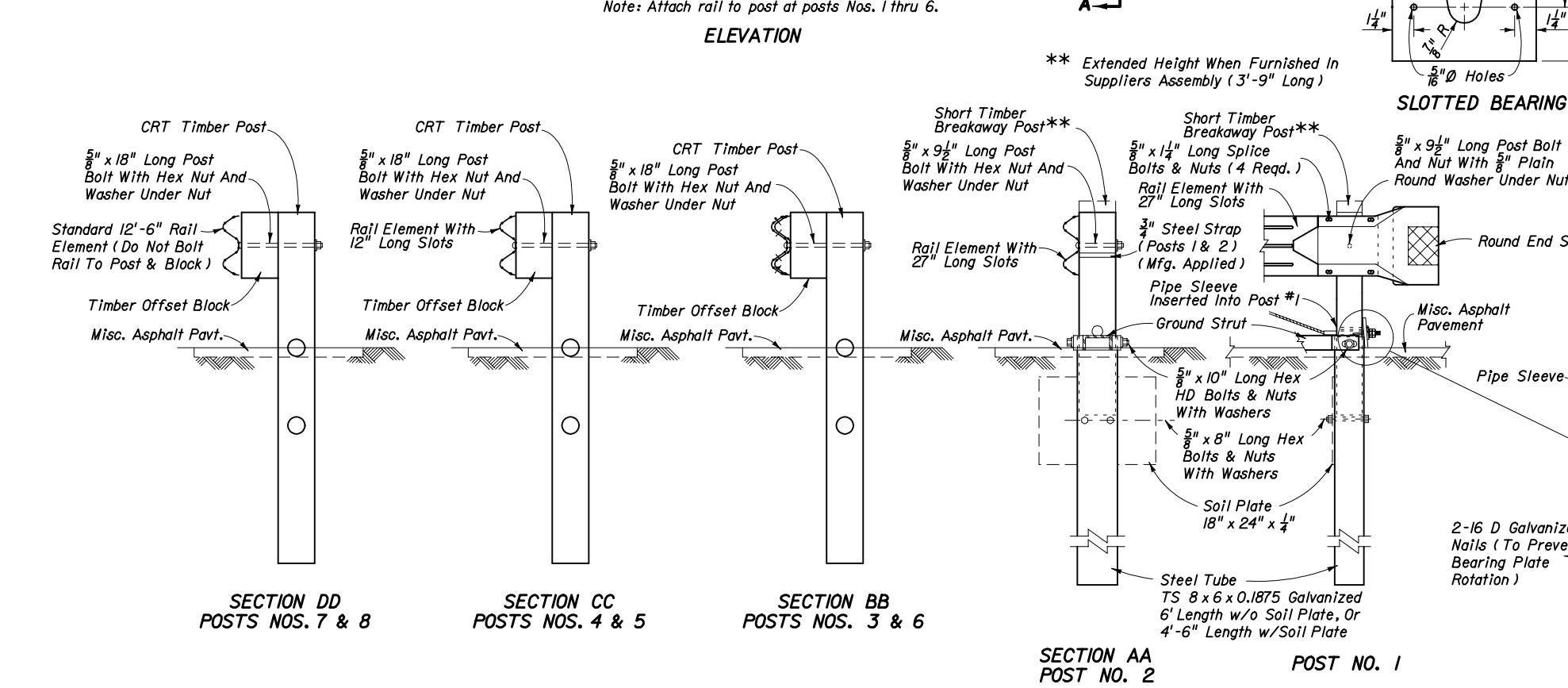
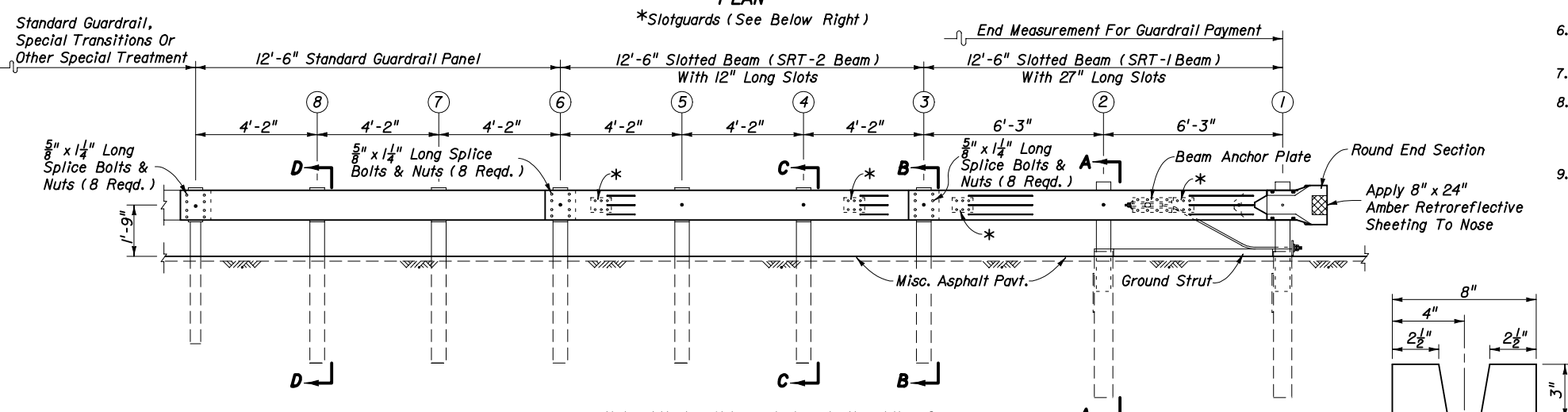
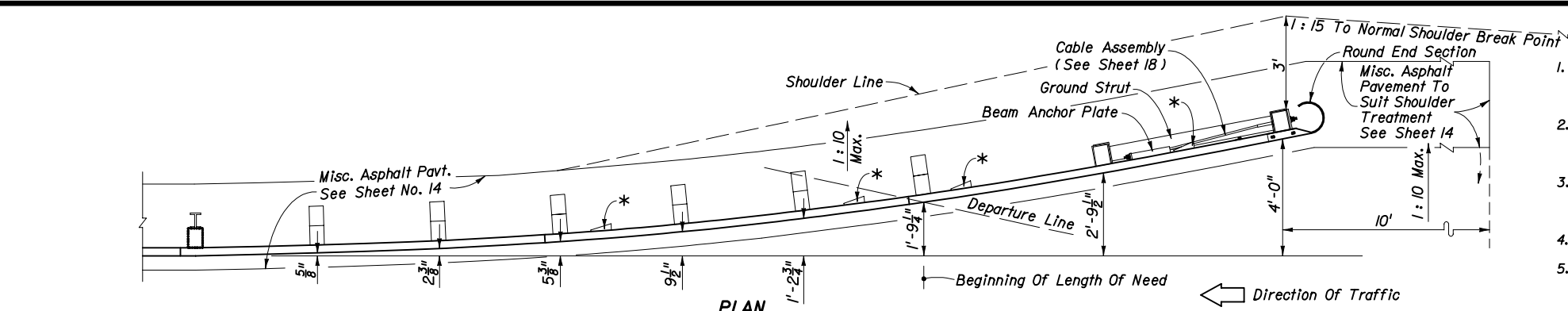
**DESIGN NOTES**

- A special site evaluation should be considered prior to using the ET-2000 where there is less than 25' clear area on the extrusion side (back side) of the ET-2000.
- The ET-2000 is suitable for all design speeds.

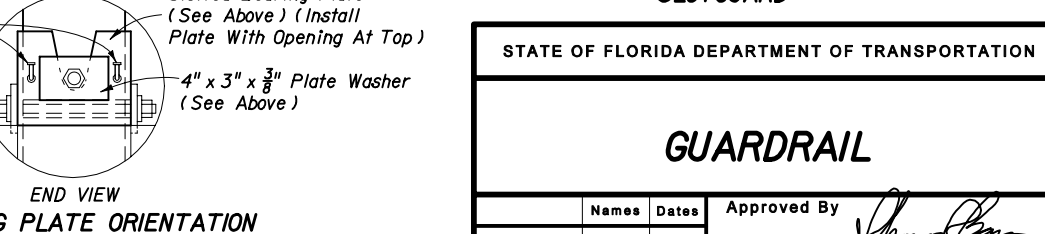
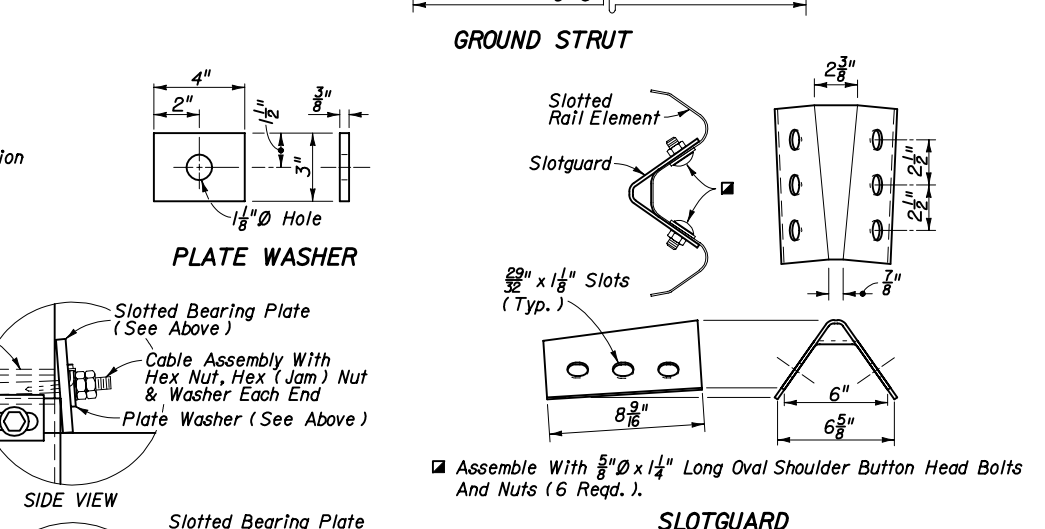
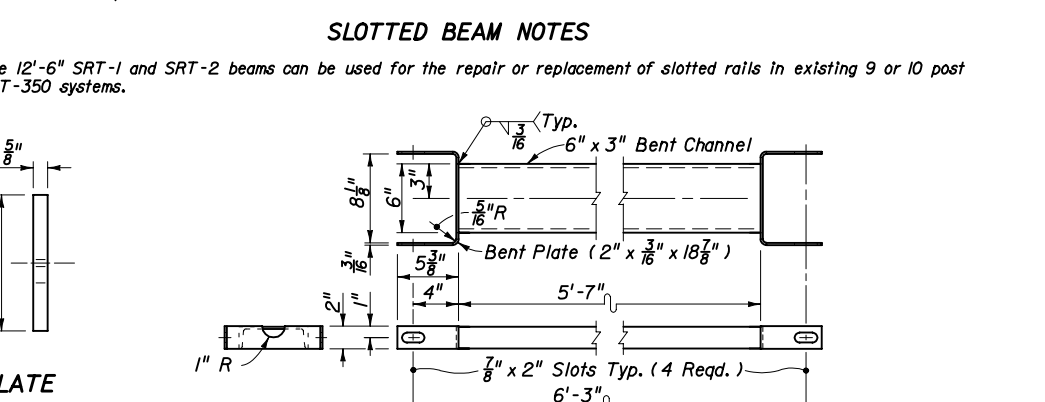
**END ANCHORAGE ASSEMBLY TYPE ET-2000**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Names	Dates	Approved By <i>[Signature]</i>		
Designed By MFG	8/95	Roadway Design Engineer		
Drawn By HKH	8/95	Revision	Sheet No.	Index No.
Checked By JVG	8/95	04	24 of 31	400



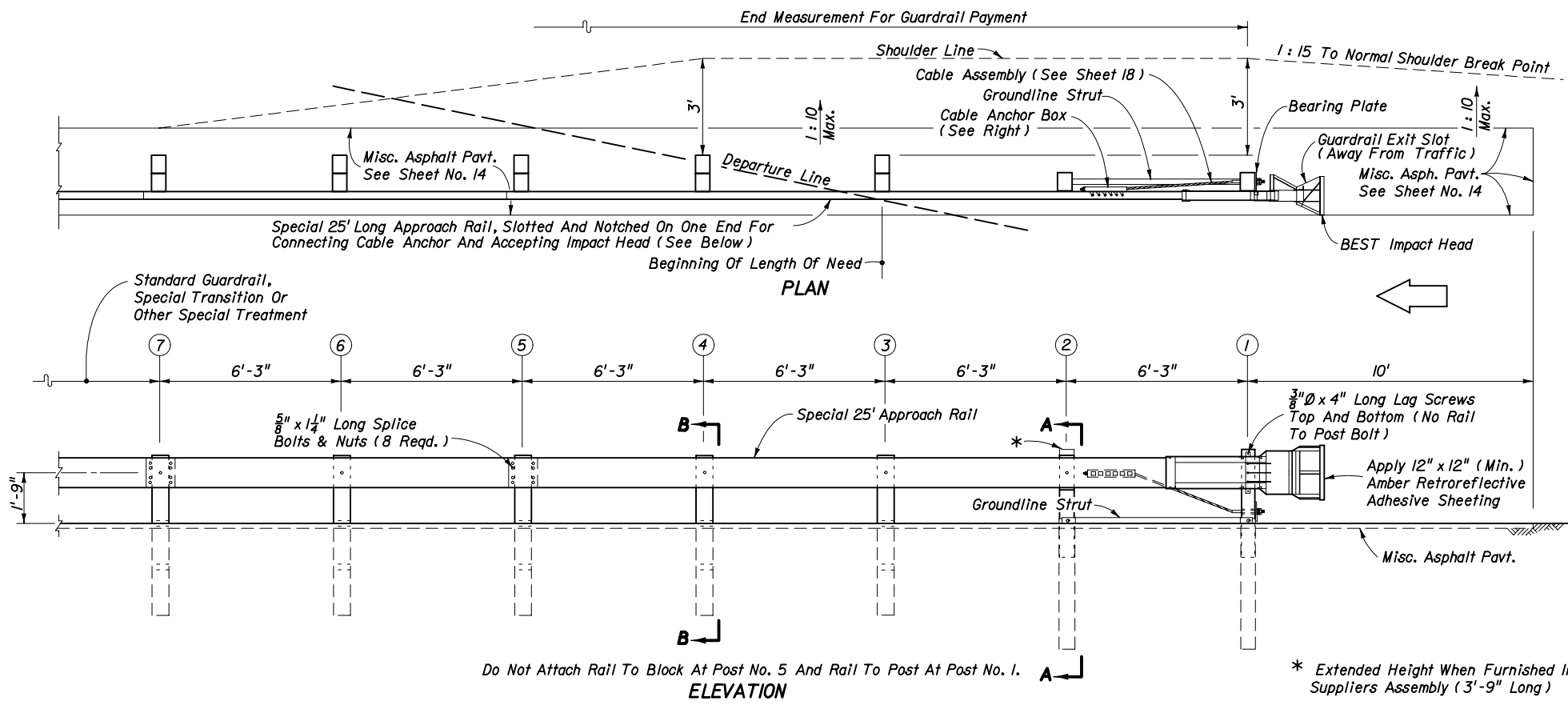


- ### SRT-350 NOTES
- The guardrail end anchorage system represented on this drawing is a proprietary eight (8) post design by Trinity Industries, Inc. and marketed by Syro, Inc. under the trade name SRT-350, short for Slotted Rail Terminal. Any infringement on the rights of the designer shall be the sole responsibility of the user.
  - This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SRT-350 and their incorporation into a whole system.
  - This drawing is sufficient for plan details for the SRT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless called for elsewhere in the plans. The SRT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
  - The SRT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
  - The SRT-350 is suitable for all design speeds. The SRT-350 is intended for use as an approach end anchorage for shoulder guardrail. Its alignment is a parabolic flare from the normal guardrail alignment with an effective length of 37.5' including two special slotted W-Beam panels and one standard W-Beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
  - Posts 1 and 2 must be timber breakaway posts each with a 3/4" steel strap located approximately 1" below the post bolt and a steel foundation tube. CRT breakaway posts shall be used at all other locations within the system.
  - See the General Notes for galvanizing requirements of metallic component.
  - If the plans call for the SRT-350 at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
  - The SRT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans, the manufacturer's detail drawings, procedures and specifications and this index.



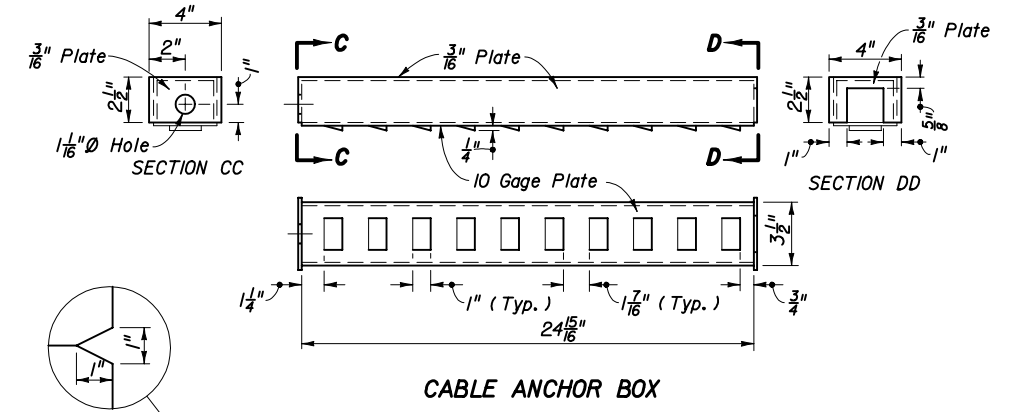
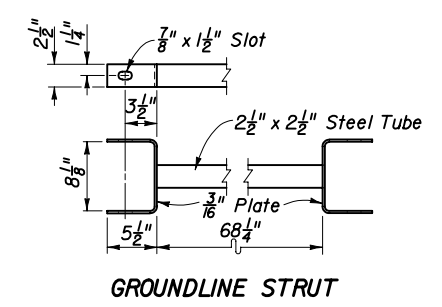
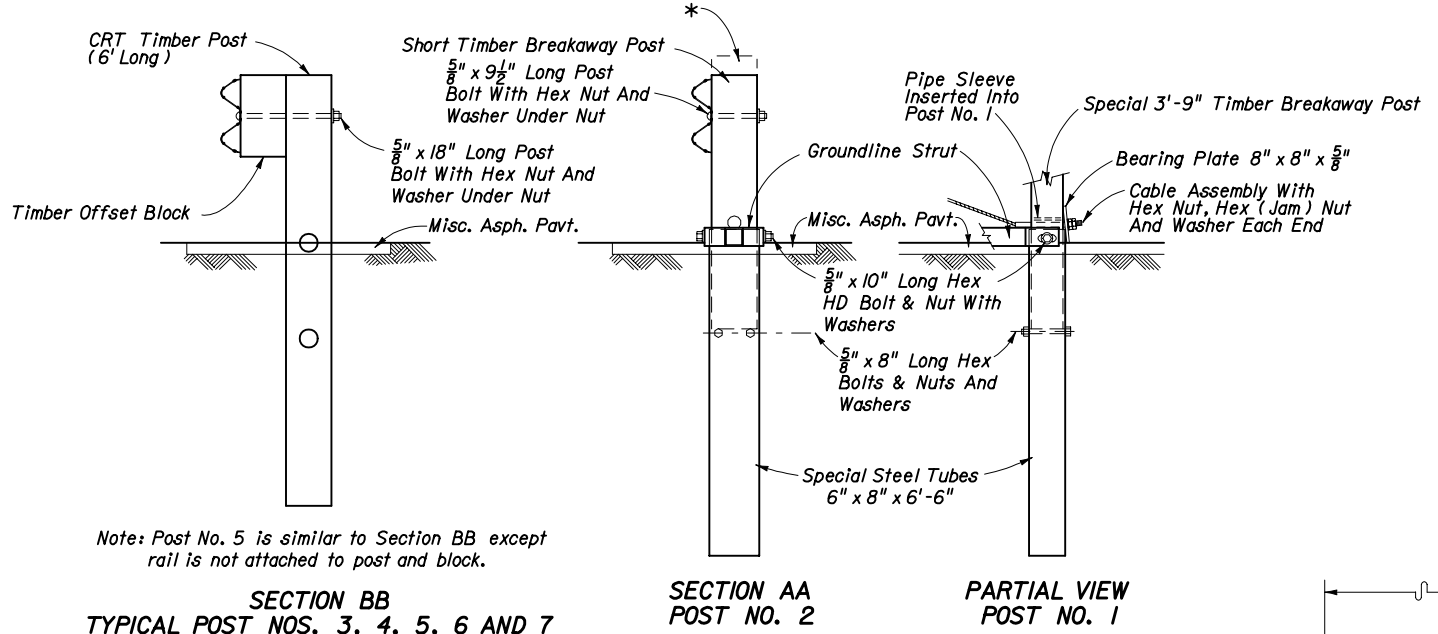
## END ANCHORAGE ASSEMBLY TYPE SRT-350 (8 POST SYSTEM)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
GUARDRAIL				
Names	Dates	Approved By		
Designed By	MFG	2/96	Roadway Design Engineer	
Drawn By	HKH	2/96		
Checked By	JVG	2/96		
Revision	02	Sheet No.		
Index No.	400			



- ### 'BEST' NOTES
- The guardrail end anchorage system represented on this standard drawing is a proprietary design by Interstate Steel Corporation and marketed under the trade name BEST. Any infringement on the rights of the designer shall be the sole responsibility of the user.
  - This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the BEST and their incorporation into a whole system.
  - This standard drawing is sufficient for plan details for the BEST when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The BEST shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
  - The BEST is intended for use as an approach end guardrail anchorage for shoulder guardrail located parallel to traffic lanes. The effective length of the BEST is 37.5' including a 25' special W-Beam panel plus one 12.5' standard W-Beam panel outside of any other standard guardrail, guardrail transitions or other special treatments. The alignment of the BEST is an extension of the normal guardrail alignment, except when constructed with curb the alignment of the BEST will be flared over the first 25' at a rate of 1:25.
  - The BEST can not be used in medians where horizontal clearance requires the use of a backrail.
  - Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6 and 7 shall be CRT timber posts.
  - See the General Notes for galvanizing requirements of metallic components.
  - If the plans call for the 'BEST' at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'parallel' at a specific location, the contractor has the option to construct any FDOT approved parallel assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchor will not be eligible for VECP consideration.
  - The BEST shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Parallel), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

- ### DESIGN NOTES
- A special site evaluation should be considered prior to using the BEST where there is less than 25' clear area on the extrusion side (back side) of the BEST.
  - The BEST is suitable for all design speeds.

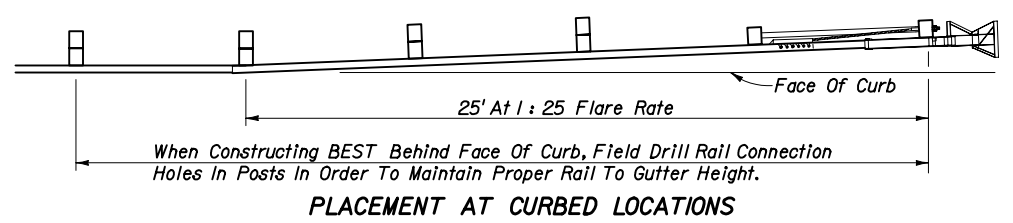


Note: Post No. 5 is similar to Section BB except rail is not attached to post and block.

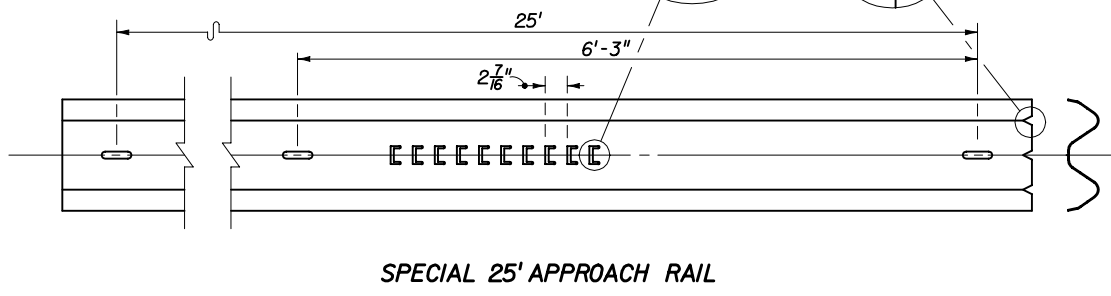
SECTION BB  
TYPICAL POST NOS. 3, 4, 5, 6 AND 7

SECTION AA  
POST NO. 2

PARTIAL VIEW  
POST NO. 1



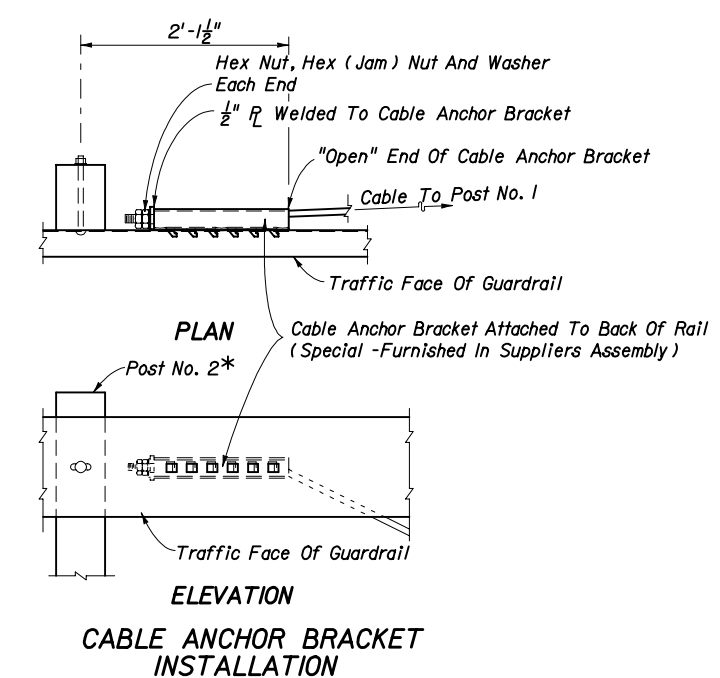
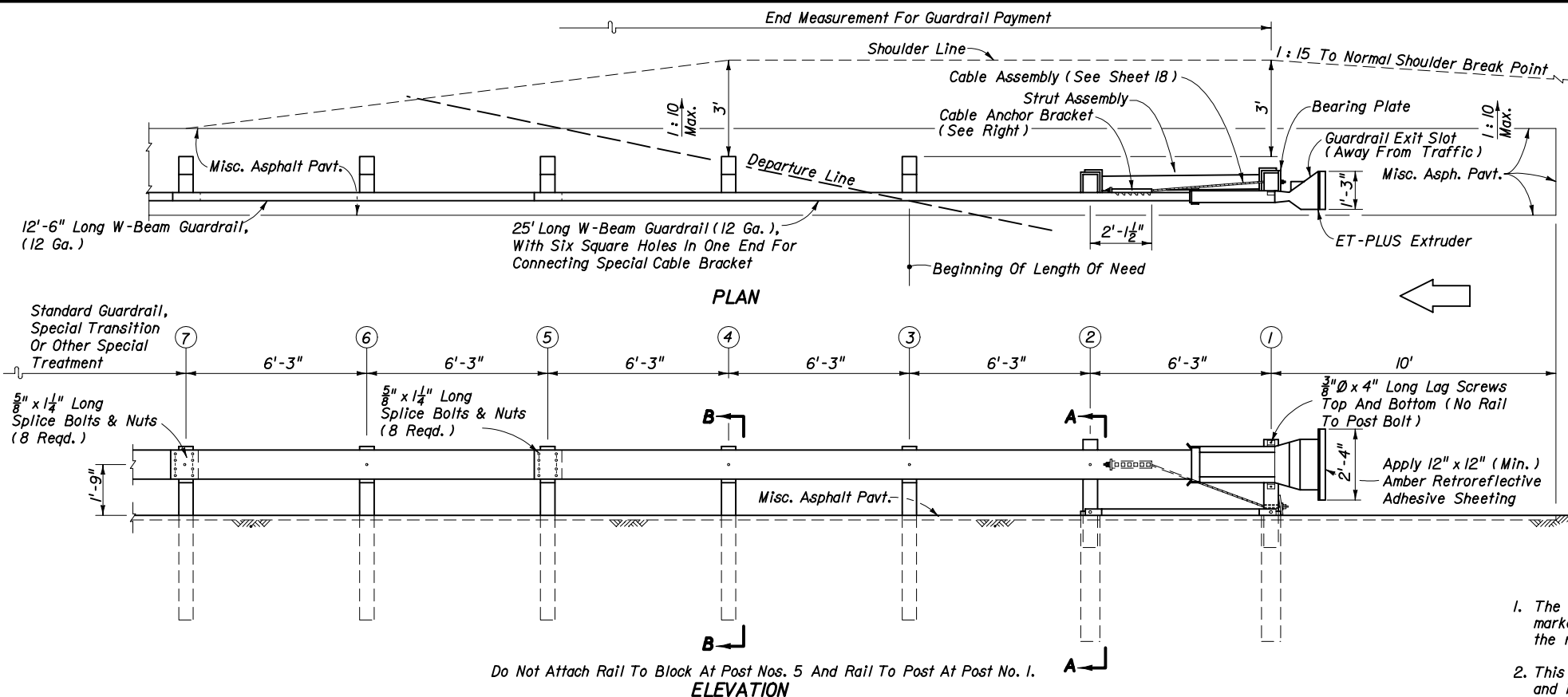
PLACEMENT AT CURBED LOCATIONS



SPECIAL 25' APPROACH RAIL

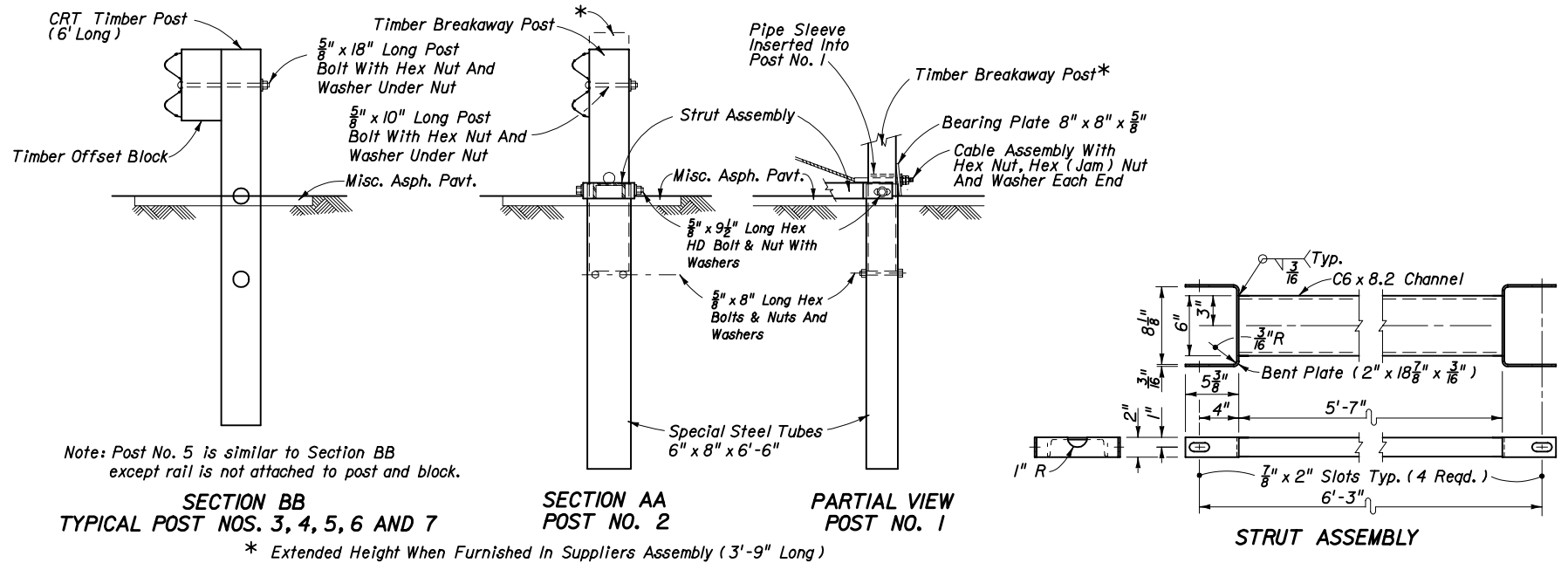
## END ANCHORAGE ASSEMBLY TYPE BEST

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	MFG	8/95	Approved By <i>Shawn Pen</i> Roadway Design Engineer	
Drawn By	HKH	8/95	Revision	Sheet No.
Checked By	JVG	8/95	00	26 of 31
				Index No. 400



**LET NOTES**

1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Syro, Inc. and marketed under the trade name ET-2000 LET hereafter referred to and identified as LET. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the LET and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the LET when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The LET shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The LET is intended for use as an approach end guardrail anchorage for shoulder guardrail located parallel to traffic lanes. The effective length of the LET is 37.5' including one 25' special W-Beam panel and one 12.5' standard W-Beam panel. The effective length is outside of any other standard guardrail, guardrail transitions or other special treatments. The LET alignment is an extension of the normal guardrail alignment, except when constructed with curb the alignment of the LET will be flared over the first 25' at a rate of 1 : 25.
5. The LET can not be used in medians where horizontal clearance requires the use of a backrail.
6. Post Options:  
 (a) Posts at location Nos. 1 and 2 are timber breakaway posts with special length steel foundation tubes without soil plates. Posts at location Nos. 3, 4, 5, 6 and 7 are CRT timber posts.  
 (b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by two parallel 3" x 3" x 1/4" steel angles, one angle each side between Posts No. 1 and No. 2. Post No. 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification HBA Post Type J2.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'LET' at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'parallel' at a specific location, the contractor has the option to construct any FDOT approved parallel assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchor will not be eligible for VECP consideration.
9. The LET shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Parallel), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detailed drawings, procedures and specifications and this Index.



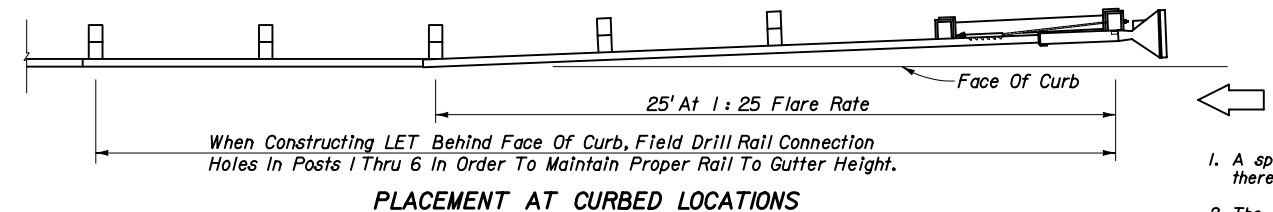
Note: Post No. 5 is similar to Section BB except rail is not attached to post and block.

**SECTION BB TYPICAL POST NOS. 3, 4, 5, 6 AND 7**  
 \* Extended Height When Furnished In Suppliers Assembly (3'-9" Long)

**SECTION AA POST NO. 2**

**PARTIAL VIEW POST NO. 1**

**STRUT ASSEMBLY**



**PLACEMENT AT CURBED LOCATIONS**


**DESIGN NOTES**

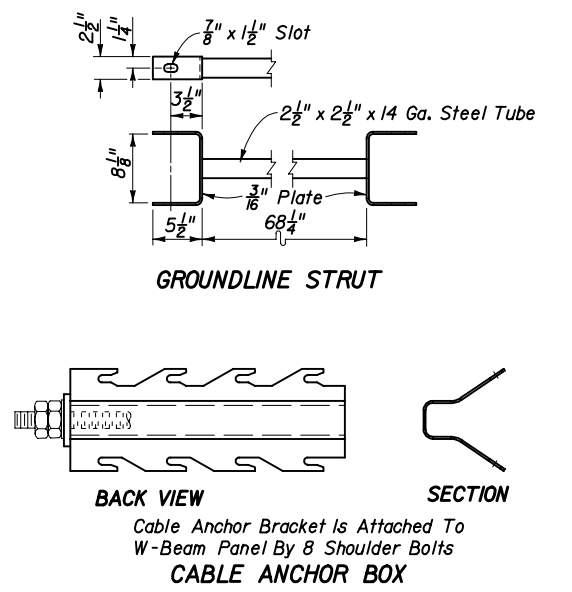
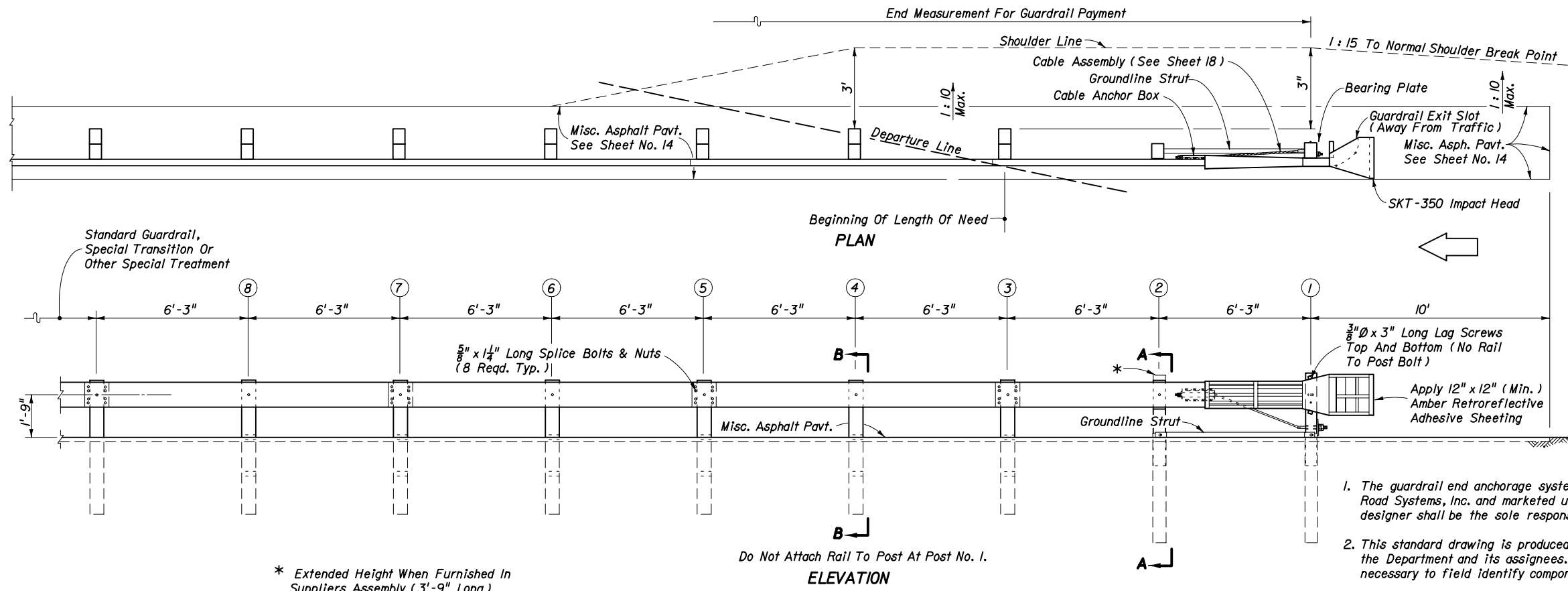
1. A special site evaluation should be considered prior to using the LET where there is less than 25' clear area on the extrusion side (back side) of the LET.
2. The LET is suitable for all design speeds.

**END ANCHORAGE ASSEMBLY TYPE LET**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

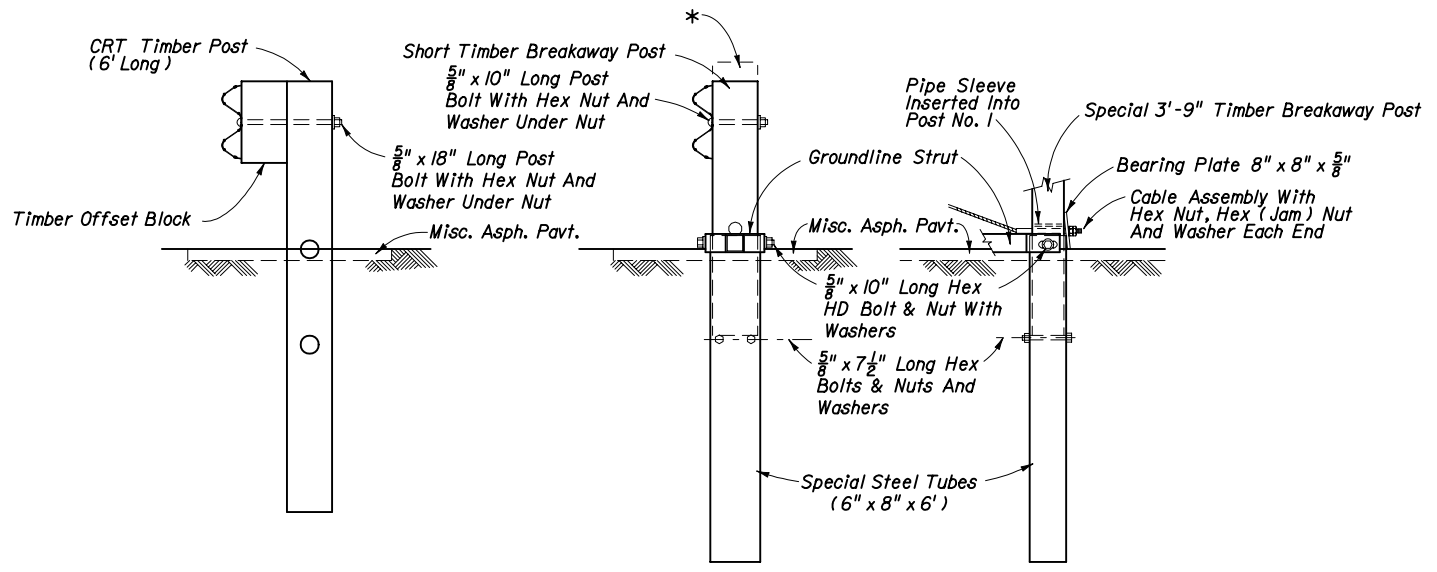
**GUARDRAIL**

Names	Dates	Approved By		
Designed By	STAFF	10/97	 Roadway Design Engineer	
Drawn By	HKH	10/97		
Checked By	JVG	10/97		
Revision	04	Sheet No.	27 of 31	Index No.
				400



\* Extended Height When Furnished In Suppliers Assembly (3'-9" Long)

Do Not Attach Rail To Post At Post No. 1.



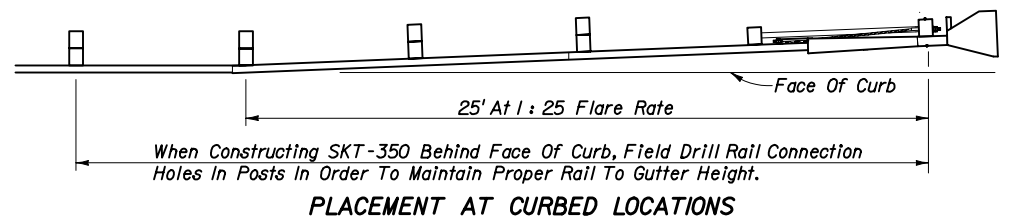
SECTION BB  
TYPICAL POST NOS. 3, 4, 5, 6, 7 AND 8

SECTION AA  
POST NO. 2

PARTIAL VIEW  
POST NO. 1

**'SKT-350' NOTES**

1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Road Systems, Inc. and marketed under the trade name SKT-350. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SKT-350 and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the SKT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The SKT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The SKT-350 is intended for use as an approach end guardrail anchorage for shoulder guardrail located parallel to traffic lanes. The effective length of the SKT-350 is 50'. The alignment of the SKT-350 is an extension of the normal guardrail alignment, except when constructed with curb the alignment of the SKT-350 will be flared over the first 25' at a rate of 1:25.
5. The SKT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
6. Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6, 7 and 8 shall be CRT timber posts.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'SKT-350' at a specific location, substitution with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'parallel' at a specific location, the contractor has the option to construct any FDOT approved parallel assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchor will not be eligible for VECP consideration.
9. The SKT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Parallel), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.



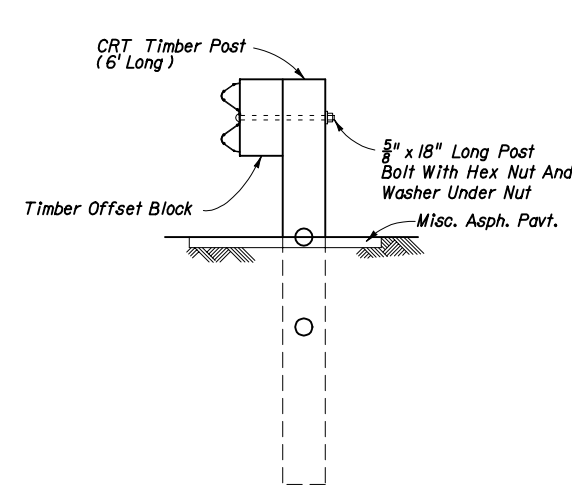
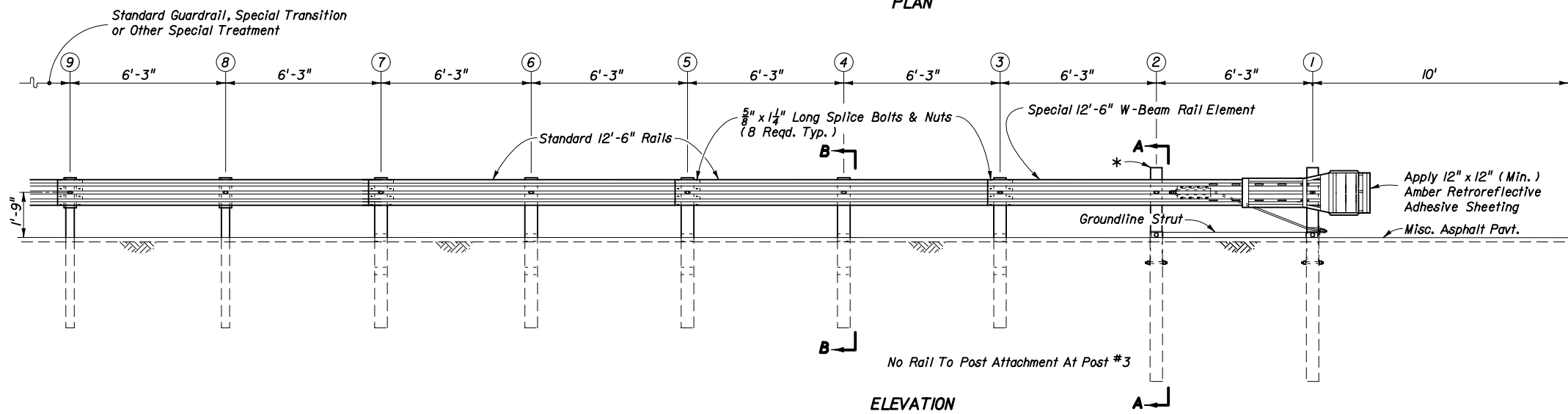
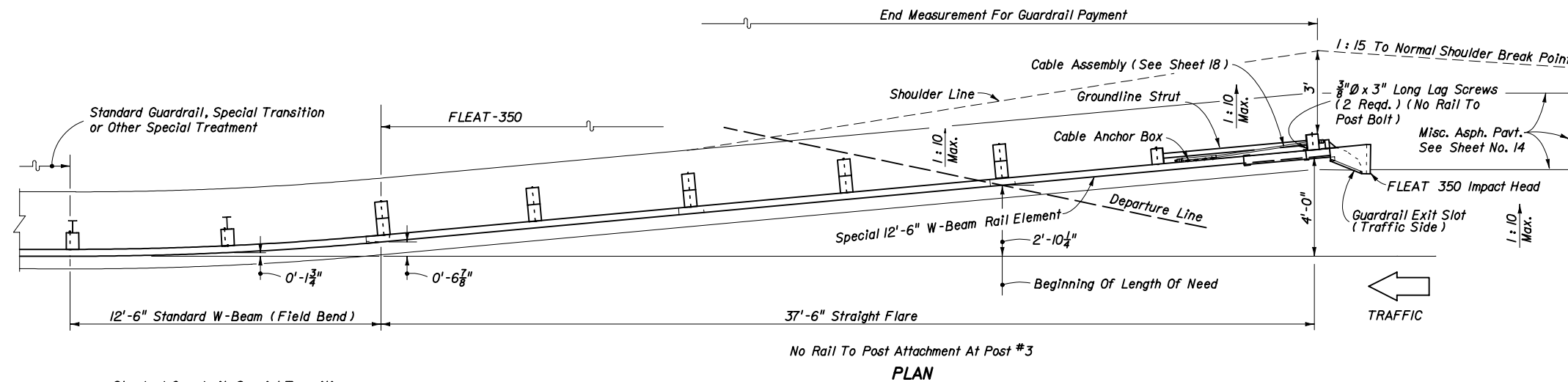
PLACEMENT AT CURBED LOCATIONS

**DESIGN NOTES**

1. A special site evaluation should be considered prior to using the SKT-350 where there is less than 25' clear area on the extrusion side (back side) of the SKT-350.
2. The SKT-350 is suitable for all design speeds.

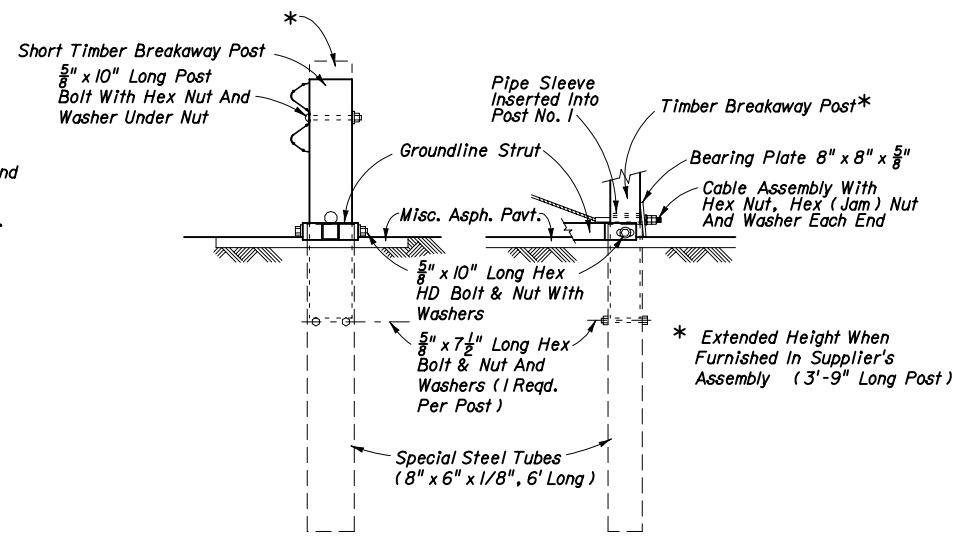
**END ANCHORAGE ASSEMBLY TYPE SKT-350**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Names	Dates	Approved By <i>[Signature]</i>		
Designed By MFG	8/95	Roadway Design Engineer		
Drawn By HKH	8/95	Revision	Sheet No.	Index No.
Checked By JVG	8/95	02	28 of 31	400



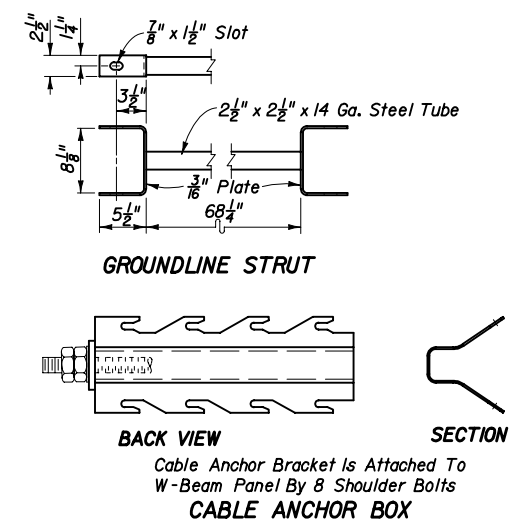
Note: Do not attach rail to block at post location 3.

SECTION BB  
TYPICAL POST NOS. 3, 4, 5, 6 AND 7



SECTION AA  
POST NO. 2

PARTIAL VIEW  
POST NO. 1



BACK VIEW  
SECTION  
Cable Anchor Bracket Is Attached To  
W-Beam Panel By 8 Shoulder Bolts  
CABLE ANCHOR BOX

**'FLEAT-350' NOTES**

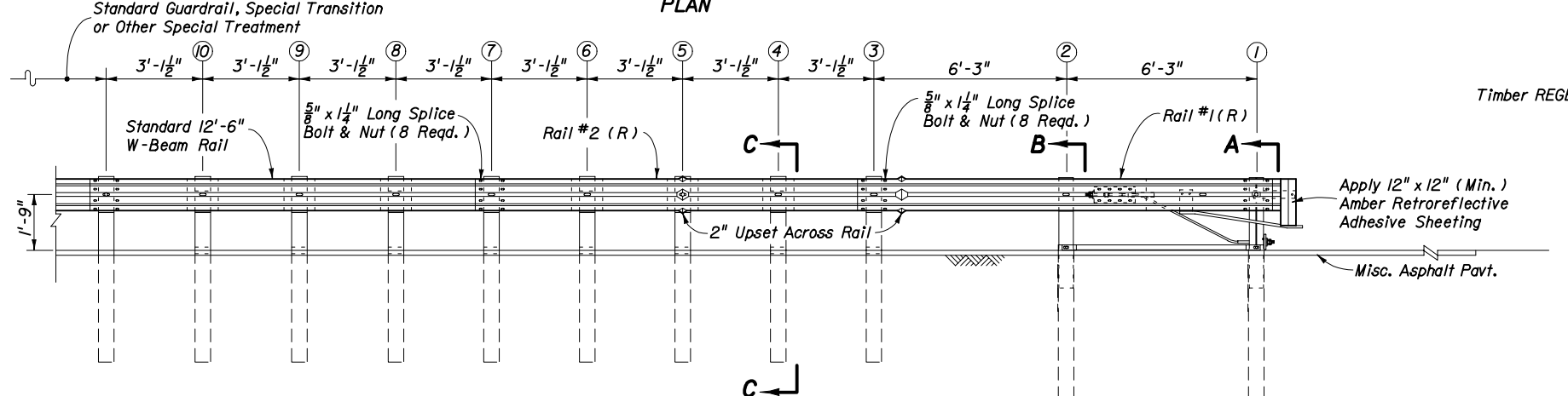
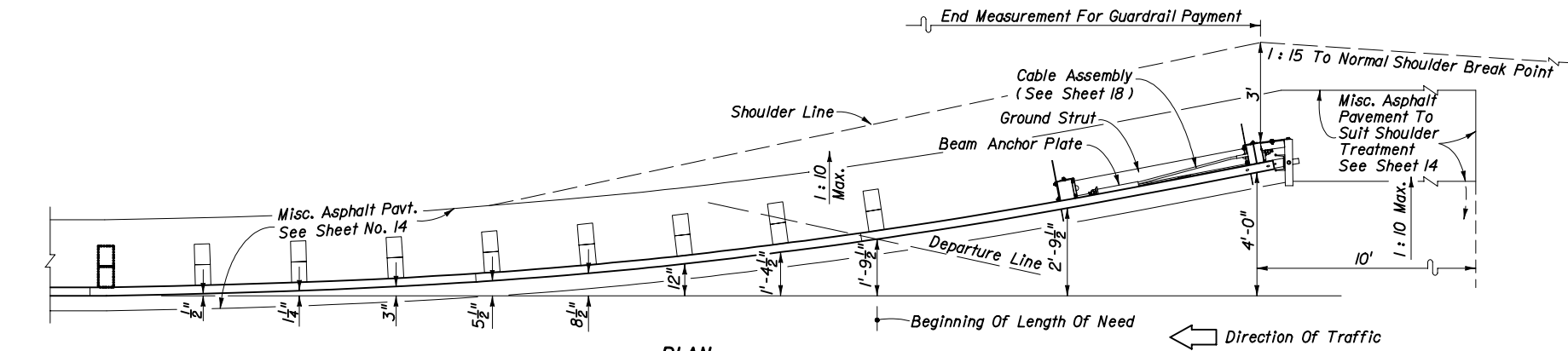
1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Road Systems, Inc. and marketed under the trade name FLEAT-350. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the FLEAT-350 and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the FLEAT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The FLEAT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The FLEAT-350 is intended for use as an approach end guardrail anchorage for shoulder guardrail. The effective length of the FLEAT-350 is 37.5' including one 12.5' special W-Beam panel plus two 12.5' standard W-Beam panels outside of any other standard guardrail, guardrail transitions or other special treatments. The alignment of the FLEAT-350 is a straight flare with an upstream offset of 4' and a downstream offset of 0'-6 7/8" from the normal guardrail alignment.
5. The FLEAT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
6. Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6, and 7 shall be CRT timber posts.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'FLEAT-350' at a specific location, substitution with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The FLEAT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

**DESIGN NOTES**

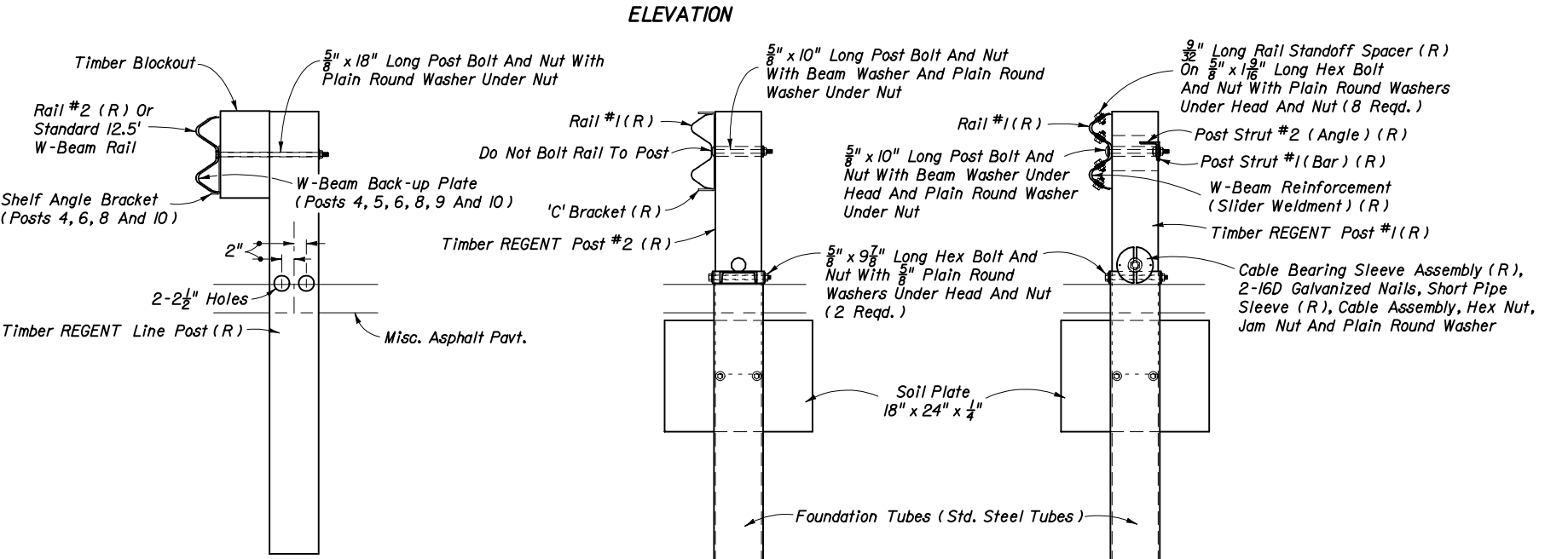
1. The FLEAT-350 is suitable for all design speeds.

**END ANCHORAGE ASSEMBLY TYPE FLEAT-350**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
<b>GUARDRAIL</b>				
Designed By	Names	Dates	Approved By	
Drawn By	HKH	07/98	 Roadway Design Engineer	
Checked By	JVG	07/98		
	Revision	Sheet No.	Index No.	
	04	29 of 31	400	



Note: Attach rail to post at posts Nos. 1 and 5 only. W-Beam back-up plates are to be installed at posts Nos. 4, 5, 6, 8, 9 and 10 only. Shelf angle brackets are to be installed at posts Nos. 4, 6, 8 and 10 only.



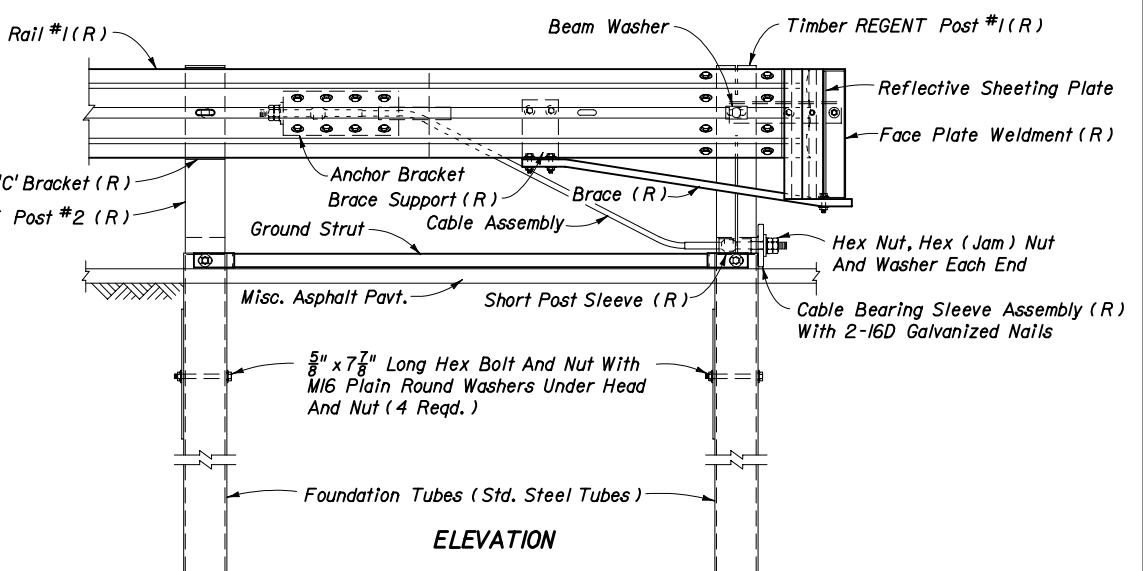
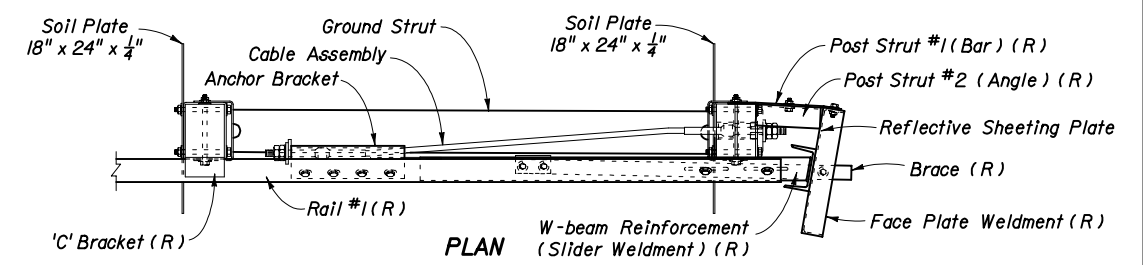
Note: Attach Rail To Post At Post No. 5 Only

SECTION CC  
TYPICAL POST NOS. 3 THRU 10

SECTION BB  
POST NO. 2

SECTION AA  
POST NO. 1

**END ANCHORAGE ASSEMBLY TYPE REGENT**



**'REGENT' NOTES**

1. The REGENT is suitable for all design speeds. The REGENT is intended for use as an approach end guardrail anchorage for shoulder guardrail. Its alignment is a parabolic flare from the normal guardrail alignment with an effective length of 37.5' including two special W-Beam panels and one standard W-Beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the REGENT and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the REGENT when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The REGENT shall be assembled in accordance with the distributor's detailed drawings, procedures and specifications.
4. The first post must be a timber REGENT Post #1 with a steel foundation tube and soil plate; the second post must be a timber REGENT Post #2 with a steel foundation tube and soil plate; and, posts Nos. 3 thru 10 must be timber REGENT line posts.
5. The suffix (R) indicates components unique to the REGENT System, these components along with bolts, nuts and washers not labeled are to be furnished in the distributor's package.
6. The REGENT can not be used in medians where horizontal clearance requires the use of a backrail.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'REGENT' at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The REGENT shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the distributor's detailed drawings, procedures and specifications and this Index.

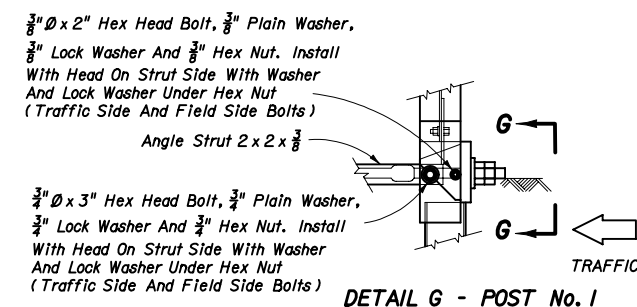
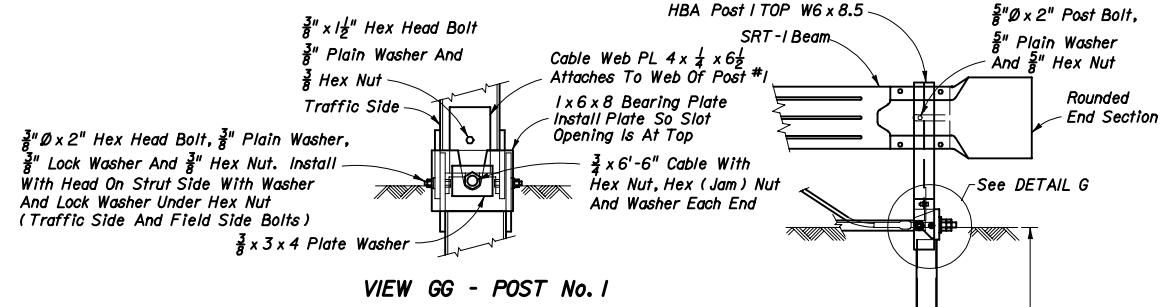
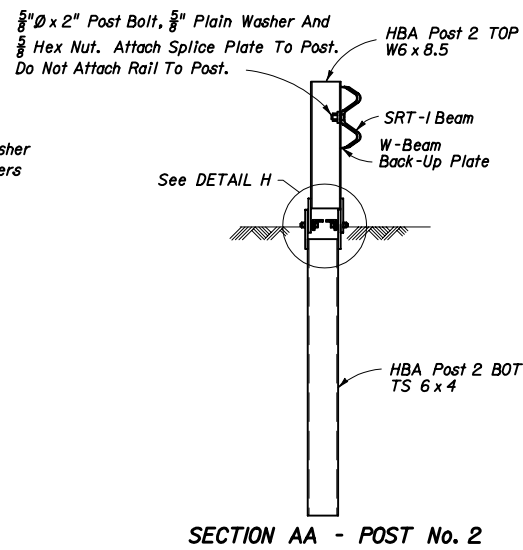
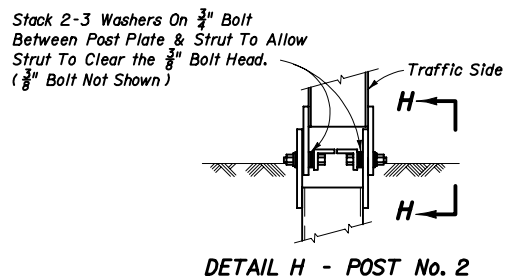
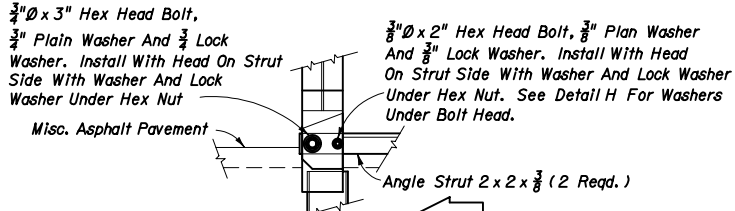
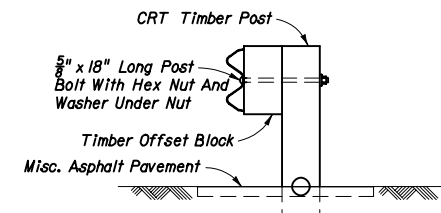
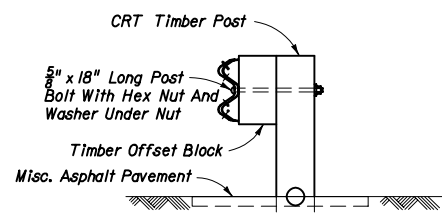
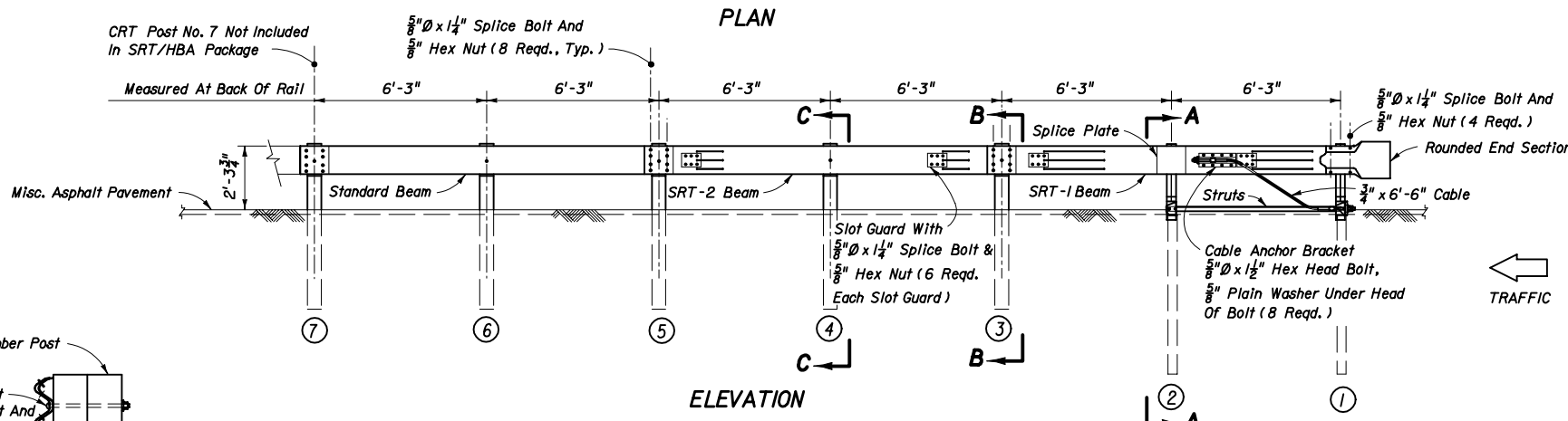
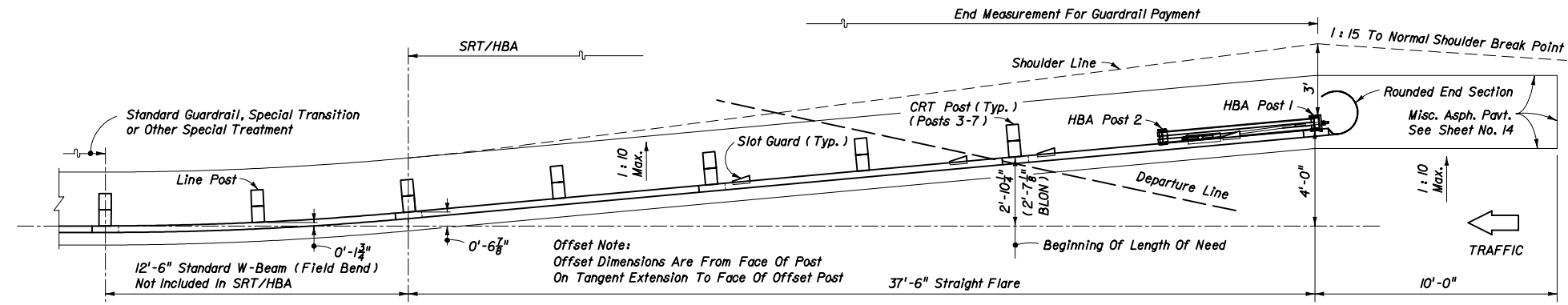
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

**GUARDRAIL**

Designed By	MFG	07/98	Approved By	<i>[Signature]</i>	
Drawn By	HKH	07/98	Revision	Sheet No.	Index No.
Checked By	JVG	07/98	00	30 of 31	400

SRT/HBA 6 POST SYSTEM NOTES

1. The guardrail end anchorage system represented on this drawing is a proprietary six (6) post design by Trinity Industries, Inc. and marketed by Syro, Inc. under the trade name SRT/HBA 6 Post. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SRT/HBA 6 Post and their incorporation into a whole system.
3. This drawing is sufficient for plan details for the SRT/HBA 6 Post when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless called for elsewhere in the plans. The SRT/HBA 6 Post shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The SRT/HBA 6 Post can not be used in medians where horizontal clearance requires the use of a backrail.
5. The SRT/HBA 6 Post is suitable for all design speeds. The SRT/HBA 6 Post is intended for use as an approach end anchorage for shoulder guardrail. Its alignment is a straight flare from the normal guardrail alignment with an effective length of 37.5' including two special slotted W-beam panels and one standard W-beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
6. Posts 1 and 2 must be hinged breakaway steel posts. CRT breakaway posts shall be used at all other locations within the system.
7. See the General Notes for galvanizing requirements of metallic component.
8. If the plans call for the SRT/HBA 6 Post at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The SRT/HBA 6 Post shall be paid for under the contract unit price for Guardrail End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

Names		Dates	Approved By		
Designed By	MRG	4/00	Roadway Design Engineer		
Drawn By	SBC	3/01			
Checked By	JVG	3/01			
Revision	02	3/01			
Sheet No.		Index No.			
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SRT/HBA-6 POST SYSTEM