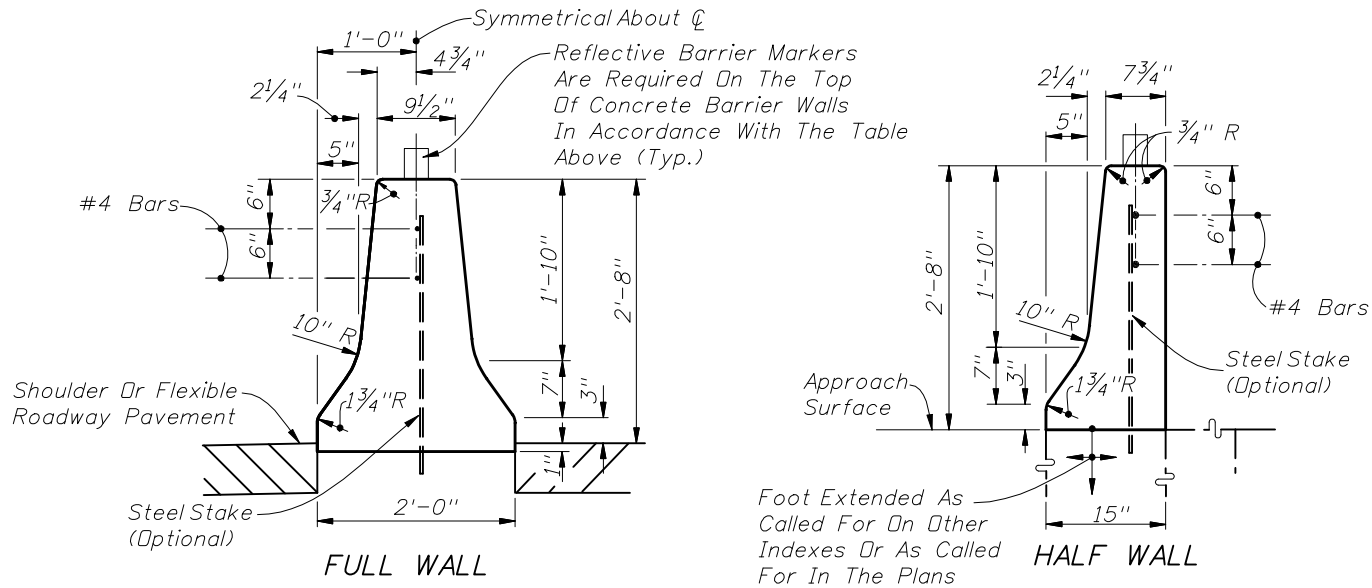
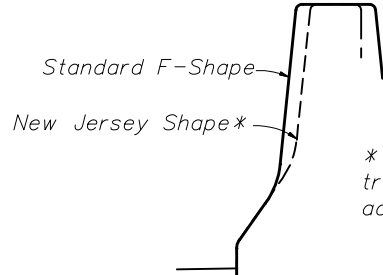


REFLECTIVE BARRIER MARKER SPACING ON WALL		
Distance-Edge of Travel Lane to Barrier Wall (ft)	Spacing (Ft.)	REMARKS
< 4'	40'	1. Reflectors shall conform to Section 993 of the Standard Specifications. 2. Reflector color (white or yellow) shall conform to the color of the near edgeline. 3. The cost for reflectors shall be included in the contract unit price for barrier wall.
4' to 8'	80'	
> than 8'	none required	



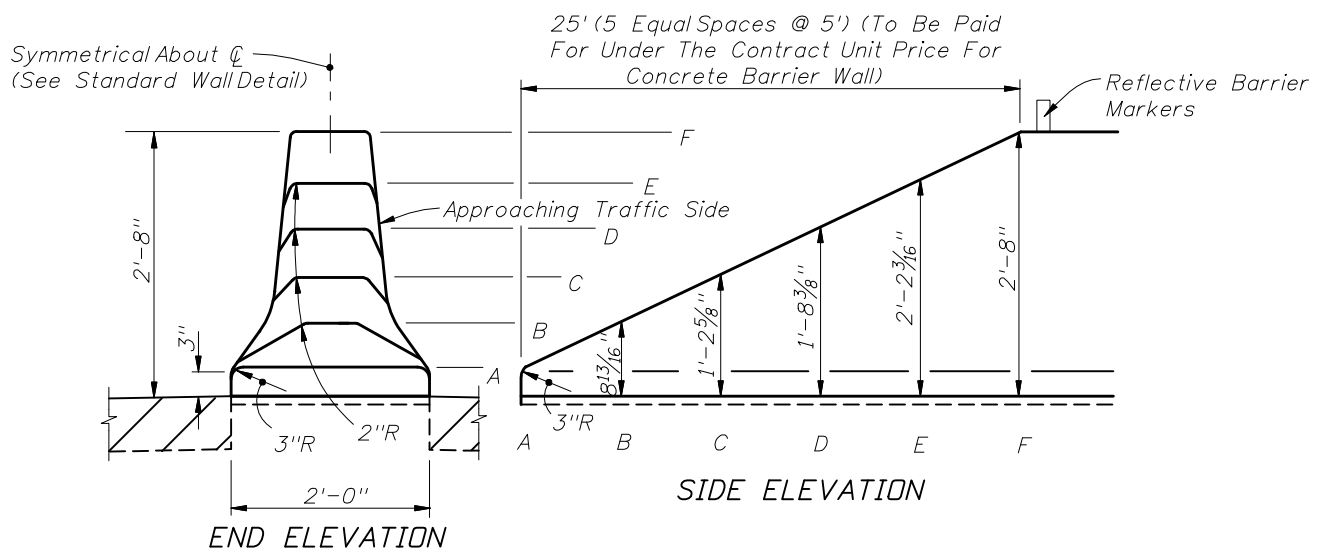
For concrete barrier wall details at piers, highway lighting and guardrail connections, see other sheets of this Index. Standard barrier to be paid for under the contract unit price for Median Concrete Barrier Wall, LF.

**STANDARD BARRIER WALL SECTIONS**



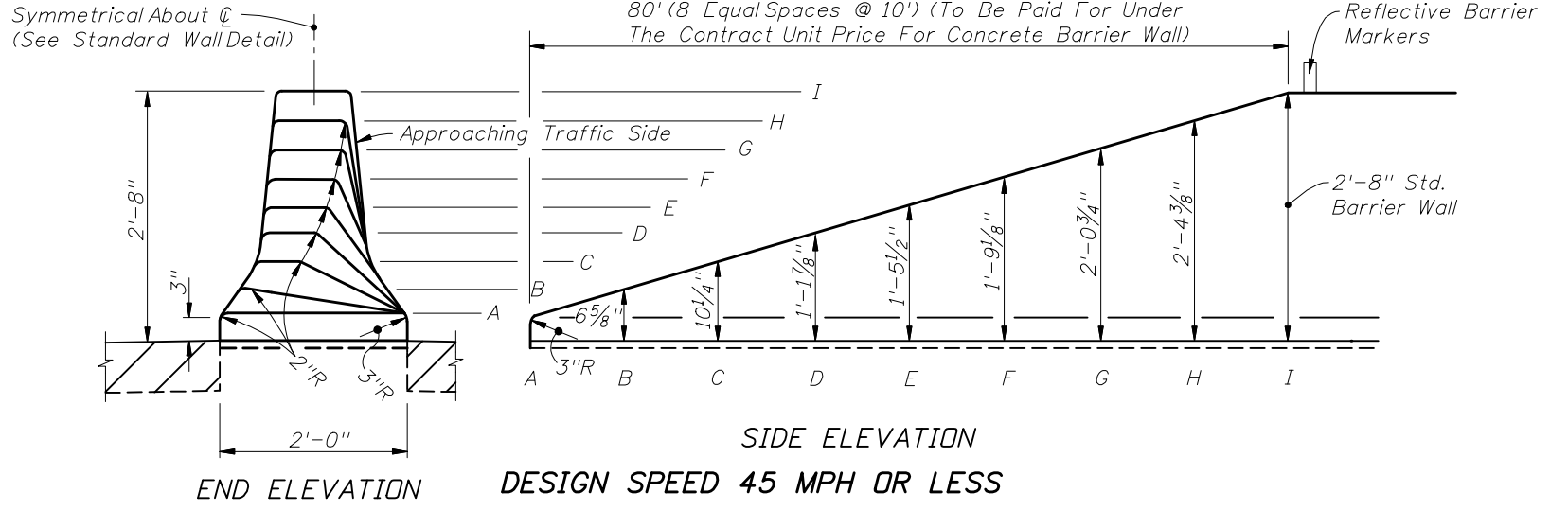
\* Where standard F-Shape walls abut existing NJ Shape walls, face transitions of not less than 5' in length shall be constructed at the adjoining end of the F-Shape wall.

**WALL FACE SAFETY SHAPES**



TO BE USED ONLY WHERE TERMINAL LOCATED CLEAR ZONE WIDTH FROM EDGE OF THE NEAR APPROACH TRAFFIC LANE.

**CONCRETE BARRIER WALL TERMINAL DETAIL II**



**DESIGN SPEED 45 MPH OR LESS CONCRETE BARRIER WALL TERMINAL FOR NARROW MEDIAN DETAIL III**

**GENERAL NOTES**

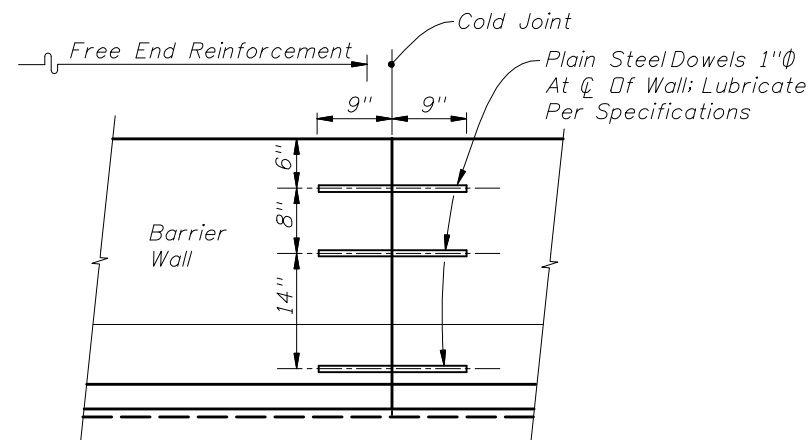
- Class II concrete shall be used for all reinforced and plain (nonreinforced) concrete barrier walls; except, in moderately and extremely aggressive environments, Class IV concrete shall be used. All reinforcing steel with undesignated size shall be #4 bars. Exposed concrete surfaces shall have a Class 3 surface finish in accordance with Section 521 of the Standard Specifications, unless other finish called for in plans. The surfaces shall have a Class 5 Applied Finished Coating in accordance with Section 400 only when called for in the plans.
- Concrete barrier wall terminal notes for design speeds  $\geq 50$  mph.
  - Terminated outside clear zone of the approach traffic with 'Detail II' end treatment.
  - Terminated within a shielded location.
  - Terminal protection by the use of a crash cushion system.
  - Terminated in conjunction with a suitably designed transition to another barrier.
- Expansion joints in wall required only at bridge ends and/or at locations where wall is an integral part of existing or proposed concrete slab; wall joints are to match an existing or proposed expansion joint.
- When the barrier is installed adjacent to the pavement the top 12" of the subgrade shall be compacted to at least 100% of the density as defined in the AASHTO T-99 specifications.
- Cast-in place barrier wall normally will be a continuous pour without transverse contraction joints. Cast-in-place segments with a length < 40' shall be joined to adjacent sections by doweling. See Detail B on Sheet 2.
- Precast construction is allowed as an alternate to cast-in-place construction.
  - Wall segments < 40' in length shall be joined by a transverse joint in accordance with Details C & D on Sheet 2. The minimum segment length is 20'.
  - Bedding of the precast sections shall be facilitated by the use of sand-cement grout or equal method to assure uniform bearing.
  - Reinforcement may be required for handling stresses.
- On roadways designated for reverse laning all downstream, ends that are not shielded or outside the clear zone shall be marked by Type 3 Object Markers.
- Cost of reinforcing steel and reflective barrier markers shall be included in the contract unit price for concrete barrier wall. See individual details for pay item information.
- For barrier wall inlet details see Indexes Nos. 217, 218 and 219.
- Concrete barrier wall with New Jersey Safety Shape may not be substituted for the Standard F Shape Barrier.



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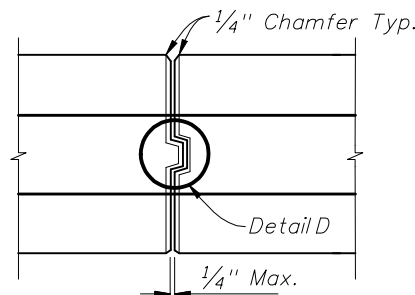
**CONCRETE BARRIER WALL**

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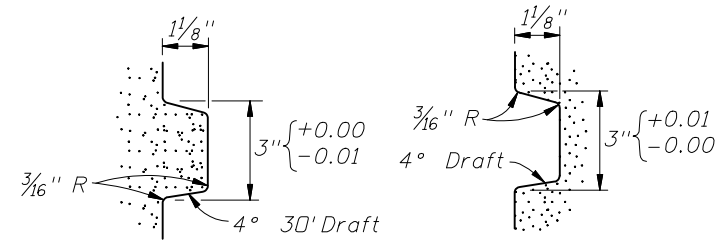


**DOWELED TRANSVERSE CONSTRUCTION JOINT WHEN ABUTTING SEGMENT(S) LESS THAN 40' IN LENGTH**

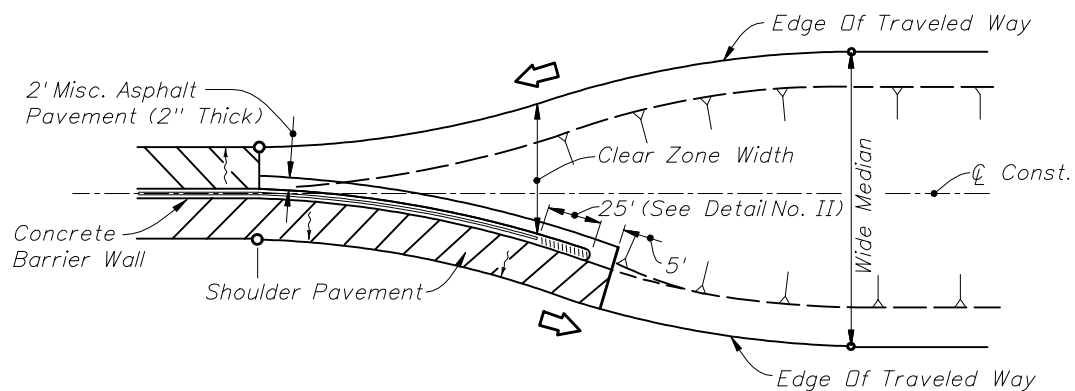
**DETAIL B**



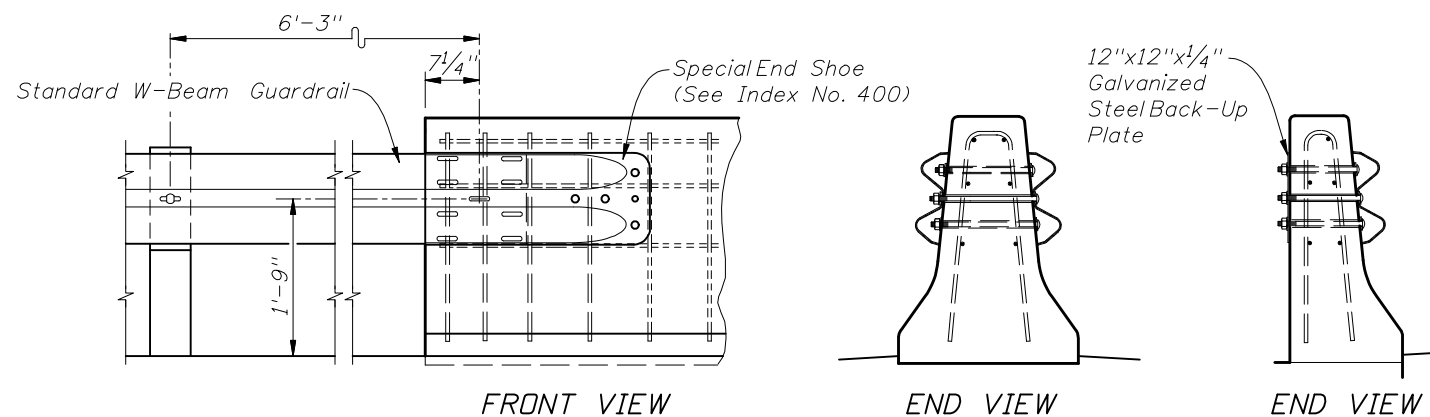
**TOP VIEW  
PRECAST BARRIER TRANSVERSE JOINTS  
DETAIL C**



**TOP VIEW  
STRAIGHT TONGUE AND GROOVE  
DETAIL D**

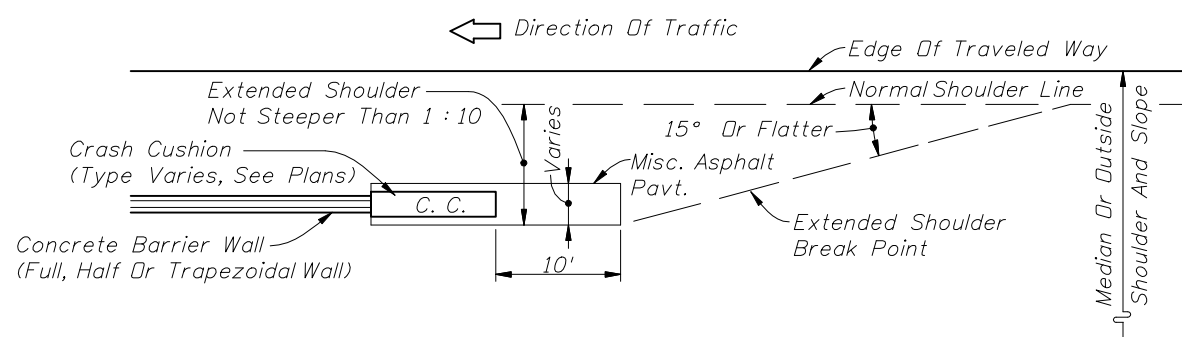


**CONCRETE BARRIER WALL TRANSITION BETWEEN WIDE AND NARROW MEDIANS WHEN BARRIER WALL END LOCATED OUTSIDE APPROACH CLEAR ZONE OR HORIZONTAL CLEARANCE**



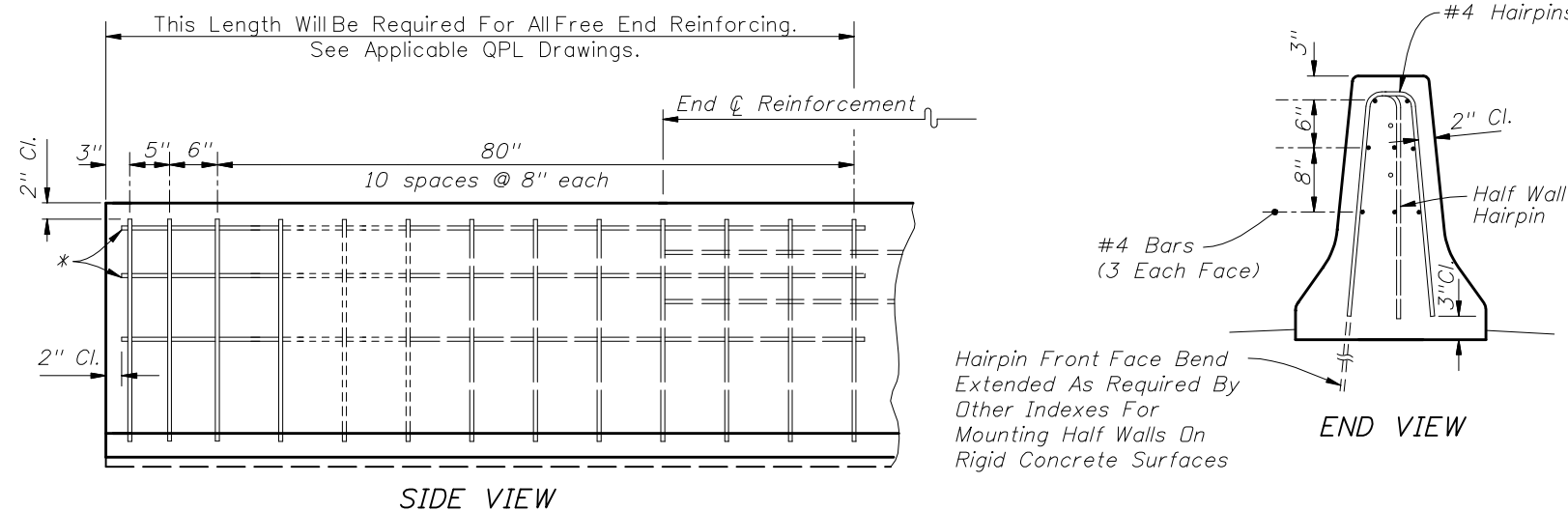
- NOTES**
- End of wall flush mounted connections are not applicable to two-lane two-way facilities. See Sheets 20, 24, and 25 for trailing end connections on two-lane two-way facilities and for approach guardrail connections.
  - Trailing guardrail connections to double face safety shaped walls will be under one of the following traffic conditions and mounting methods:
    - One-way traffic trailing condition one side only - flush mount with flat steel back-up plate on back side.
    - One-way traffic trailing condition both sides - flush mount both sides.
    - For trailing condition one side and approach traffic condition opposite side - see "Median Barrier Wall" mounting, Sheet 25.

**W-BEAM GUARDRAIL CONNECTION TO CONCRETE BARRIER WALL TRAILING ENDS**



**SHOULDER TREATMENT WHEN CRASH CUSHIONS SHIELDING CONCRETE BARRIER WALL END LOCATED INSIDE APPROACH CLEAR ZONE OR HORIZONTAL CLEARANCE**

**DETAIL A**



- \* Note: Free end reinforcement required for nonreinforced walls at the following locations: All exposed ends; abutting ends of true joints; ends with guardrail connections; ends with redirective crash cushion connections; and, ends connecting to bridge traffic rails or other rigid barrier walls.

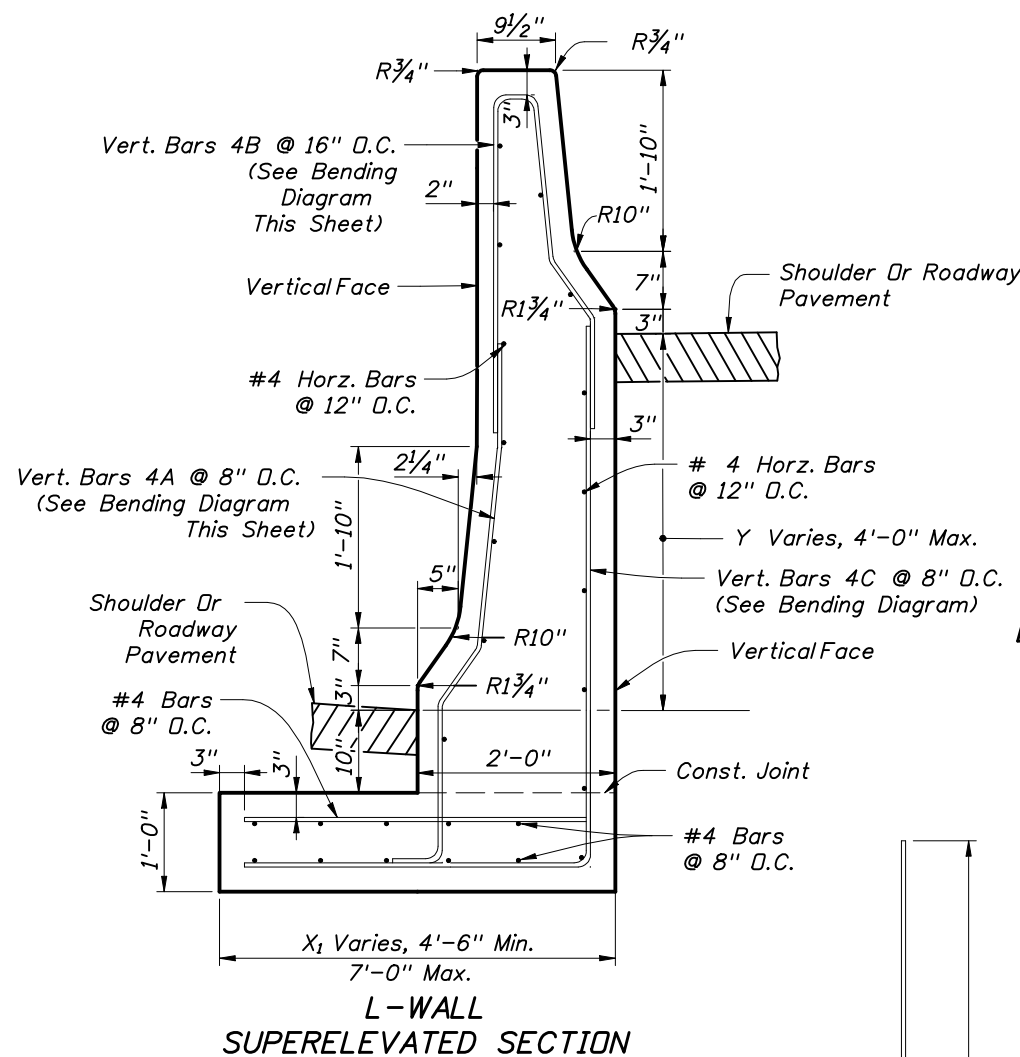
**FREE END REINFORCEMENT**



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**CONCRETE BARRIER WALL**

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Design Criteria:  
NCHRP report 350 Test Level (TL-4) Vehicle:  
8000S, 50 mph, 25°, Avg. Lat. Impact.

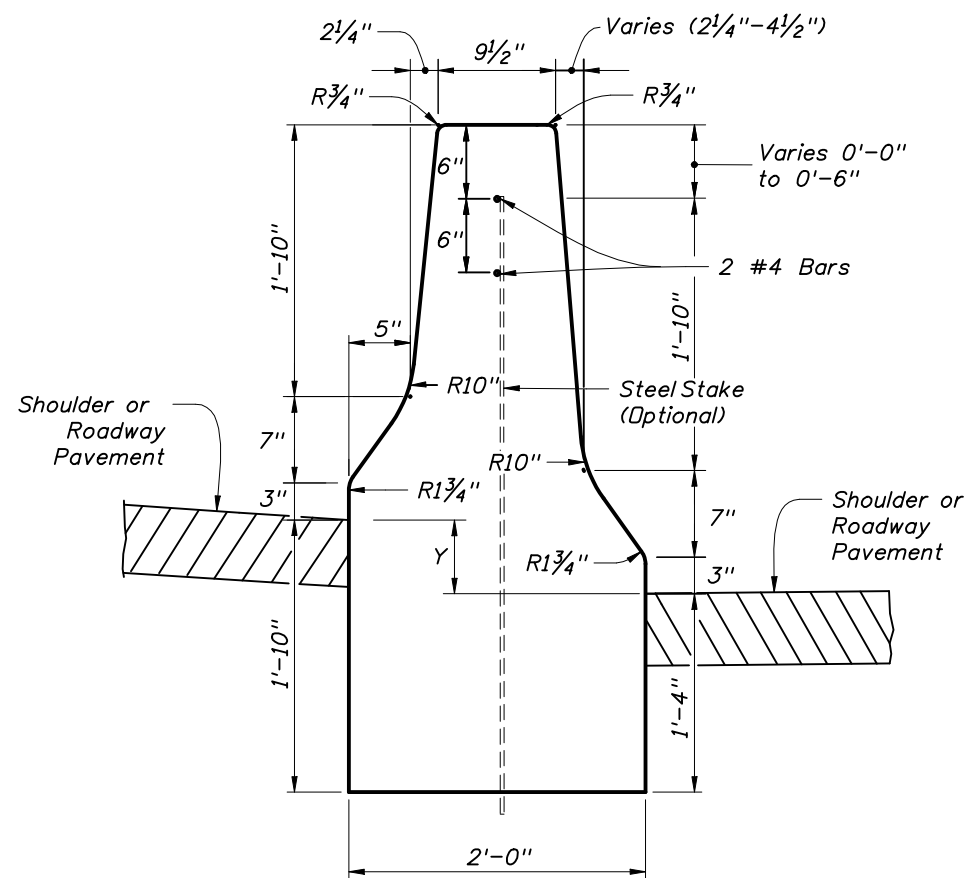
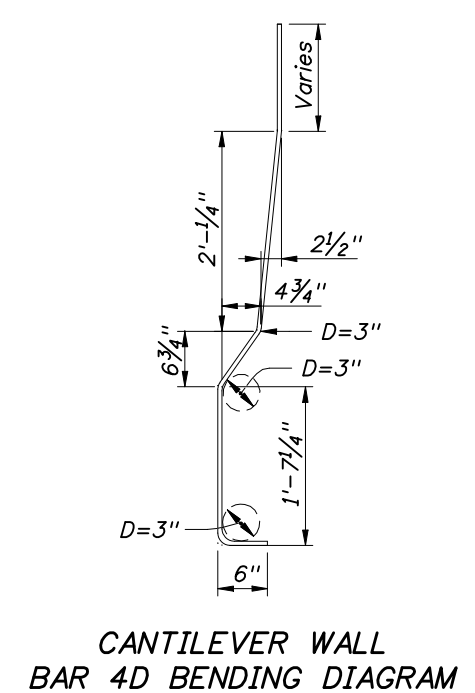
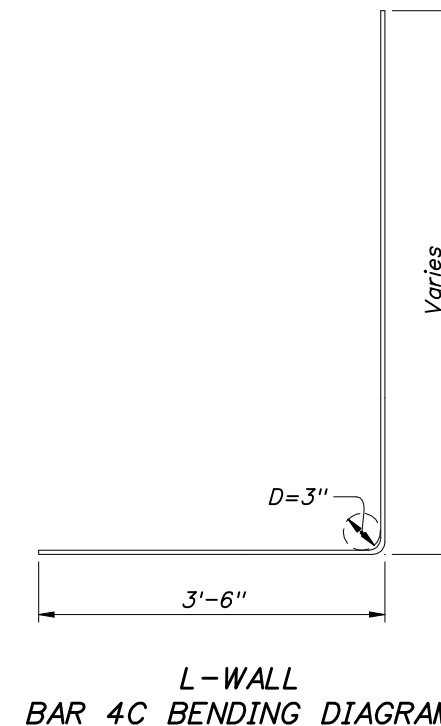
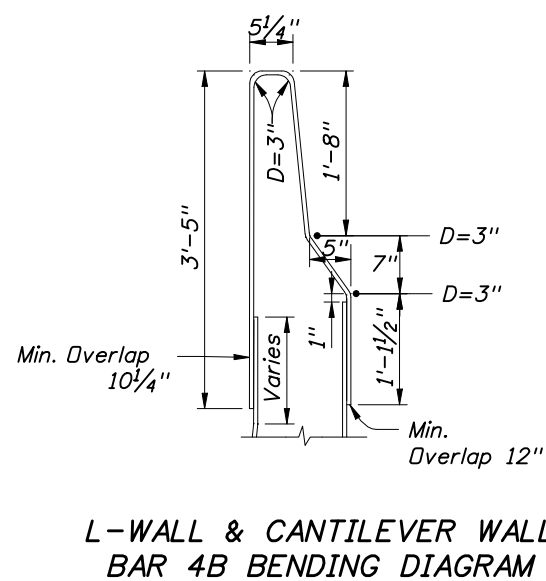
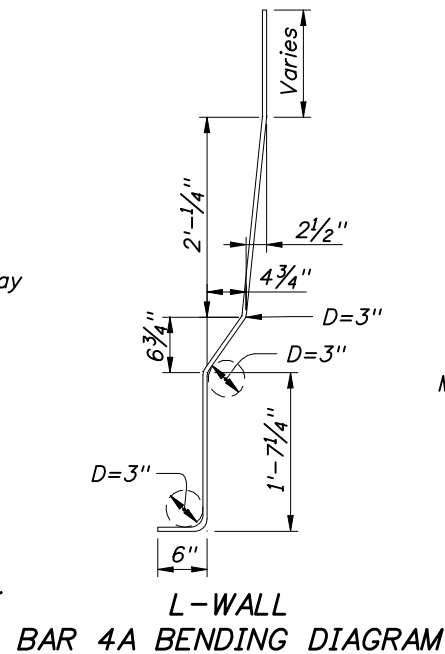
Vehicle force: 54 kips Horiz.; 18 kips Vert.  
at 32" above pavement.

Unless the plans stipulate a specific wall type, either the cantilever wall or the "L" wall may be constructed at the Contractor's option.

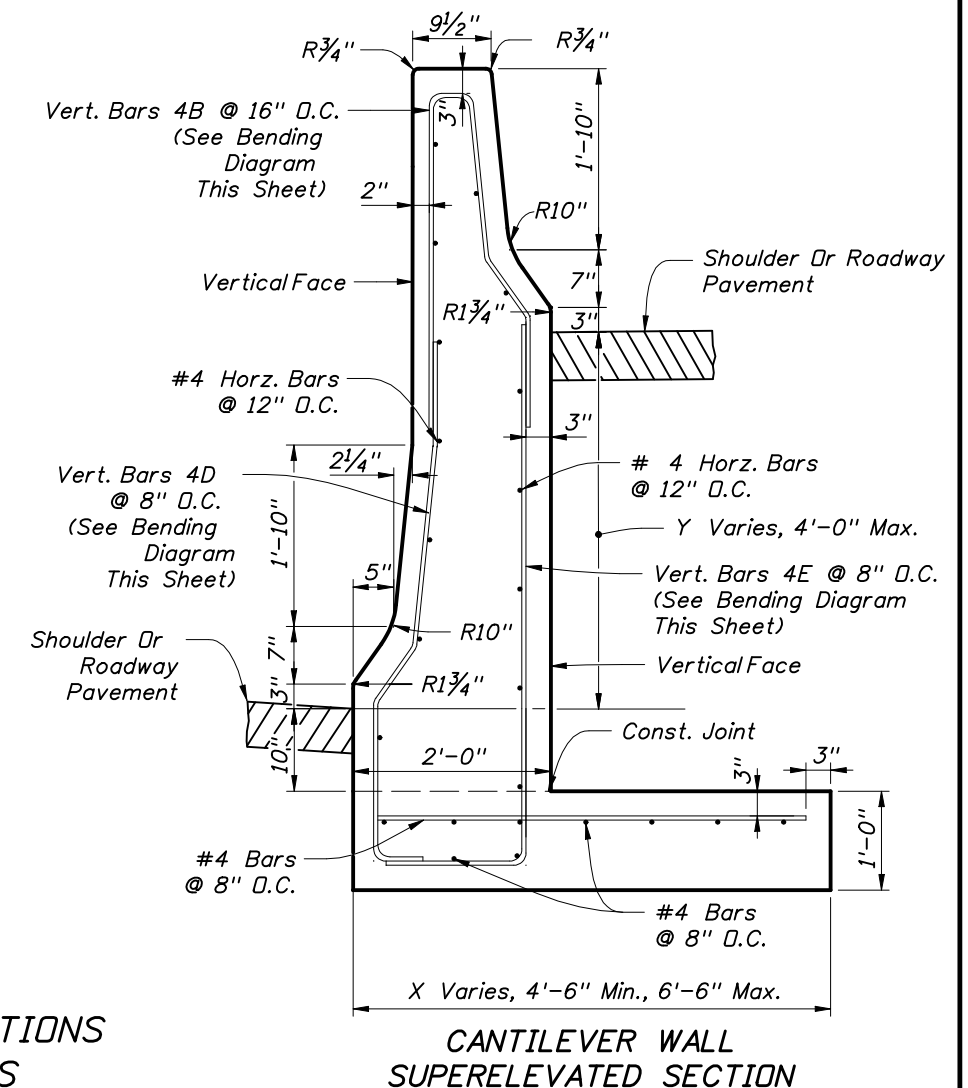
Cost of the footing to be included in the contract unit price for Median Concrete Barrier Wall, LF.

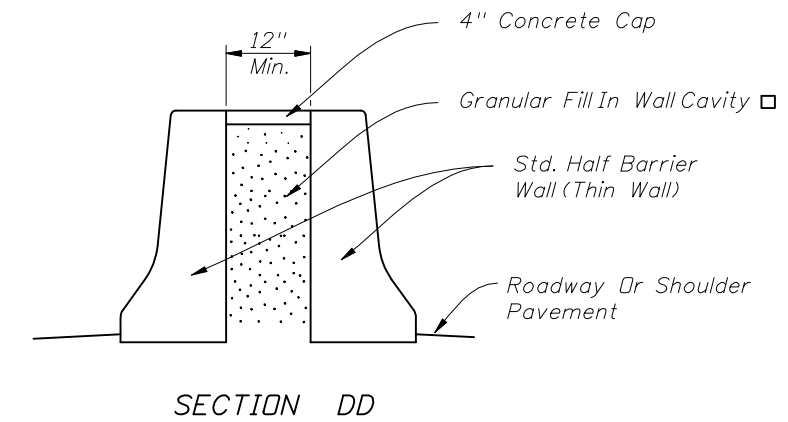
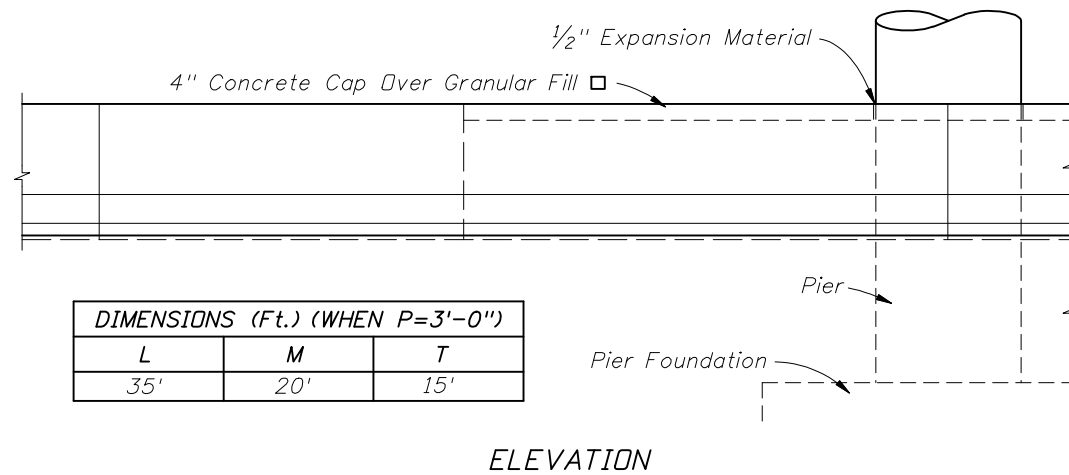
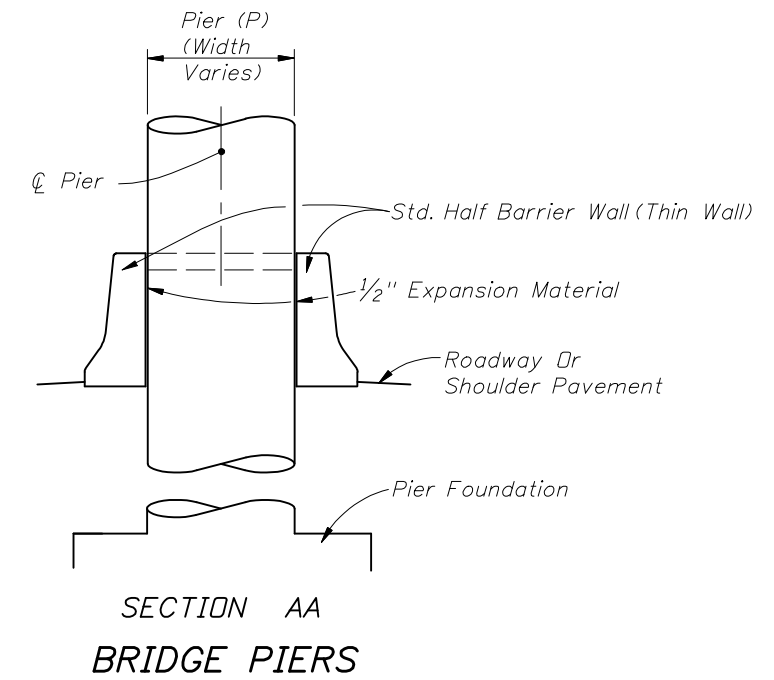
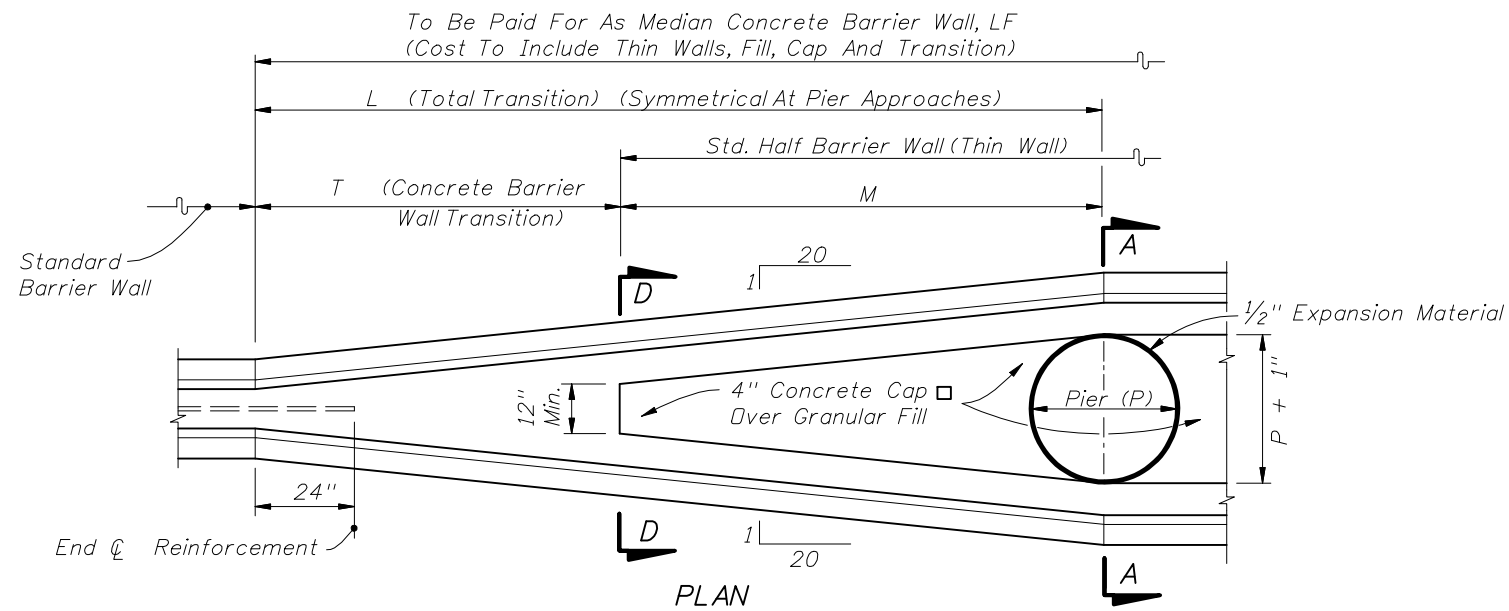
"L" Wall	Height Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"
	Width $X_1$	5'-0"	5'-3"	5'-6"	5'-9"	6'-0"	6'-6"	7'-0"
Min. Segment Wall Length		46'	44'	42'	41'	39'	36'	33'

Cantilever Wall	Height Y	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"
	Width X	5'-0"	5'-3"	5'-6"	5'-9"	6'-0"	6'-3"	6'-6"
Min. Segment Wall Length		39'	35'	32'	29'	26'	24'	22'



**MEDIAN BARRIER WALL FOR SUPERELEVATED SECTIONS OR FOR VARIABLE ROADWAY PROFILE GRADES**





□ Fill To Be Free Of Deleterious And Cementitious Material

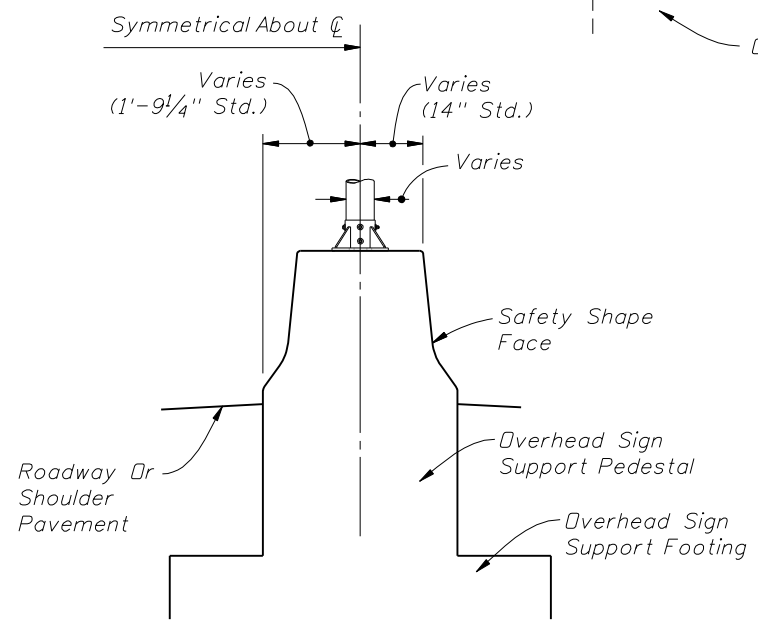
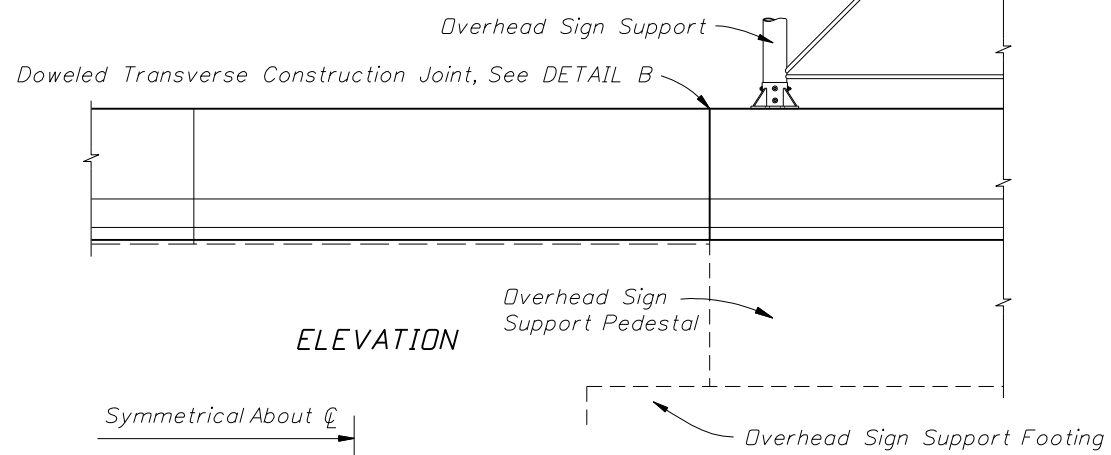
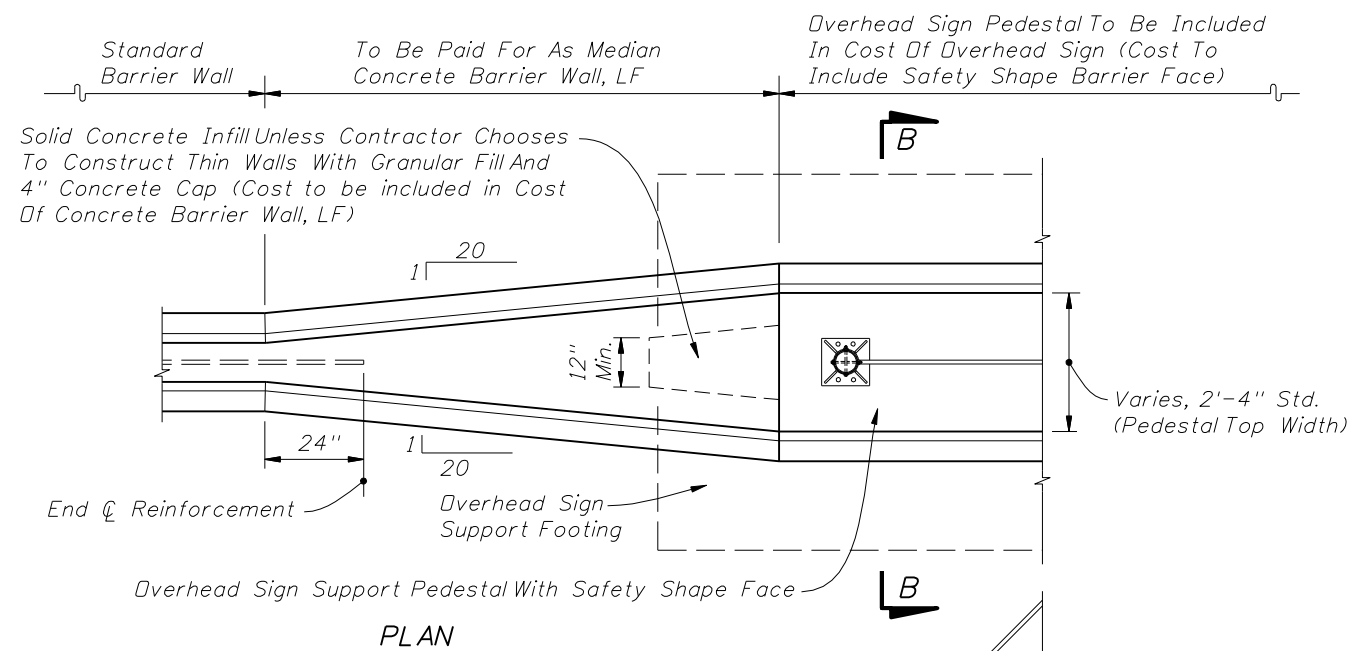
CONCRETE MEDIAN BARRIER WALL TRANSITIONS AT BRIDGE PIERS



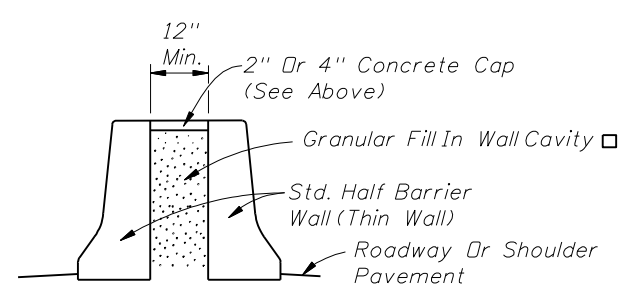
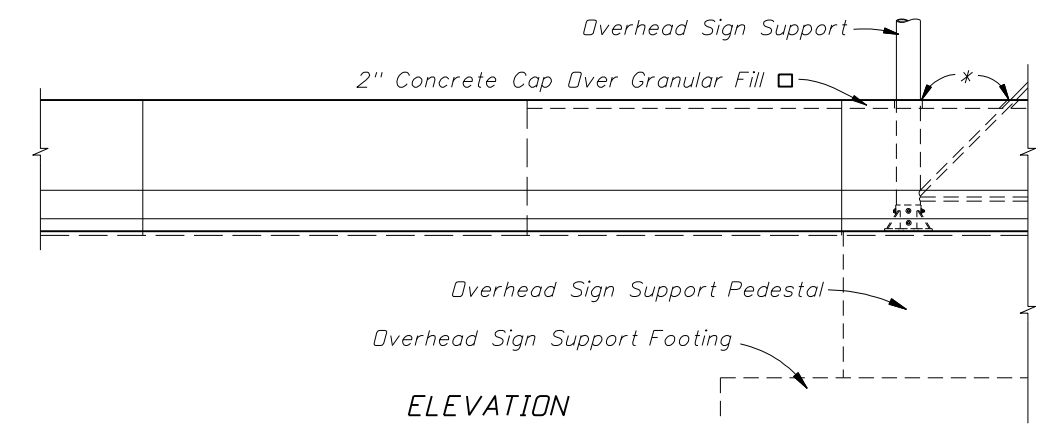
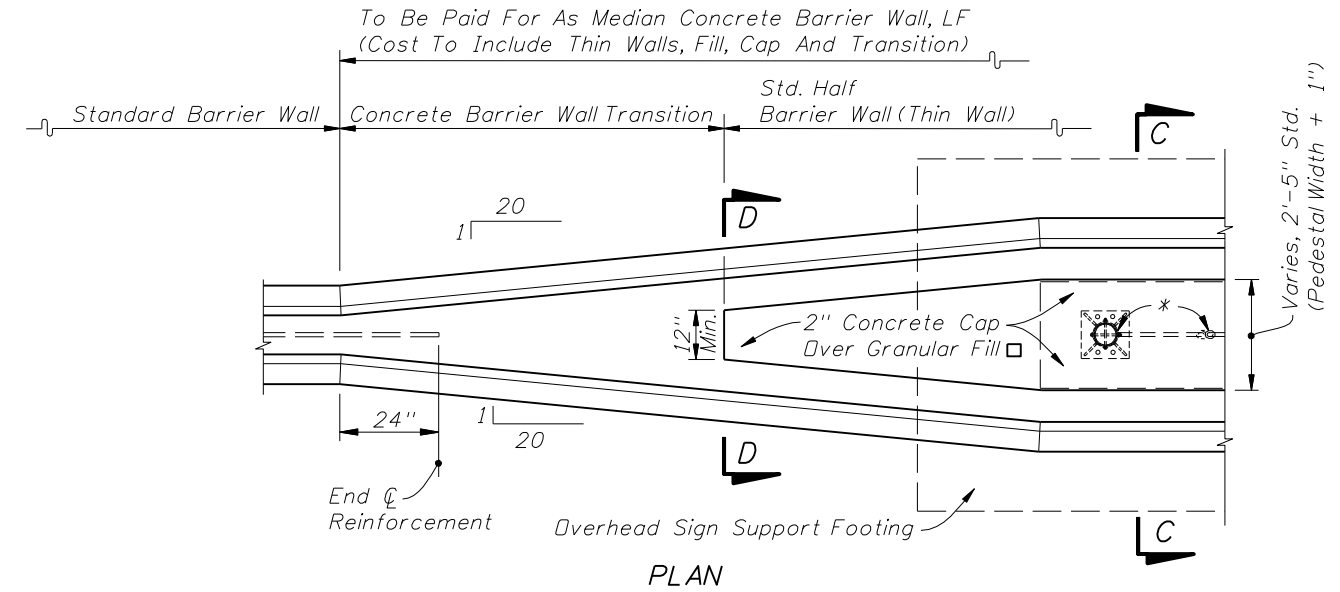
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CONCRETE BARRIER WALL

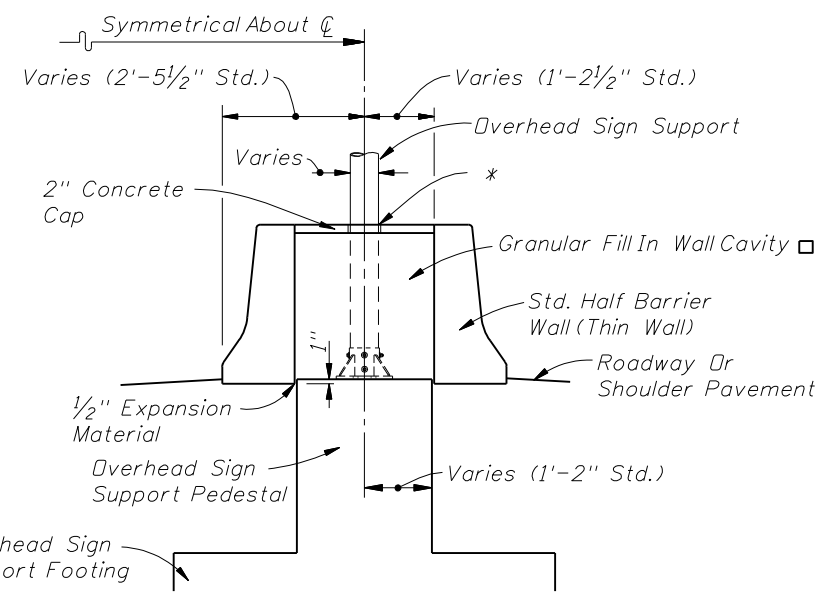
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SECTION BB  
COMBINATION BARRIER AND SIGN PEDESTAL



- Fill To Be Free Of Deleterious And Cementitious Materials
- \* 1/2" Expansion Material Wrap Around Column(s) And Strut(s) At Concrete Cap



Note: This detail to be used only when installing barriers around existing sign supports that are to remain. It shall not be used for new sign support installations. For new installations use combination barrier and sign pedestal (Section BB).

SECTION CC  
INDEPENDENT BARRIER AND SIGN PEDESTAL

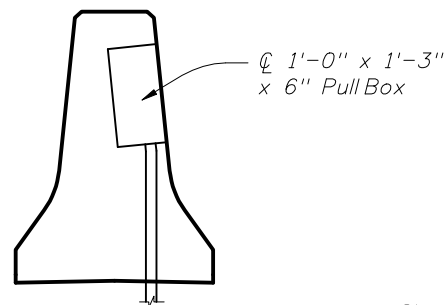
CONCRETE MEDIAN BARRIER WALL TRANSITIONS AT OVERHEAD SIGN SUPPORTS



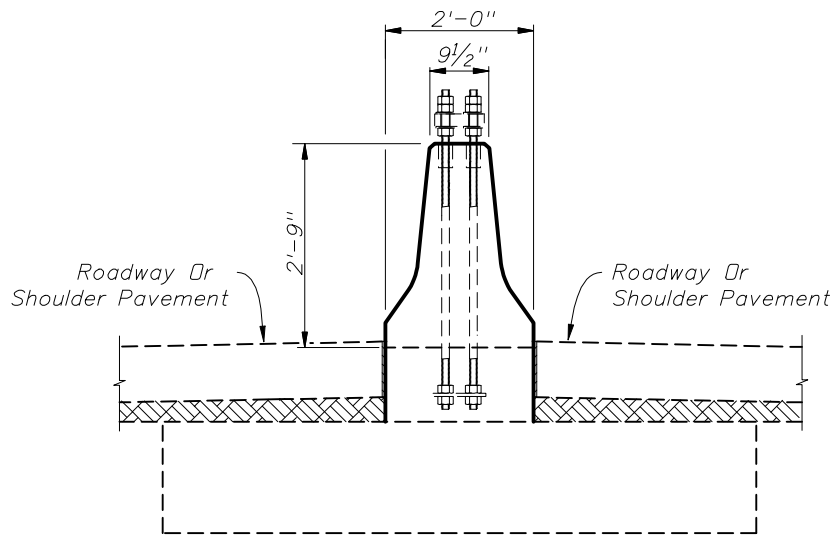
2010 FDOT Design Standards

CONCRETE BARRIER WALL

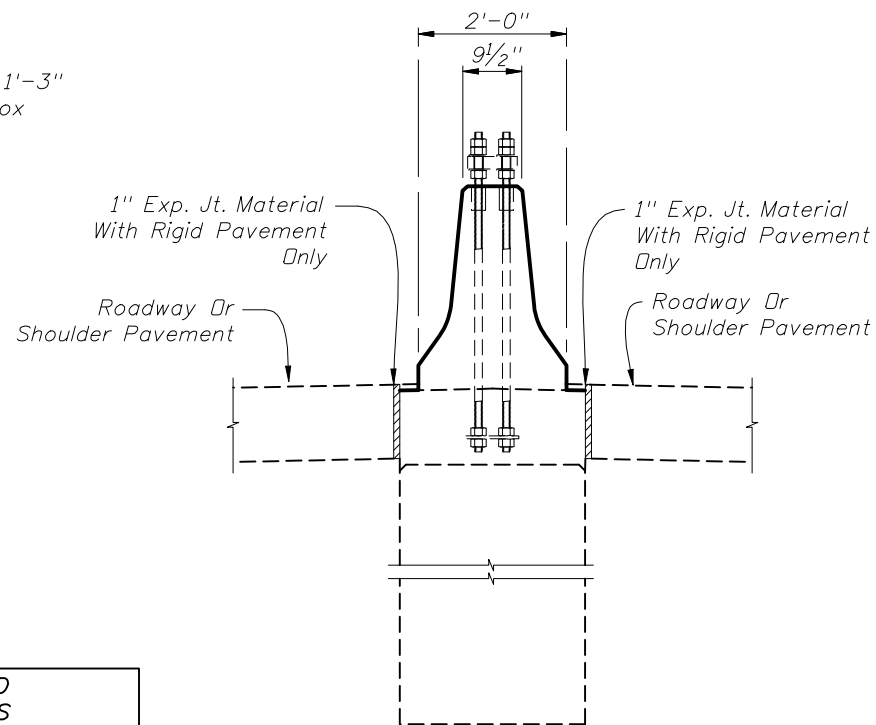
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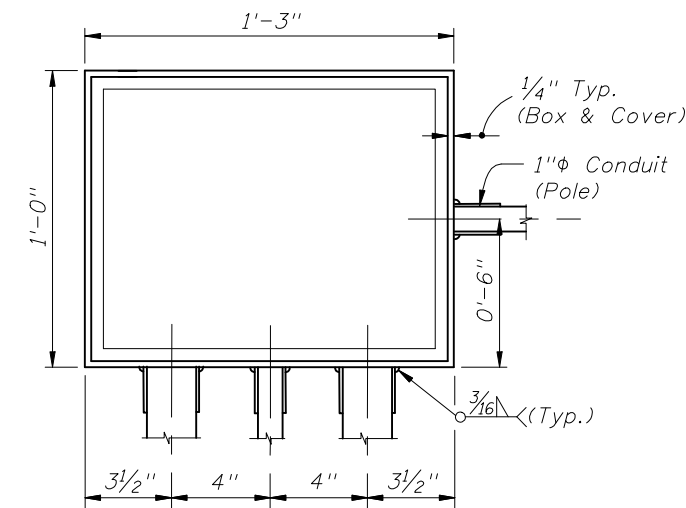
TRANSVERSE SECTION INSTALLATION



END VIEW SPREAD FOOTING OPTION

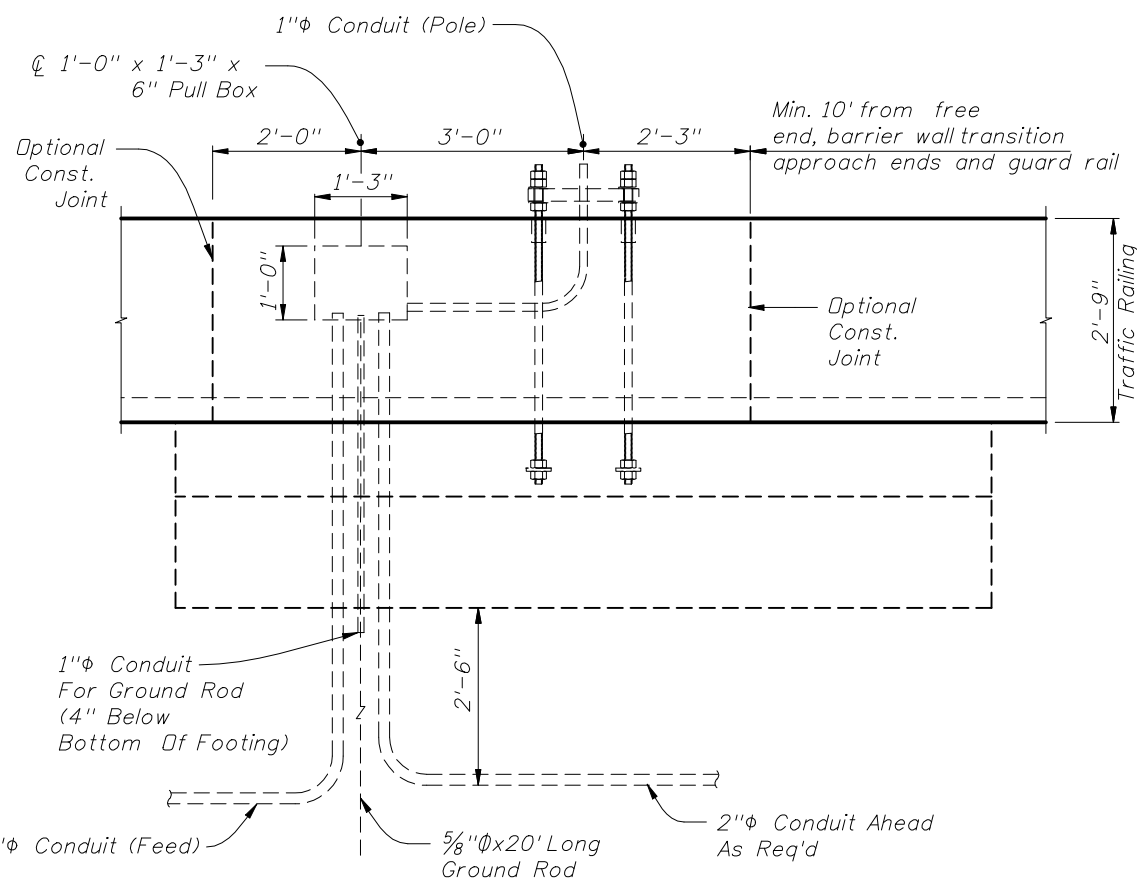


END VIEW CYLINDRICAL OPTION

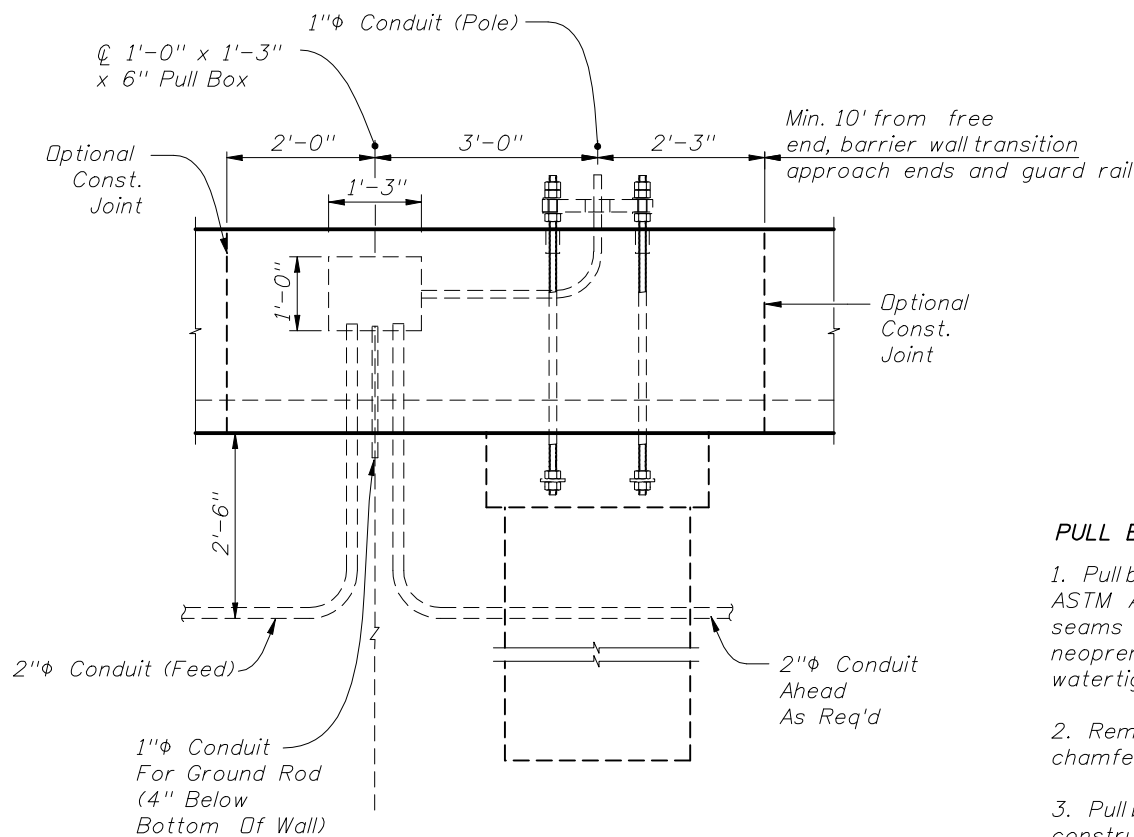


FRONT VIEW PULL BOX

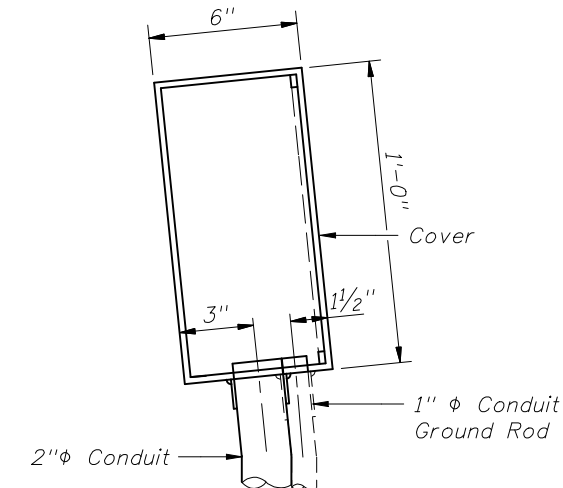
**SPREAD FOOTING AND CYLINDRICAL NOTES**  
 The Reinforcement Details And Dimensions For Both The Spread Footing And Cylindrical Foundations Can Be Found In Index 17515.



ELEVATION SPREAD FOOTING OPTION



ELEVATION CYLINDRICAL OPTION



SIDE VIEW PULL BOX

**PULL BOX NOTES**

1. Pullboxes are to be fabricated from steel conforming to ASTM A36 and be hot-dip galvanized after fabrication. All seams shall be continuously welded and ground smooth. A neoprene gasket shall be attached to the box to provide a watertight cover. The cover screws shall be fully galvanized.
2. Remove excess concrete while green and hand form chamfers.
3. Pullbox complete and conduit risers are incidental to the construction and cost of the barrier wall; there is to be no separate compensation for the box, risers or installation unless specifically called for in the plans.

PULL BOX - ELECTRICAL

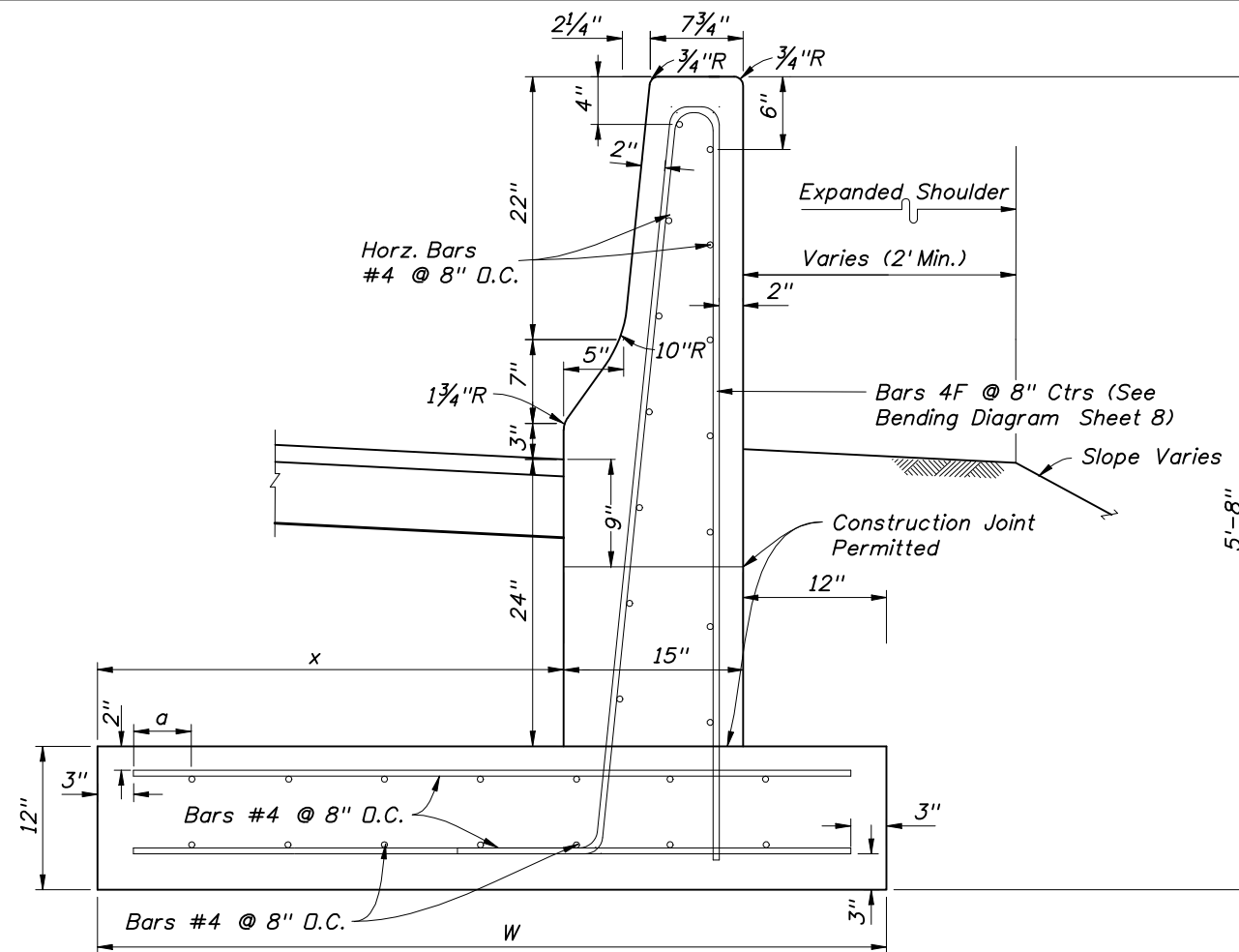
LIGHT POLE MOUNTING IN MEDIAN BARRIER WALL



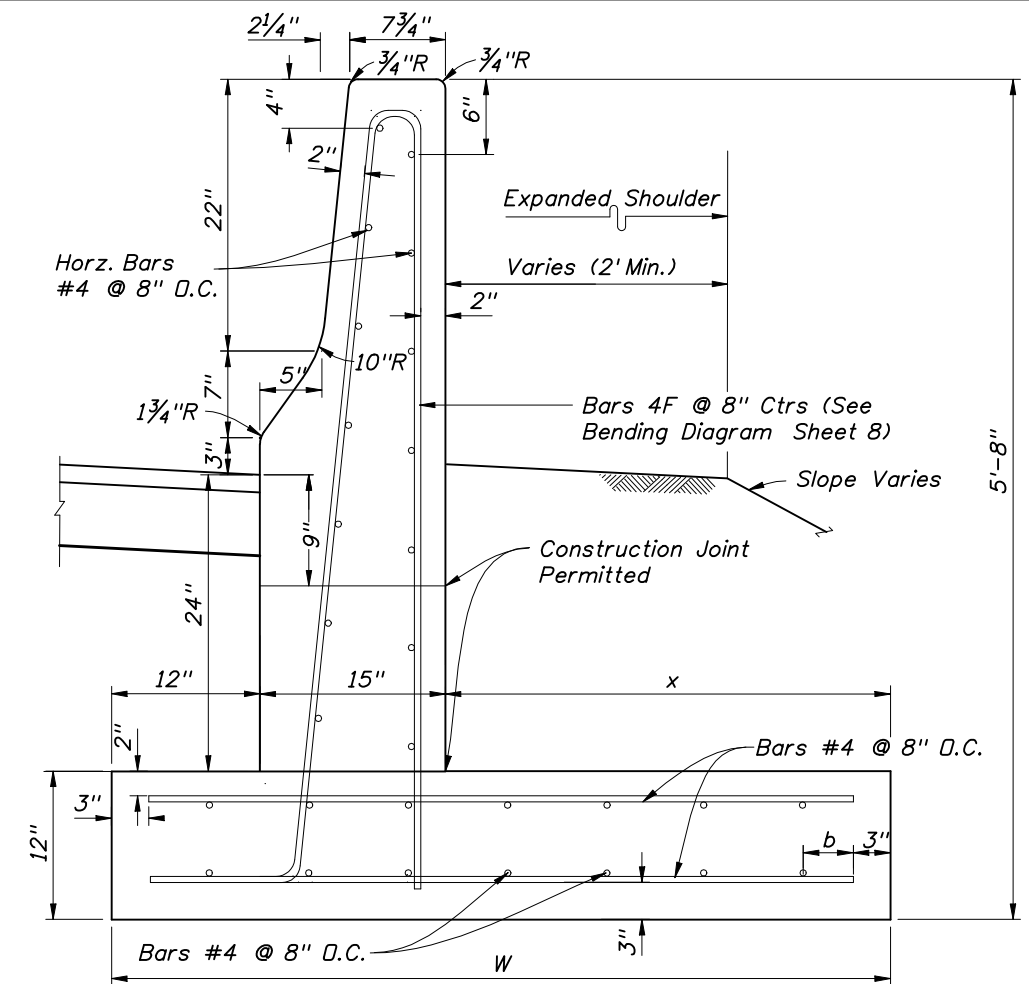
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CONCRETE BARRIER WALL

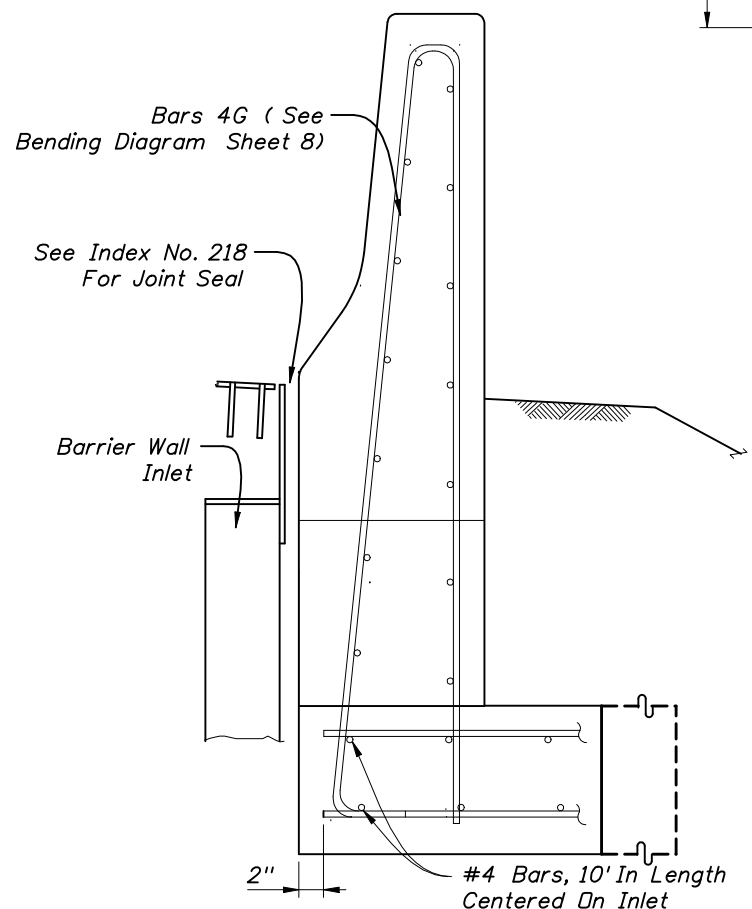
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NOTE: All longitudinal reinforcement #4 bars.  
**CANTILEVER WALL**



NOTE: All longitudinal reinforcement #4 bars.  
**L-WALL**



**REINFORCING STEEL MODIFICATIONS AT BARRIER WALL INLETS (INDEX NO. 218)**

DIMENSIONS AND QUANTITIES											
CANTILEVER WALL						L-WALL					
Length* Of Barrier Wall	W	x	a	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.	Length* Of Barrier Wall	W	x	b	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.
≥ 65'	3'-3"	1'-0"	5"	0.30	31	≥ 60'	3'-6"	1'-3"	7"	0.31	32
57' to 64'	3'-9"	1'-6"	3"	0.32	34	50' to 59'	4'-0"	1'-9"	5"	0.33	34
50' to 56'	4'-3"	2'-0"	3"	0.33	36	40' to 49'	4'-9"	2'-6"	6"	0.35	37
41' to 49'	5'-0"	2'-9"	7"	0.36	38	35' to 39'	5'-3"	3'-0"	4"	0.37	39
36' to 40'	5'-6"	3'-3"	5"	0.38	40	30' to 34'	5'-9"	3'-6"	2"	0.39	42
28' to 35'	6'-6"	4'-3"	3"	0.42	45	25' to 29'	6'-6"	4'-3"	3"	0.42	45
25' to 27'	7'-0"	4'-9"	7"	0.44	46	20' to 24'	7'-6"	5'-3"	2"	0.45	49

Quantities shown are for information only. For method of payment see payment note. Barrier wall inlets (Index 218) shall be isolated from the barrier wall stem and footing by 1" expansion material. \* All walls may be made up of segments of 20' or more in length provided the segments are joined by a transverse joint in accordance with Detail B, Sheet 2. Segments shall have dimensions same as walls above.

**REINFORCED CONCRETE BARRIER WALL (SHOULDER)**

**PAYMENT:**

Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Shoulder), LF.

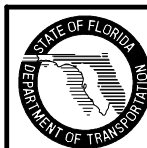
**DESIGN NOTES:**

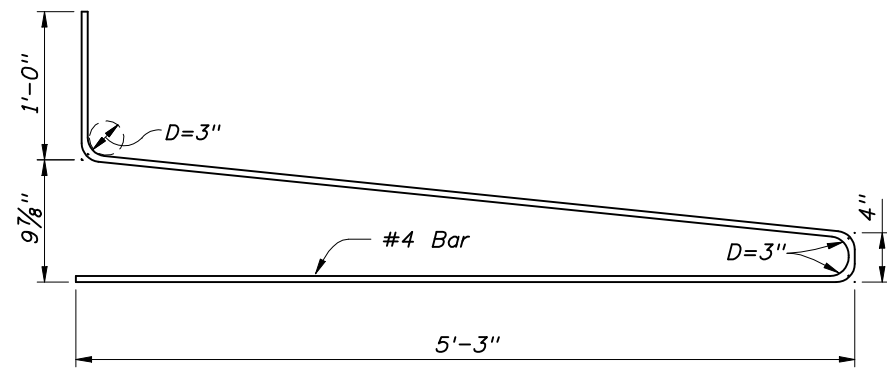
Reduce the vertical steel spacing to 4 inches O.C. a distance of 4 feet each side of all cold joints.

Use of this barrier wall should be limited to special applications such as hazard encroachment into the clear zone where barrier wall deflection, rotation or translation cannot be tolerated; example hazards to consider are as follows:

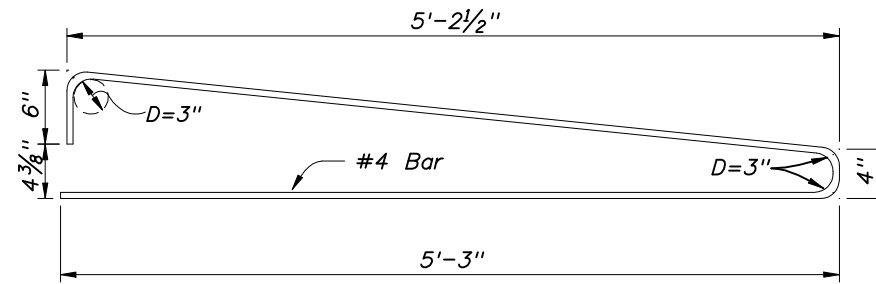
- (a) Structure supporting piers, bents and pylons
- (b) Pumping, metering, control or other similar critical stations
- (c) Quarries
- (d) Intolerable vertical drops
- (e) Historic structures or monuments
- (f) Rail transit travelway or passenger station
- (g) Other similar occupancies

NCHRP report 350 Test Level (TL-4) Vehicle: 8000S, 50 mph, 25°. Vehicle force applications: 18 kips Vert. at top of railing; 54 kips Horiz. at 32" above pavement.

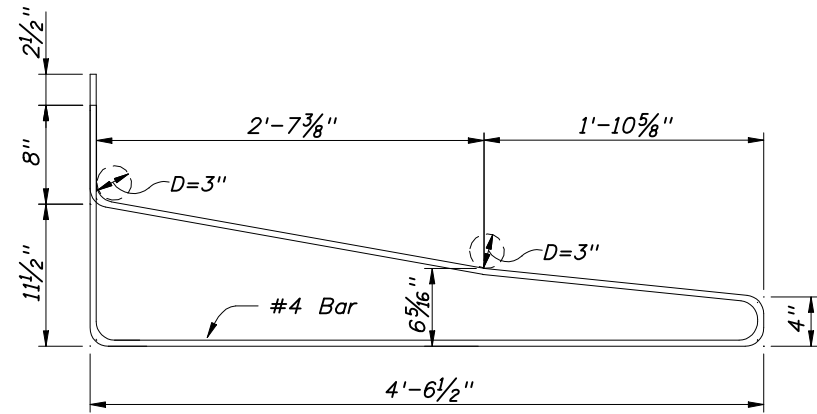




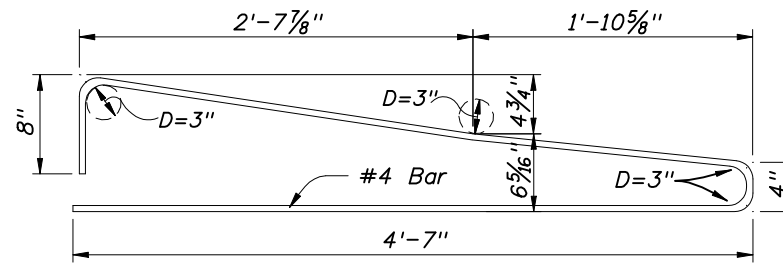
BAR 4F



BAR 4G



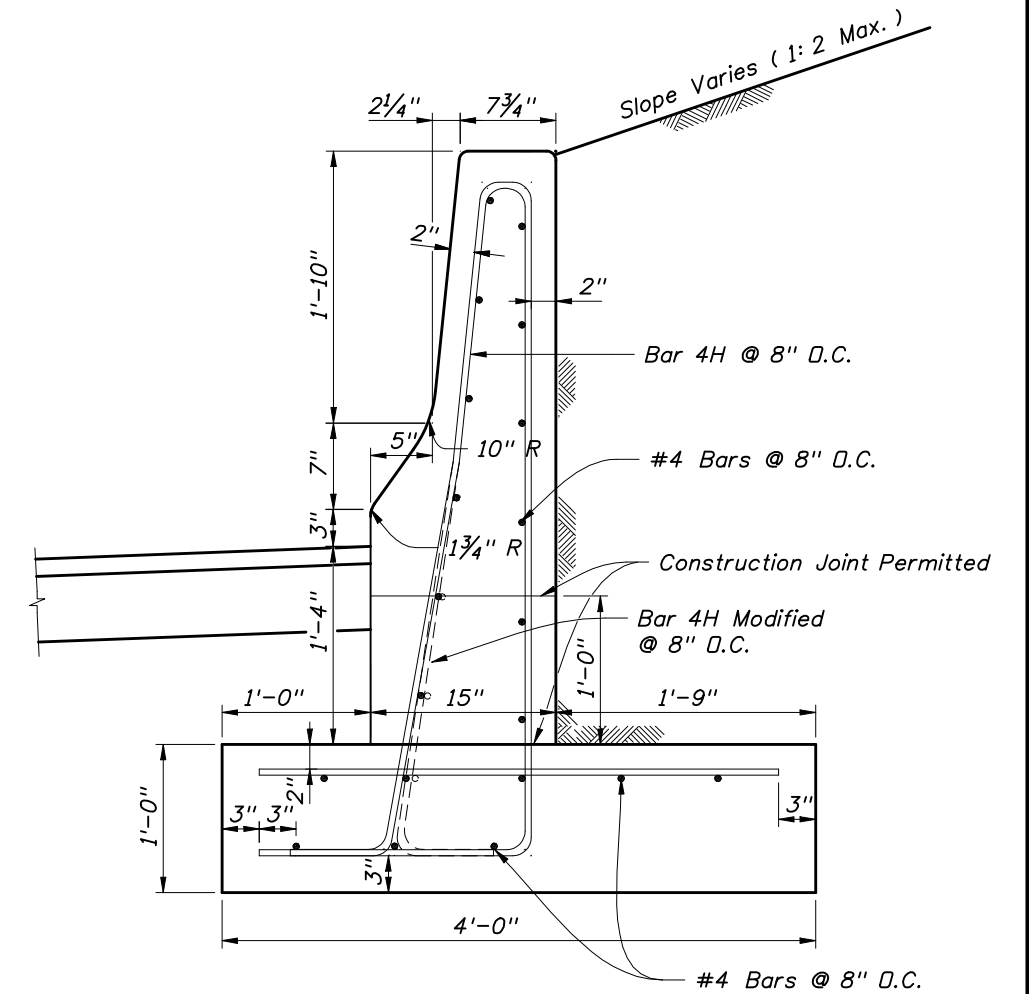
BAR 4H



For Use In Areas Where Obstructions Require Localized Omission Of Toe

BAR 4H MODIFIED

BENDING DIAGRAMS



Note: All longitudinal reinforcement #4 bars.  
 Minimum segment length for this wall is 20 feet.  
 Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Retaining), LF.

QUANTITIES: Class II Concrete 0.29 CY/LF  
 Reinforcing Steel 28.6 LBS/LF

REINFORCED CONCRETE BARRIER WALL (RETAINING)

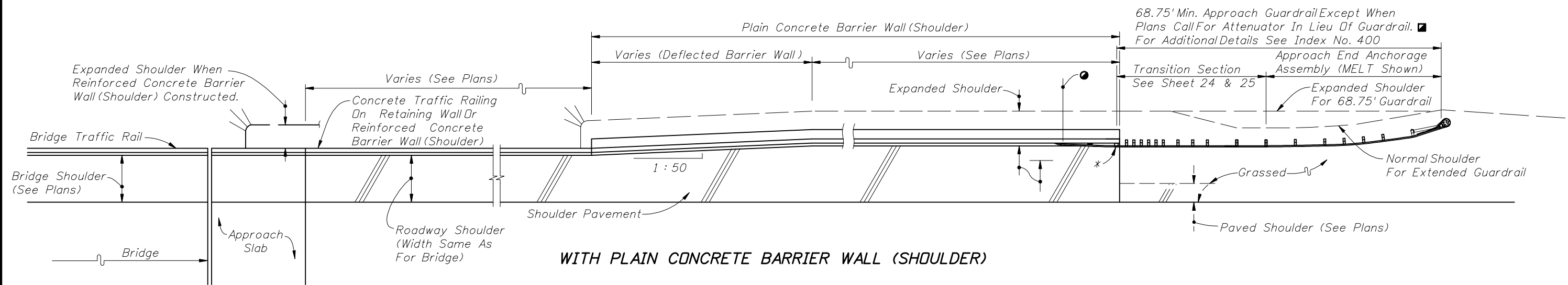


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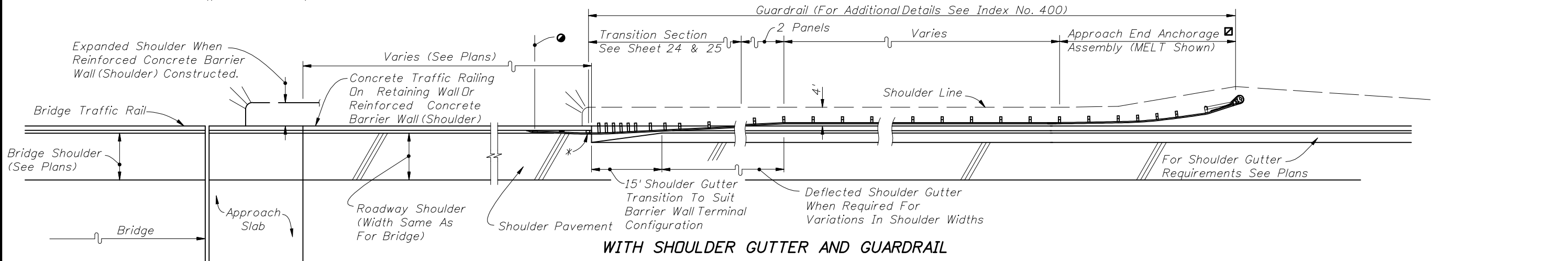
CONCRETE BARRIER WALL

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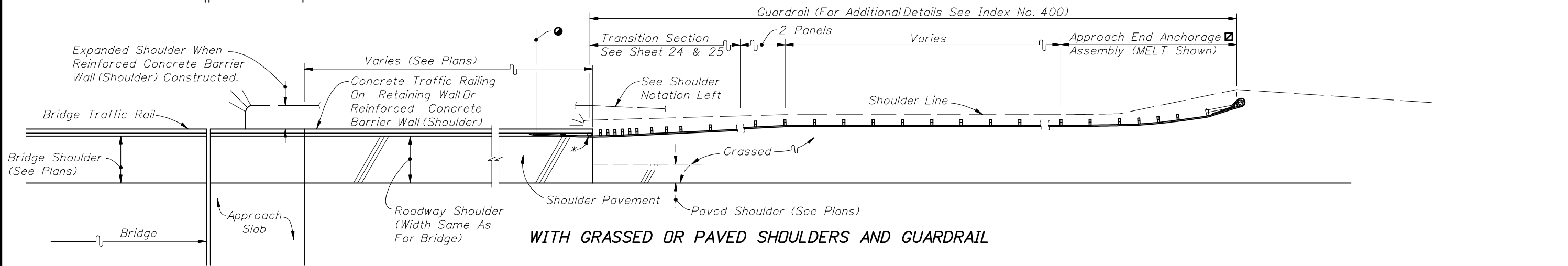




**WITH PLAIN CONCRETE BARRIER WALL (SHOULDER)**



**WITH SHOULDER GUTTER AND GUARDRAIL**



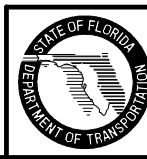
**WITH GRASSED OR PAVED SHOULDERS AND GUARDRAIL**

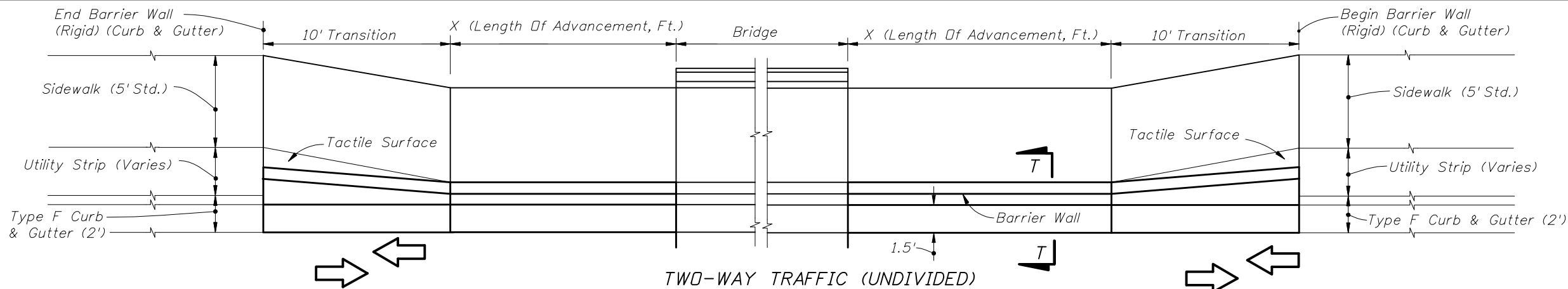
- ☒ To be deleted on trailing ends except for 2-lane 2-way facilities. The tangent guardrail shall be anchored by End Anchorage Type II, Index No. 400.
- ☑ To be deleted on trailing ends except for 2-lane 2-way facilities.
- End measurement for guardrail payment when guardrail connected to shoulder barrier walls. See Index No. 400, Detail J for end measurement when guardrail connected to concrete traffic rails constructed with approach slab or on retaining walls.

▲ Views show approach roadside barriers when length of need exceeds the length of either retaining walls with concrete traffic railings\* or Reinforced Concrete Barrier Wall (Shoulder) on shoulders. When either of these rigid barriers alone satisfies the approach length of need, the wall ends shall be shielded by crash cushions, or, by guardrail the same as for bridge traffic rails, as detailed in Index No. 400. See other flagged notes for trailing end treatments. Miscellaneous asphalt paving under guardrail not shown.

\* Guardrail connection to concrete traffic railings on retaining walls shall be in accordance with the Structures Design Office Standard Drawings and the plans. Approach guardrail connections to shoulder concrete barrier walls shall be in accordance with the details shown on Sheets 2, 24 and 25 of this Index and Index No. 400, Detail J.

**EITHER REINFORCED CONCRETE BARRIER WALL (SHOULDER) OR RETAINING WALL WITH CONCRETE TRAFFIC RAILING ▲  
CONCRETE BARRIER WALLS ON APPROACHES TO BRIDGES**

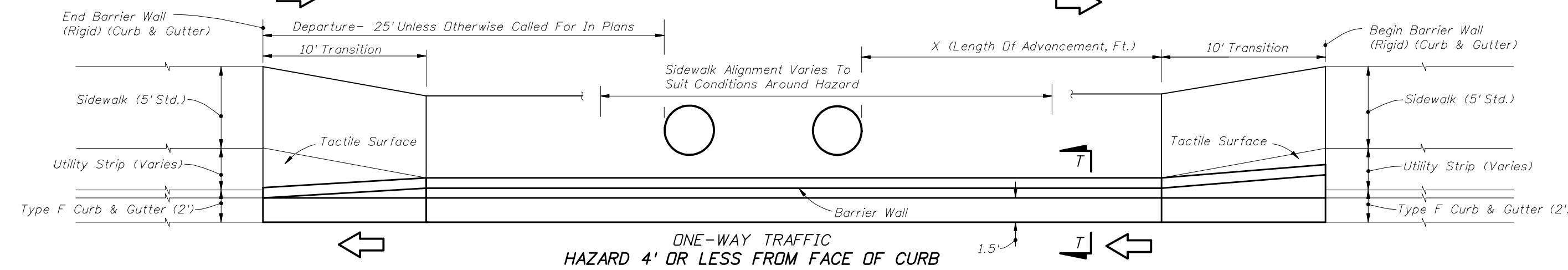
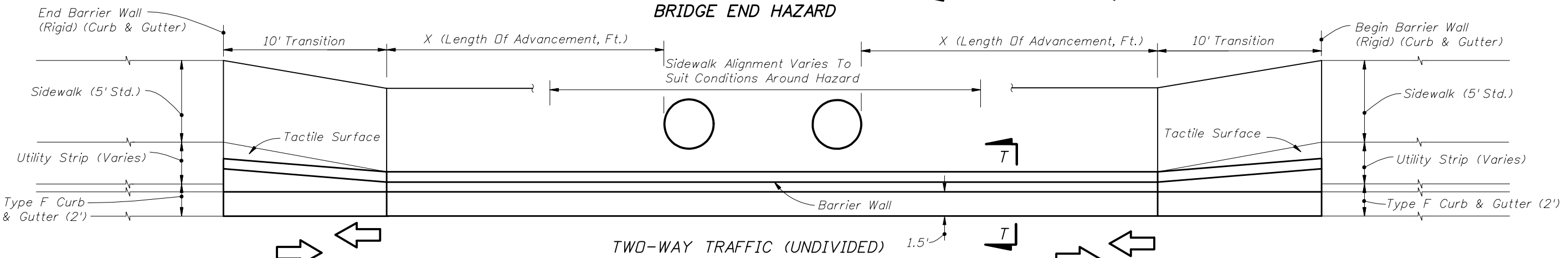
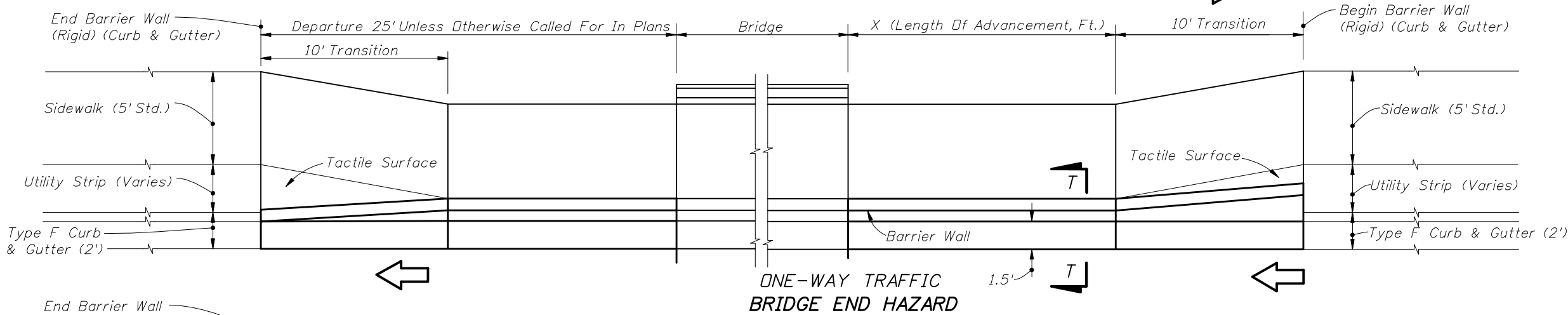




NOTE:  
 X=Length of advancement in feet for near and opposing approach lanes. See Sheet 14.

For locations without utility strips see Sheet 11.  
 For transition and sidewalk details see Sheets 12 & 13 and for sectional details see Sheet 14.

The 1.5' offsets to toe of barrier wall cannot be reduced to accommodate hazards; however, hazards located in the stem of the wall may be accommodated by the details on Sheets 22 & 23.



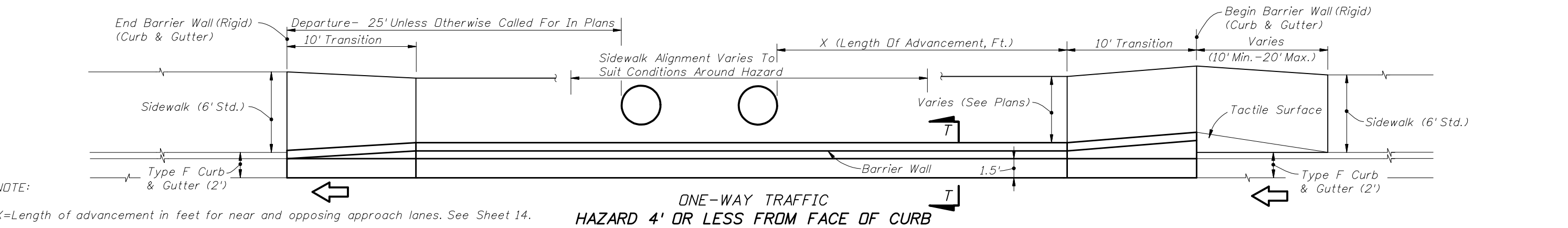
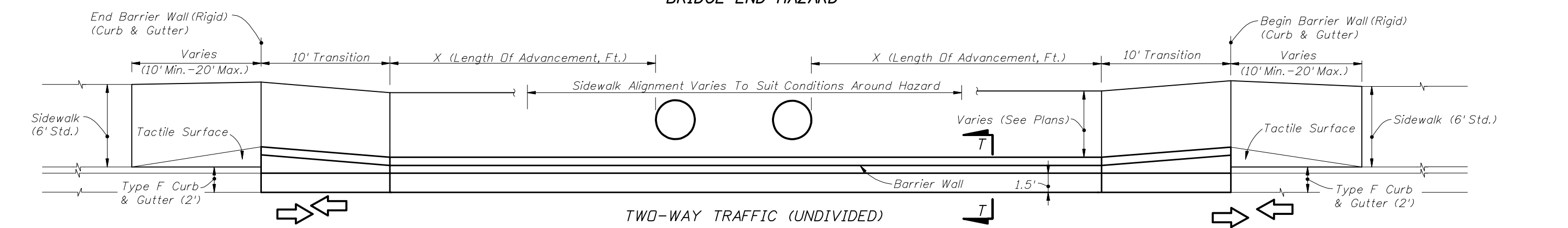
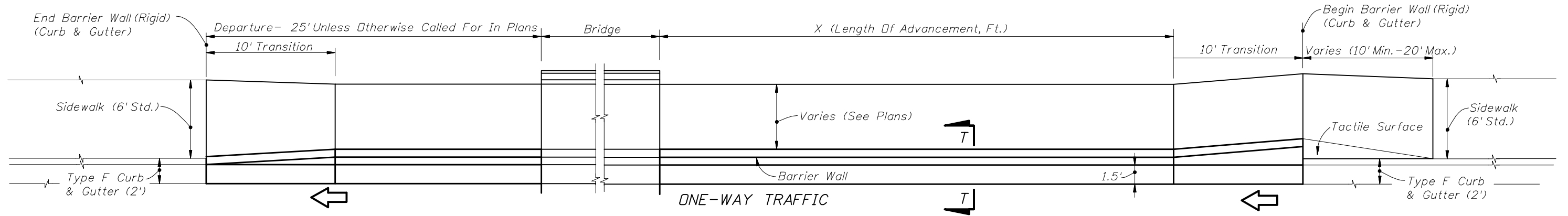
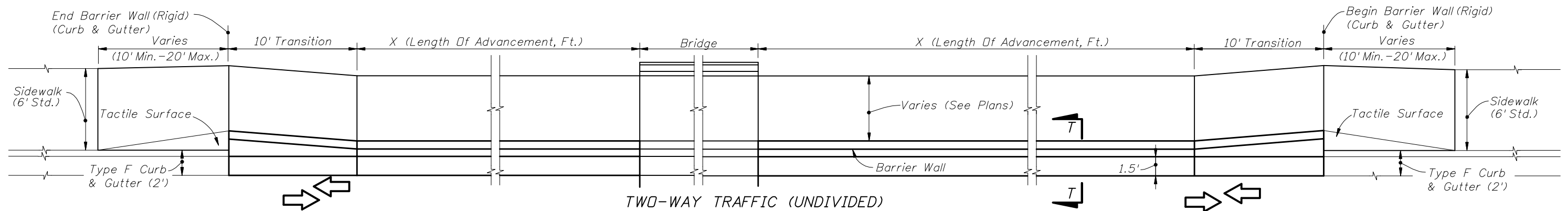
CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) • CURB AND GUTTER WITH UTILITY STRIP AND WITH ADJACENT BICYCLE LANE



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CONCRETE BARRIER WALL

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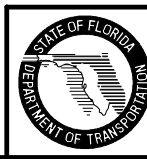
NOTE:

X=Length of advancement in feet for near and opposing approach lanes. See Sheet 14.

For locations with utility strips see Sheet 10. For transition and sidewalk see Sheets 12 & 13, for sectional details see Sheet 14.

The 1.5' offsets to toe of barrier wall cannot be reduced to accommodate hazards; however, hazards located in the stem of the wall may be accommodated by the detail on Sheets 22 & 23.

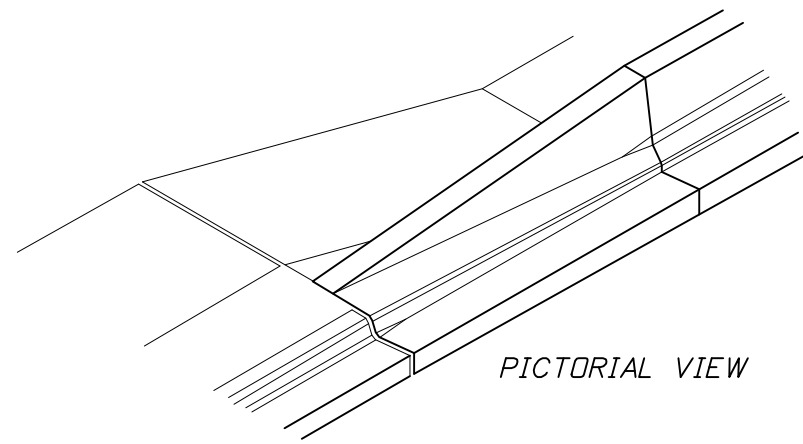
**CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER)**  
**CURB AND GUTTER WITHOUT UTILITY STRIP AND WITH ADJACENT BICYCLE LANE**



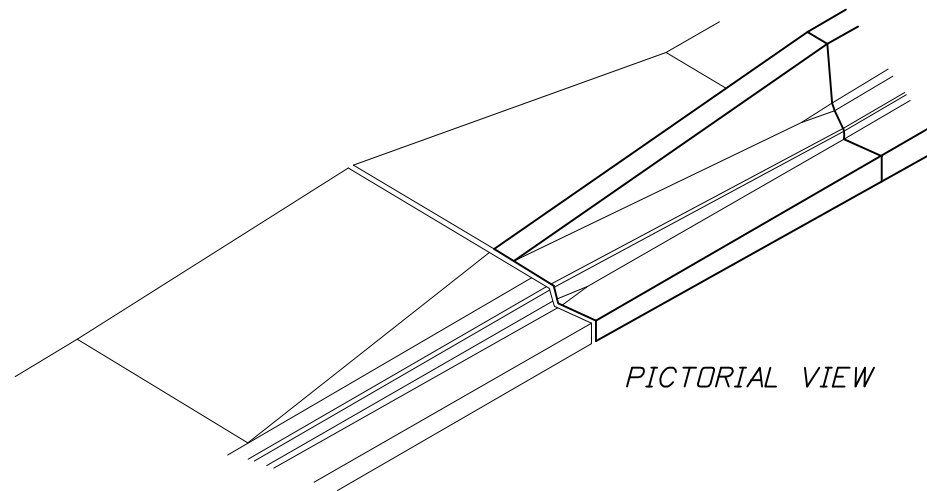
2010 FDOT Design Standards

**CONCRETE BARRIER WALL**

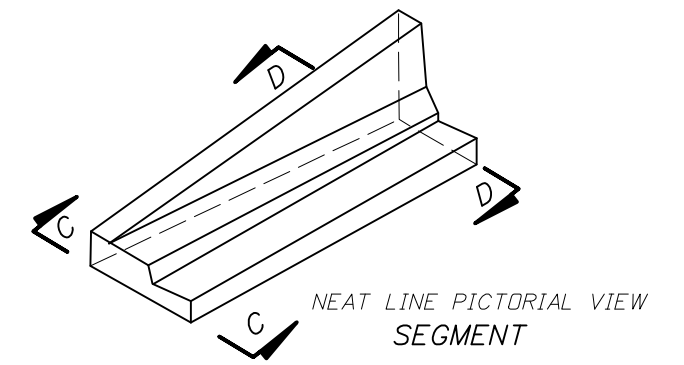
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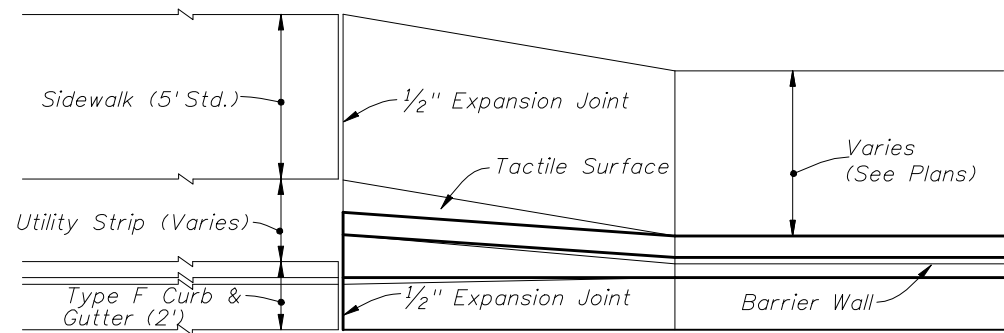
PICTORIAL VIEW



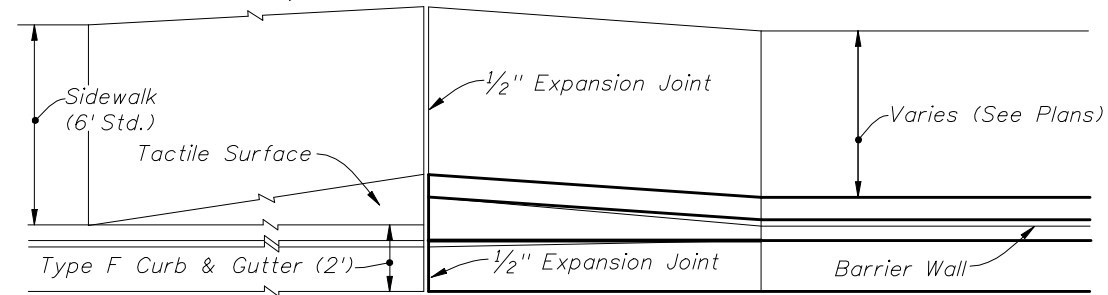
PICTORIAL VIEW



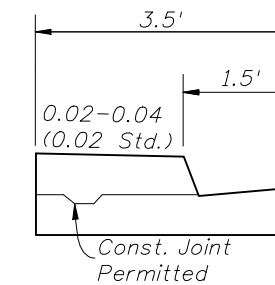
NEAT LINE PICTORIAL VIEW SEGMENT



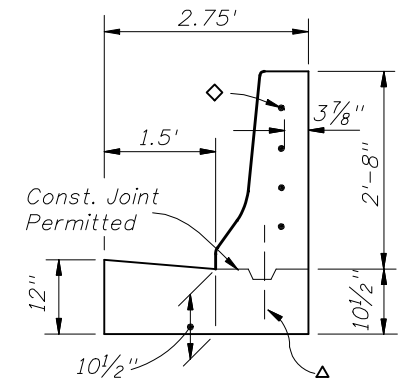
PLAN WITH UTILITY STRIP



PLAN WITHOUT UTILITY STRIP

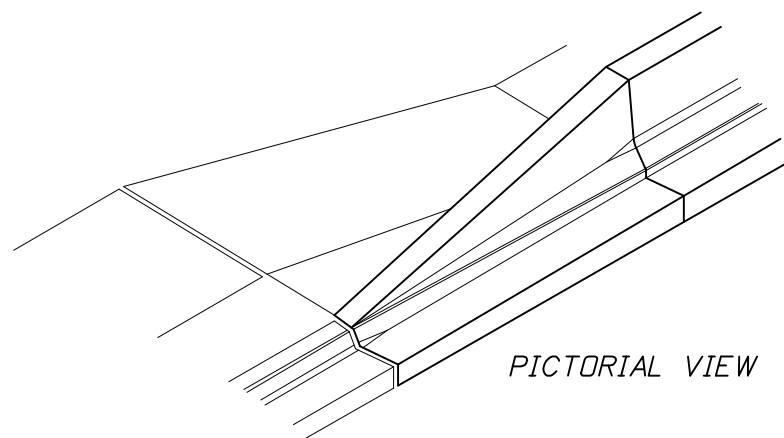


SECTION CC

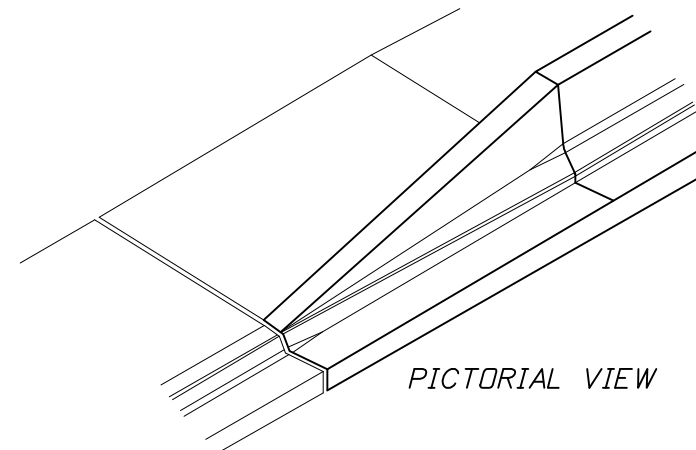


SECTION DD

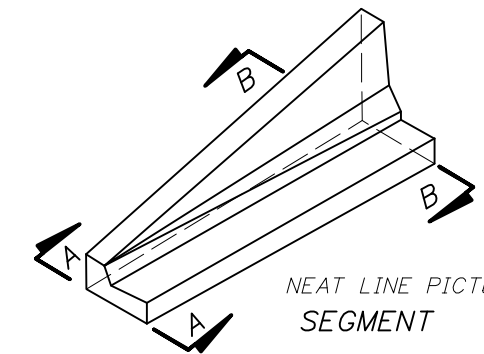
TWO-WAY TRAFFIC (OPPOSING LANE APPROACH)



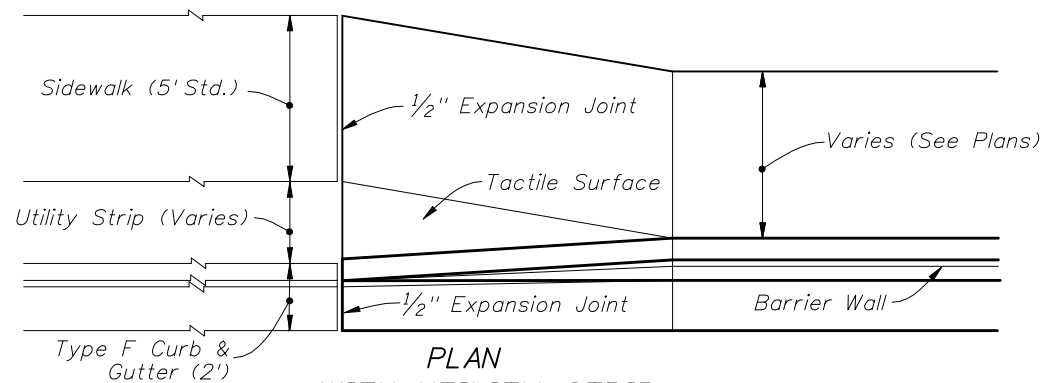
PICTORIAL VIEW



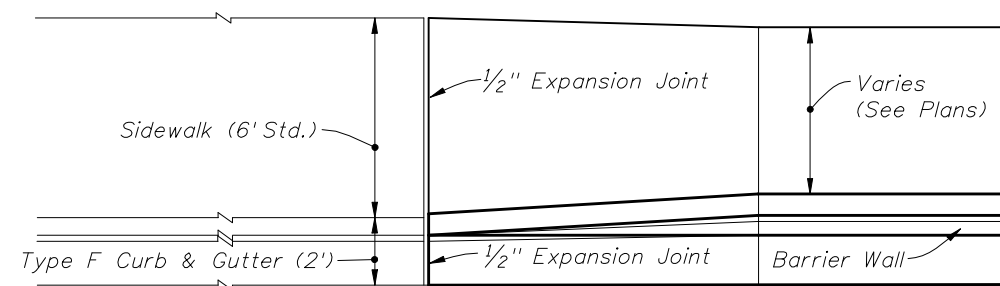
PICTORIAL VIEW



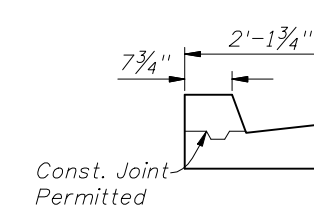
NEAT LINE PICTORIAL VIEW SEGMENT



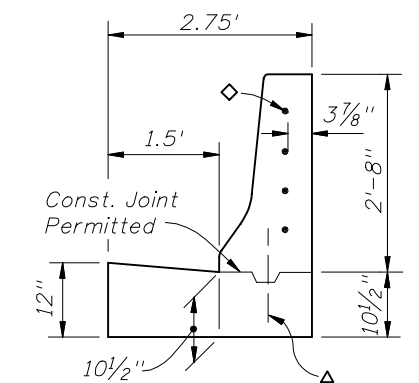
PLAN WITH UTILITY STRIP



PLAN WITHOUT UTILITY STRIP



SECTION AA



SECTION BB

ONE-WAY TRAFFIC (TRAILING END)

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) • TRANSITION SEGMENTS • WITH ADJACENT BICYCLE LANE

◇ See Notes Sheet 13  
 △ See Notes Sheet 13

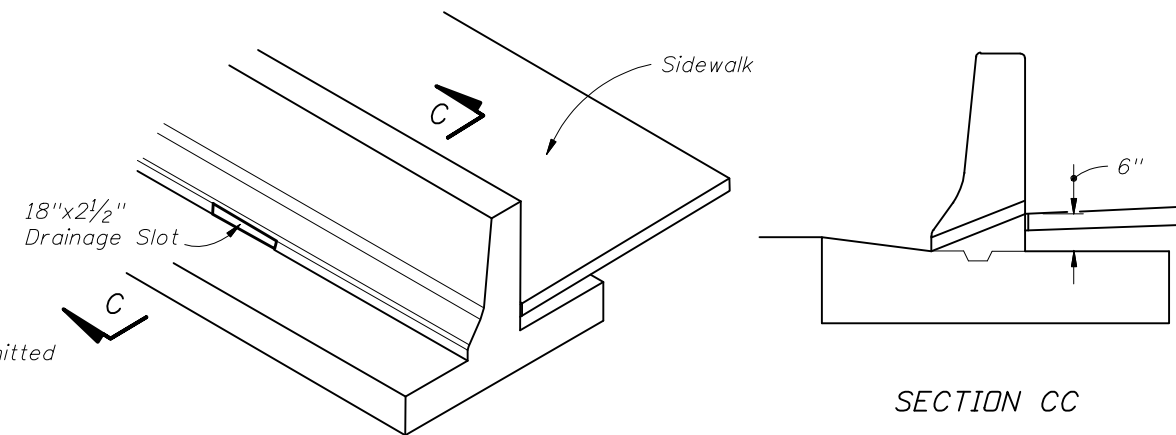
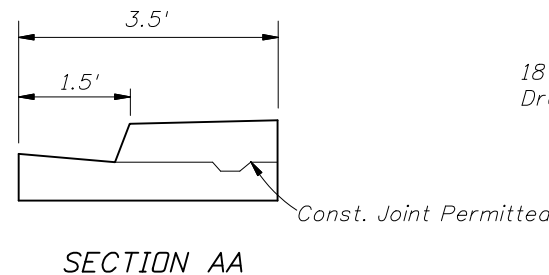
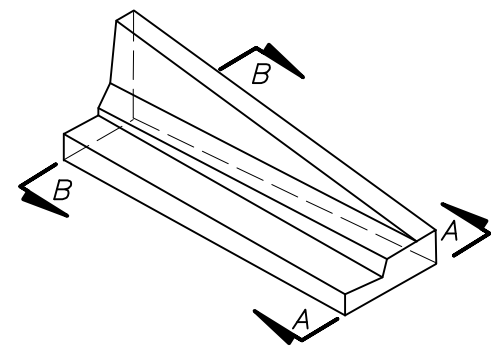
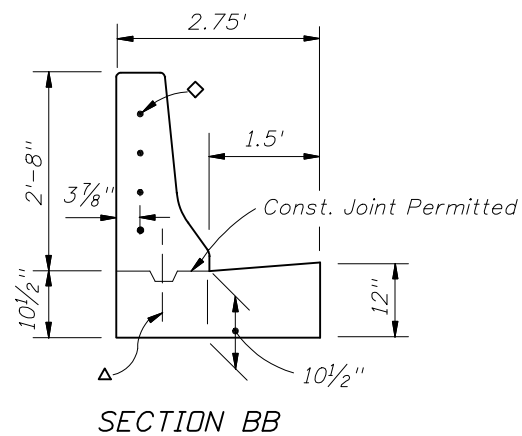


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CONCRETE BARRIER WALL

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WITH OR WITHOUT UTILITY STRIP  
NEAT LINE PICTORIAL VIEW

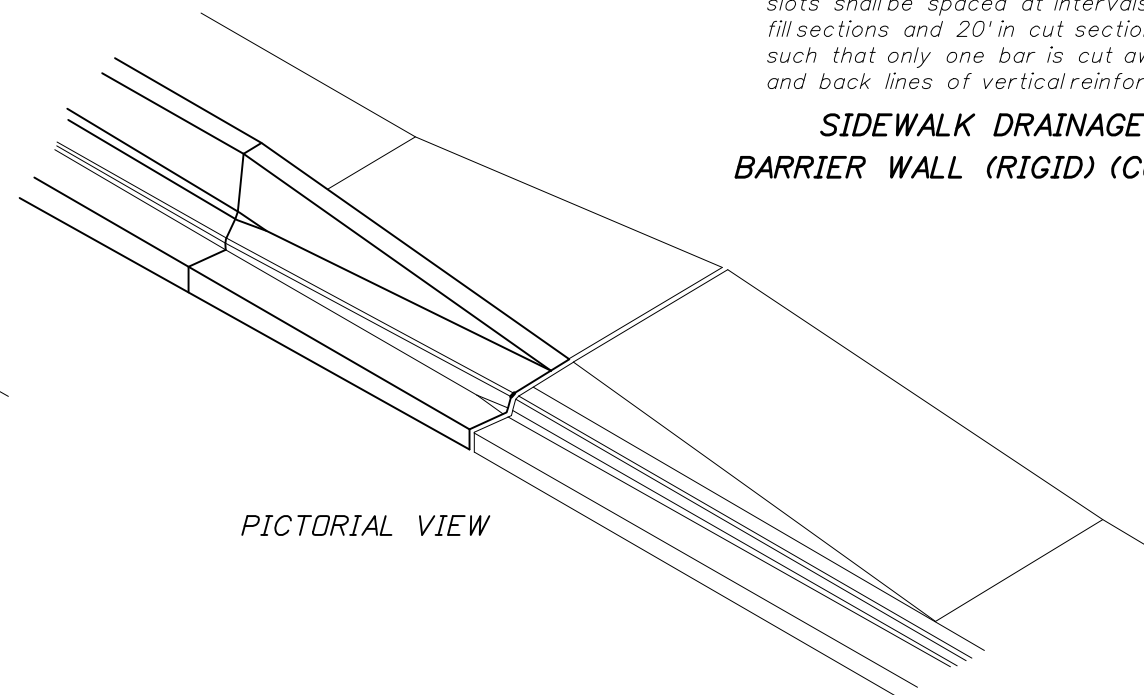
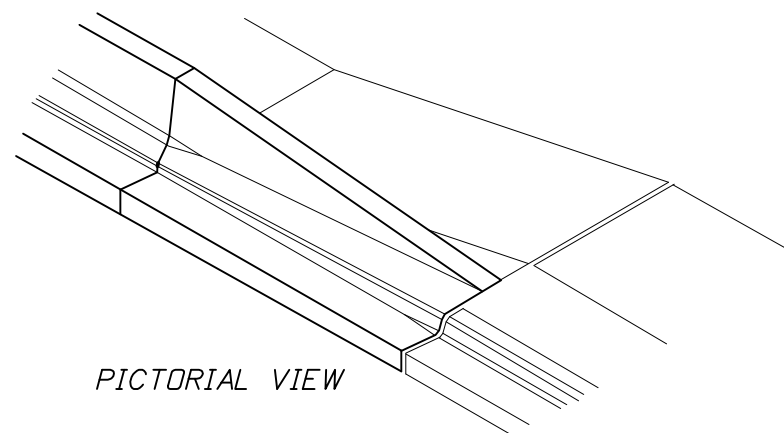
NEAT LINE PICTORIAL VIEW

NOTE: Drainage slots shall be located at all low points along the sidewalk, and, unless otherwise shown in the plans, slots shall be spaced at intervals not exceeding 50' in fill sections and 20' in cut sections. Slots shall be located such that only one bar is cut away or deleted in front and back lines of vertical reinforcement.

SIDEWALK DRAINAGE SLOT FOR  
BARRIER WALL (RIGID) (CURB & GUTTER)

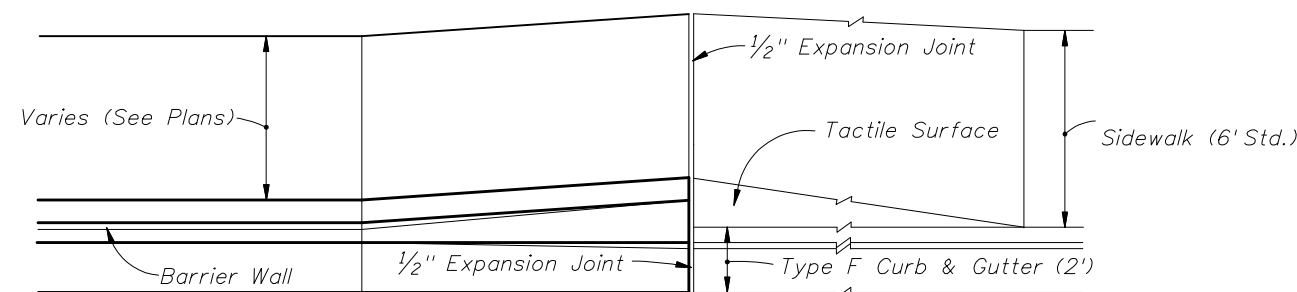
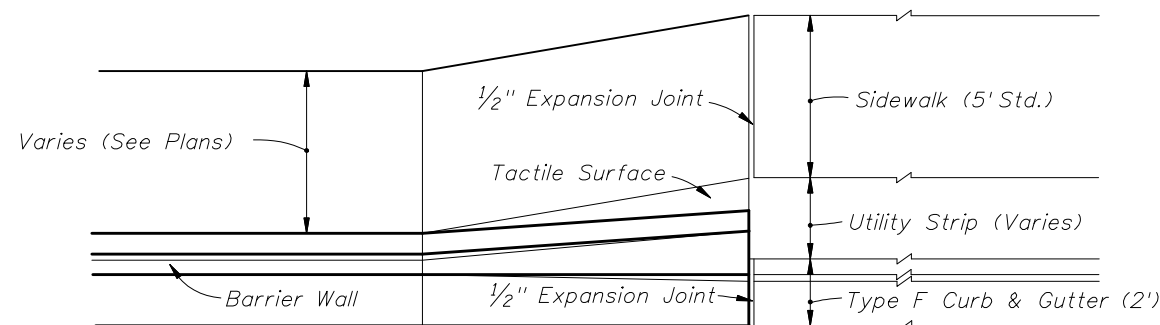
◇ Transition Segments Shall Be Doweled Into The End Of The Barrier Wall In The Following Manner: Four 1" diameter holes 6" deep on 6" centers shall be drilled in the end of the barrier and #6 bars 15" long set in an Adhesive Bonded Material System. The ends of the dowels extending into the transition segment shall be wrapped with one layer of 15 lb. Type I asphalt-saturated roofing felt with the ends crimped.

△ When Construction Joints Are Utilized For Transition Segment Construction The Stem Shall Be Doweled To The Footing In The Following Manner: Five #5 bars 15" long shall be embedded 7" into the footing. The dowels shall be spaced 15" on centers with the first dowel located 12" from the barrier wall. Dowels may be placed within or adjacent to the keyway.



PICTORIAL VIEW

PICTORIAL VIEW



PLAN WITH UTILITY STRIP

PLAN WITHOUT UTILITY STRIP

RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE HAND  
ONE-WAY AND TWO-WAY TRAFFIC (NEAR LANE APPROACH)

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) ● TRANSITION SEGMENT ● WITH ADJACENT BICYCLE LANE

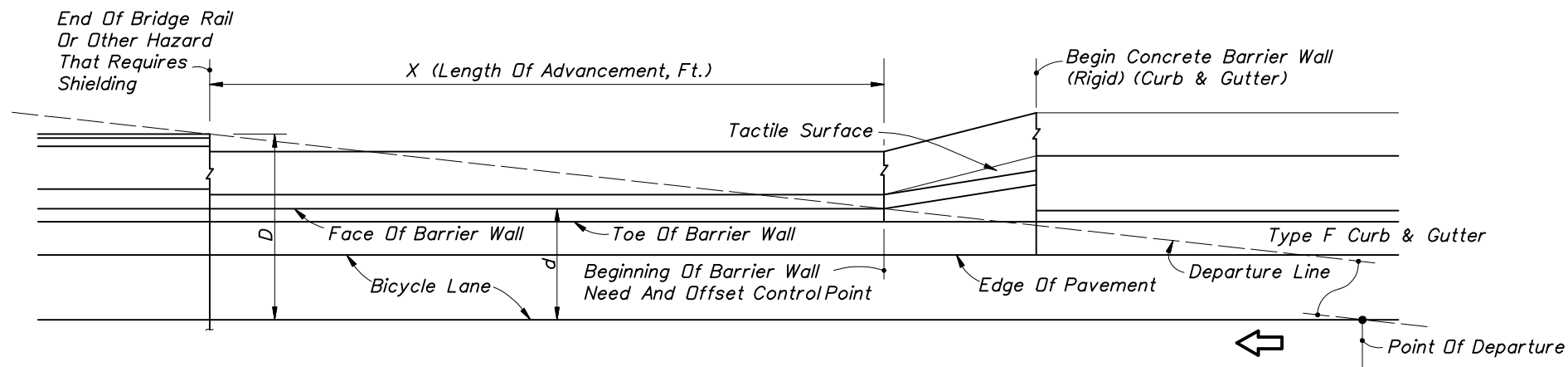


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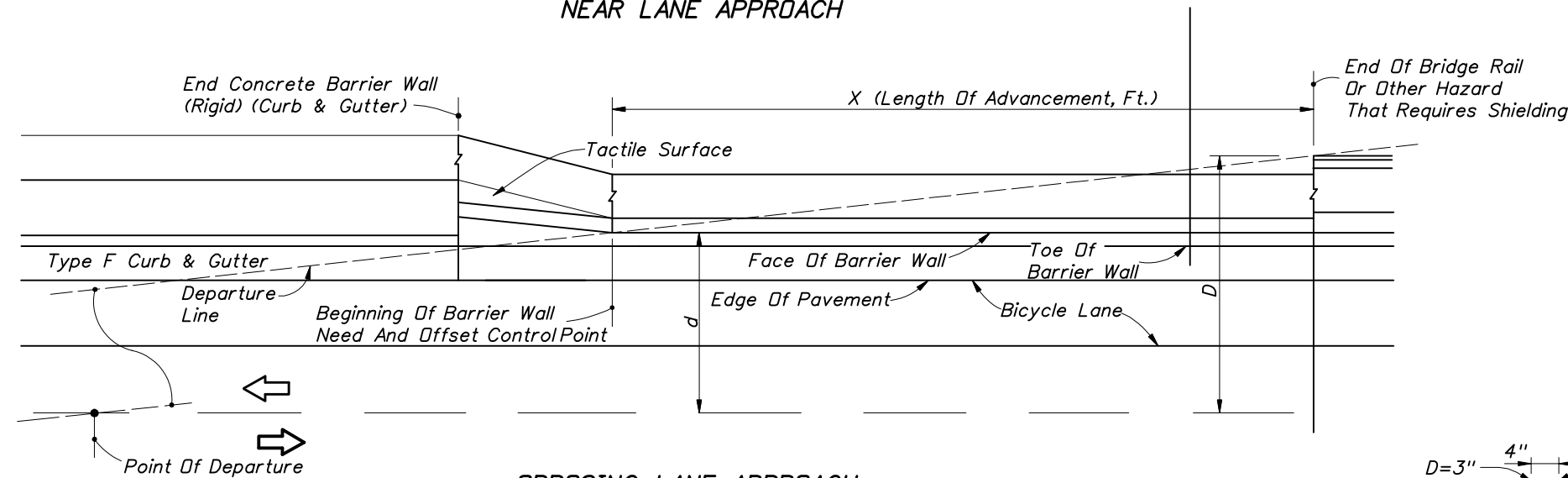
CONCRETE BARRIER WALL

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RIGHT SIDE APPROACH SHOWN - LEFT SIDE OPPOSITE HAND  
NEAR LANE APPROACH



OPPOSING LANE APPROACH  
WITH OR WITHOUT UTILITY STRIP - UTILITY STRIP SHOWN  
- SEE SHEET 10 & 11 FOR APPLICATIONS

Design Speed mph	Length Of Advancement, Ft. (X)
≤45	=16 (D-d)

Note: The minimum length of advancement for both near and opposing lane approaches is 40'.

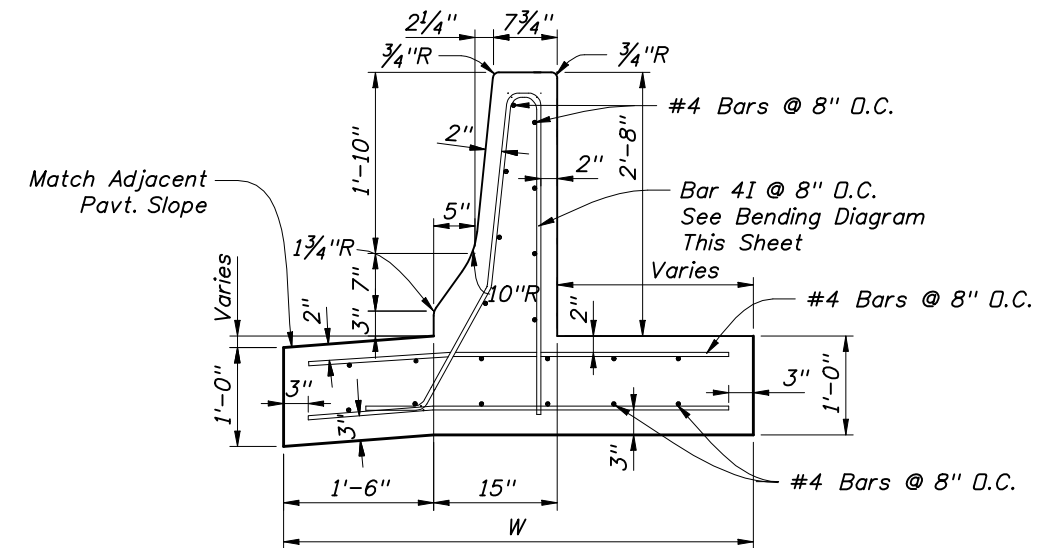
Equation Variables:

D= Distance in feet from near edge of the near approach traffic lane to back of hazard or clear zone width whichever is lesser. For left side hazards and clear zones on two-way undivided facilities D is measured from the inside edge of the near approach traffic lane.

d= Distance in feet from near edge of the near approach traffic lane to the face of barrier (at offset control point). For left side hazards on two-way undivided facilities d is measured from the inside edge of the nearest opposing traffic lane.

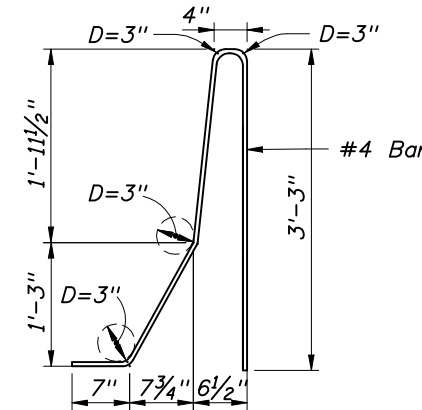
LENGTH OF ADVANCEMENT

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) WITH ADJACENT BICYCLE LANE

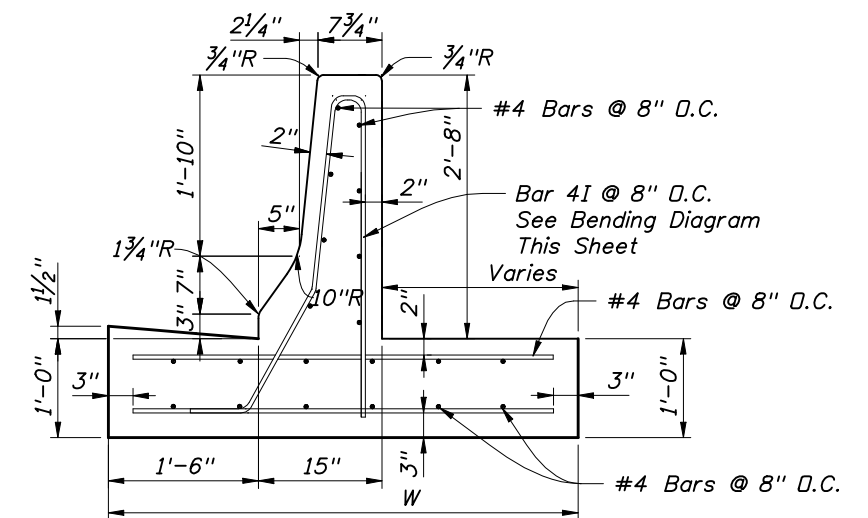


FOR HIGH SIDE SECTION TT

QUANTITIES			
Length* Of Barrier Wall	W	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.
>73'	4'-9"	0.26	29
56' to 73'	5'-6"	0.29	32
48' to 55'	6'-0"	0.31	34
41' to 47'	6'-6"	0.33	37
36' to 41'	7'-0"	0.35	39
29' to 35'	8'-0"	0.38	42



BAR 4I BENDING DIAGRAM



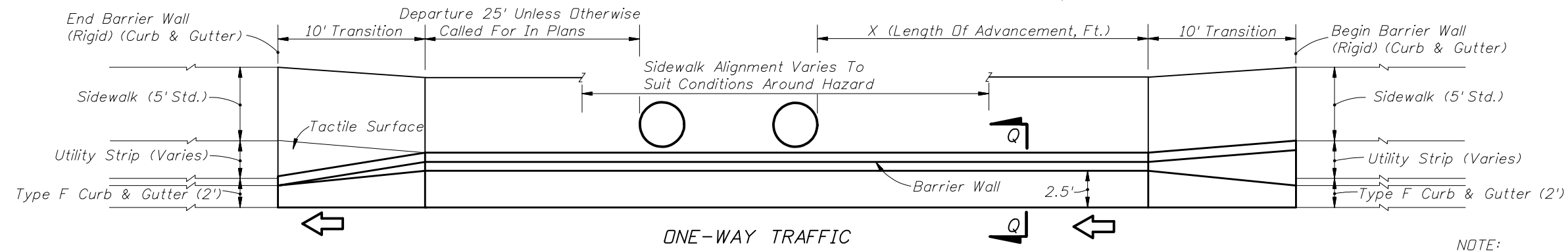
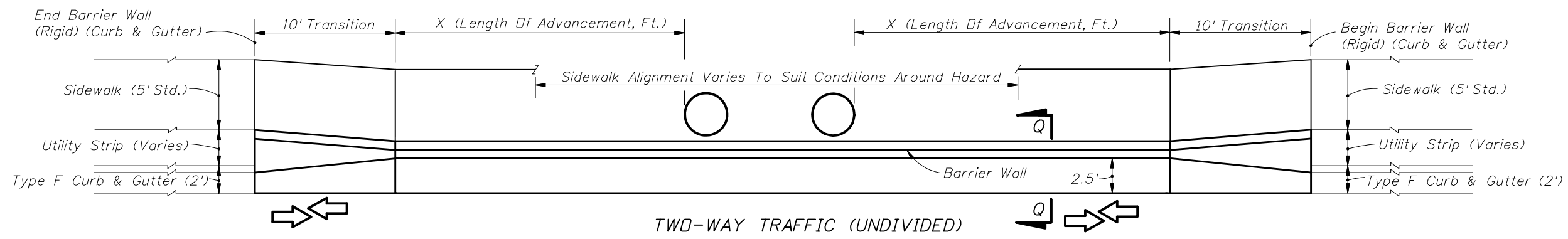
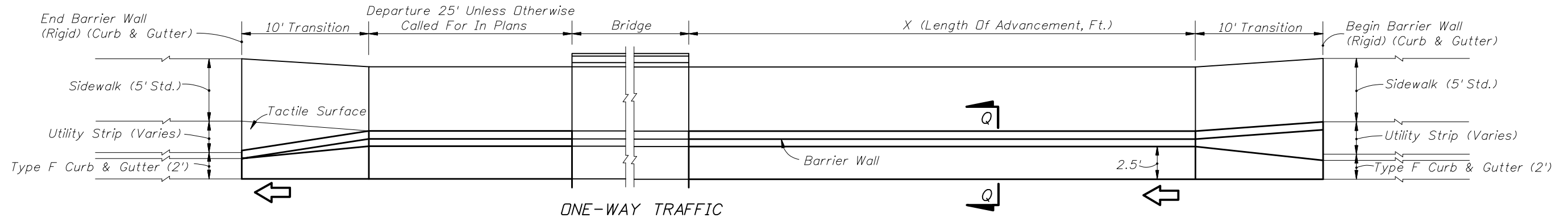
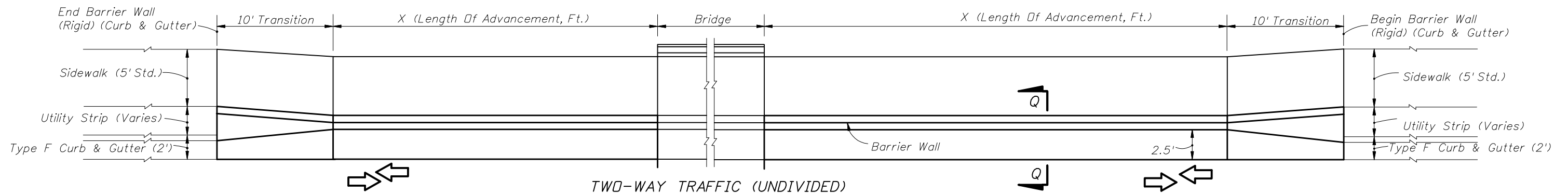
FOR LOW SIDE SECTION TT

Note: All longitudinal reinforcement #4 bars. Shorter segments due to construction or expansion joint shall be doweled in the manner described for 'Transition Segments' on Sheet 13.

Transverse expansion joints are to be constructed at the juncture of wall transitions and curb and gutter, and at intervals so that spacing will not exceed 100'.

For barrier wall inlet details see Index No. 219. Inlet extends into bicycle lane 12". Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Curb & Gutter), LF.

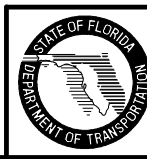


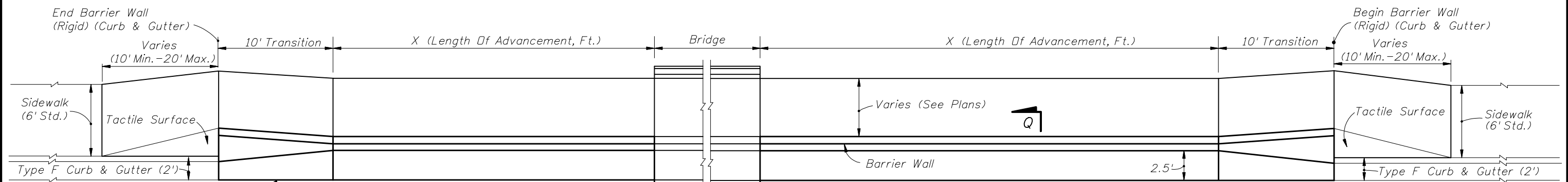


HAZARD 4' OR LESS FROM FACE OF CURB

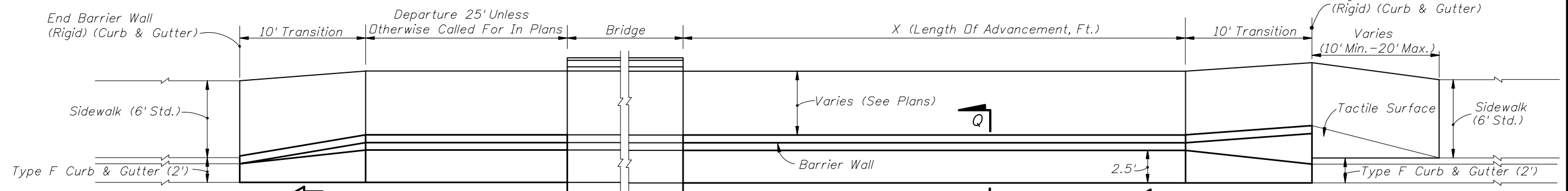
CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER)  
 CURB AND GUTTER WITH UTILITY STRIP AND WITHOUT ADJACENT BICYCLE LANE

NOTE:  
 X=Length of advancement in feet for near and opposing approach lanes. See Sheet 19.  
 For locations without utility strips see Sheet 16.  
 For transition and sidewalk see Sheets 17 & 18 and for sectional details see Sheet 19.  
 The 2.5' offsets to toe of barrier wall cannot be reduced to accommodate hazards; however, hazards located in the stem of the wall may be accommodated by the details on Sheets 22 & 23.



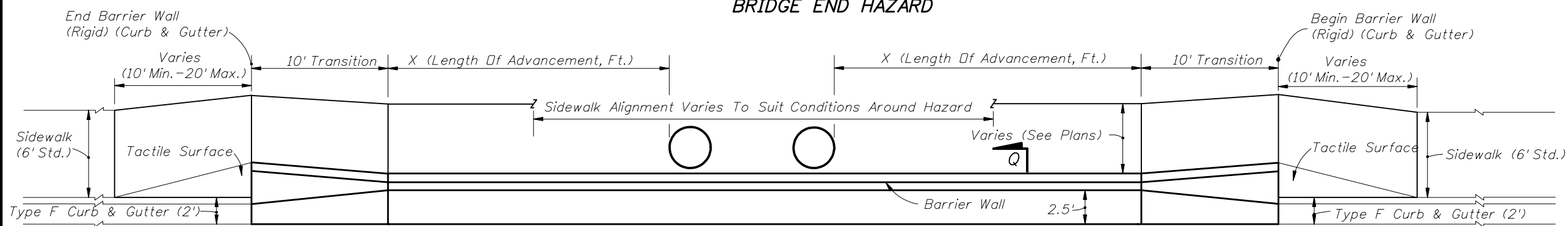


TWO-WAY TRAFFIC (UNDIVIDED)

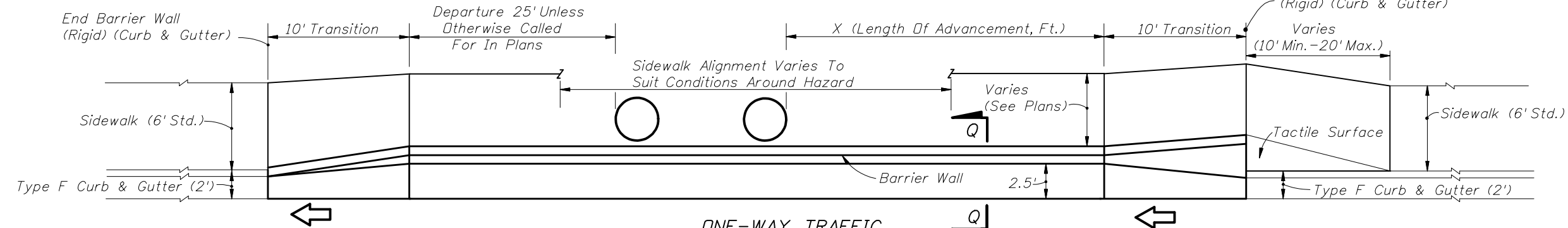


ONE-WAY TRAFFIC

BRIDGE END HAZARD



TWO-WAY TRAFFIC (UNDIVIDED)



ONE-WAY TRAFFIC

HAZARD 4' OR LESS FROM FACE OF CURB

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER)  
CURB AND GUTTER WITHOUT UTILITY STRIP AND WITHOUT ADJACENT BICYCLE LANE

NOTE:  
X=Length of advancement in feet for near and opposing approach lanes. See Sheet 19.

For locations with utility strips see Sheet 15. For transition and sidewalk see Sheets 17 & 18 and for sectional details see Sheet 19.

The 2.5' offsets to toe of barrier wall cannot be reduced to accommodate hazards; however, hazards located in the stem of the wall may be accommodated by the detail on Sheets 22 & 23.

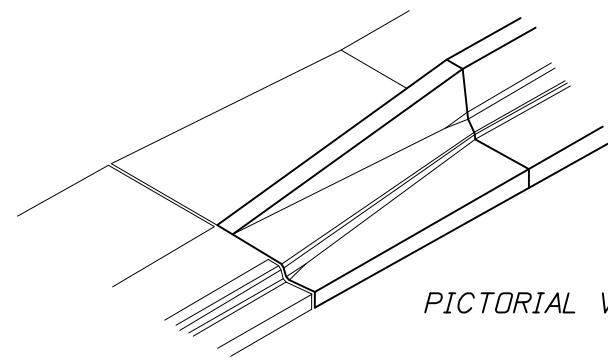


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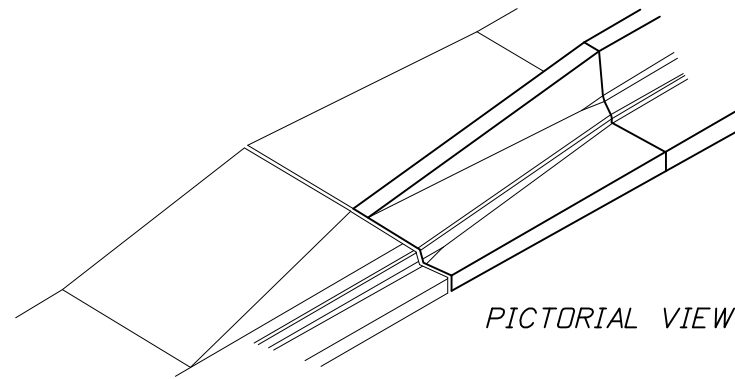
CONCRETE BARRIER WALL

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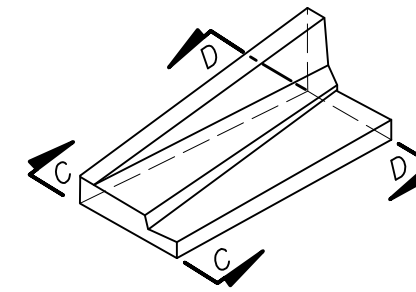




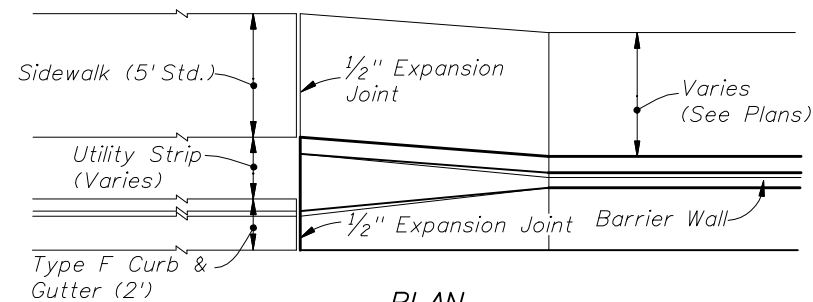
PICTORIAL VIEW



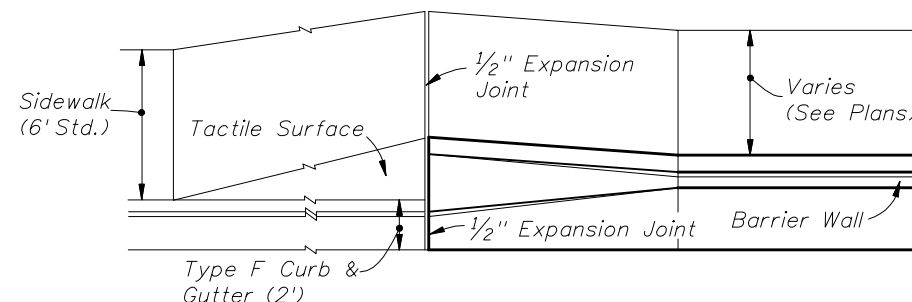
PICTORIAL VIEW



NEAT LINE PICTORIAL VIEW  
SEGMENT

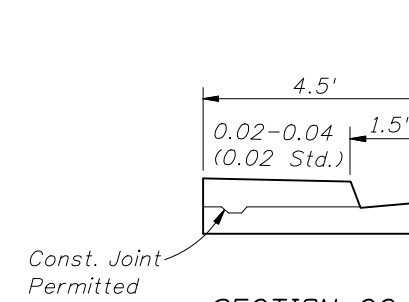


PLAN  
WITH UTILITY STRIP

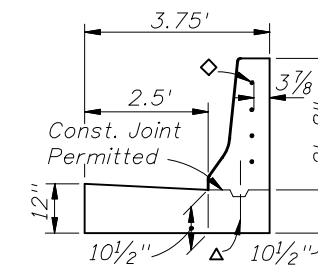


PLAN  
WITHOUT UTILITY STRIP

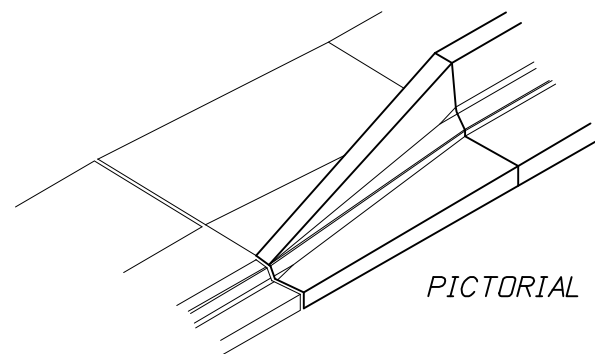
TWO-WAY TRAFFIC (OPPOSING LANE APPROACH)



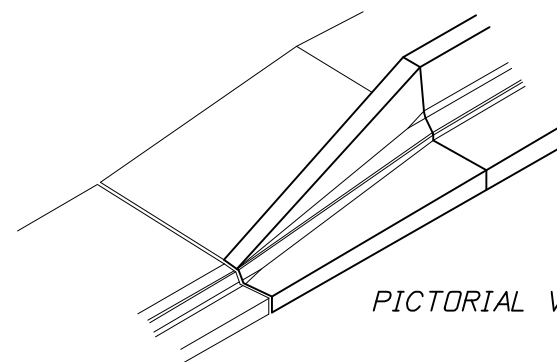
SECTION CC



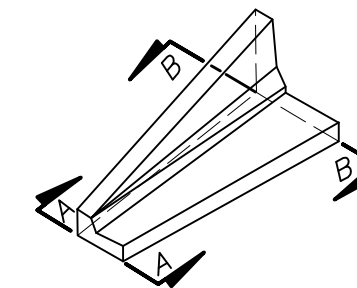
SECTION DD



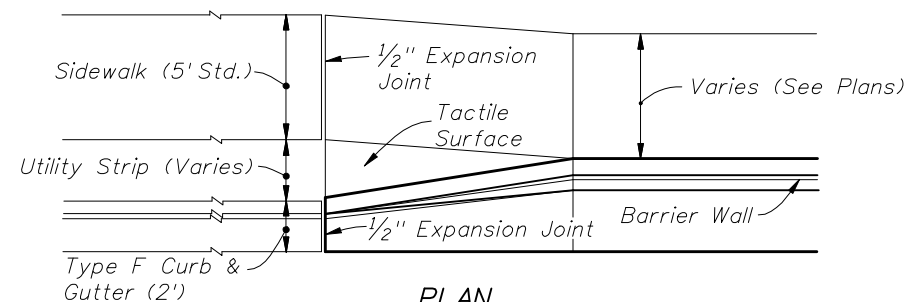
PICTORIAL VIEW



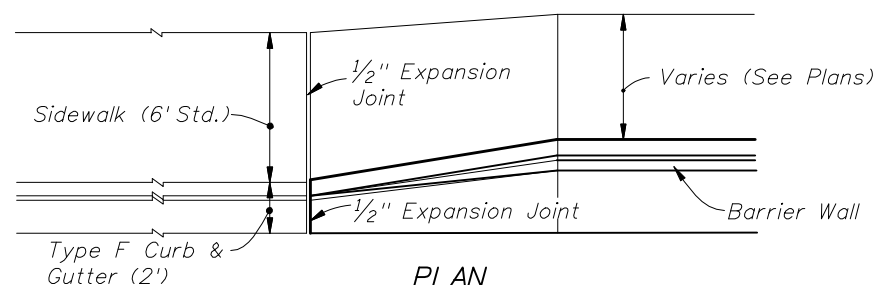
PICTORIAL VIEW



NEAT LINE PICTORIAL VIEW  
SEGMENT

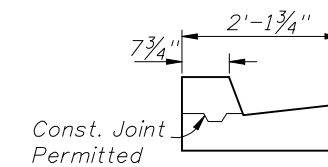


PLAN  
WITH UTILITY STRIP

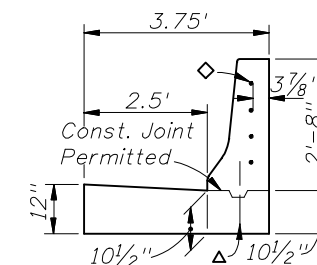


PLAN  
WITHOUT UTILITY STRIP

ONE-WAY TRAFFIC (TRAILING END)



SECTION AA



SECTION BB

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) • TRANSITION SEGMENTS • WITHOUT ADJACENT BICYCLE LANE

◇ See Sheet 19

△ See Sheet 19

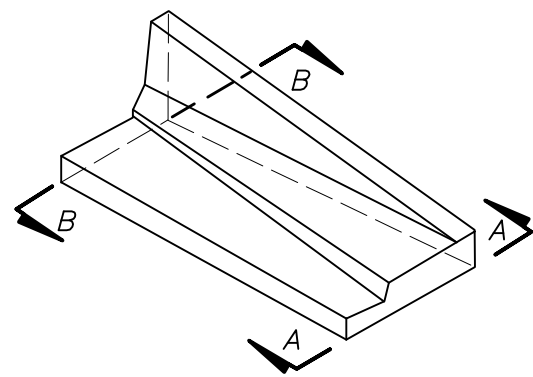
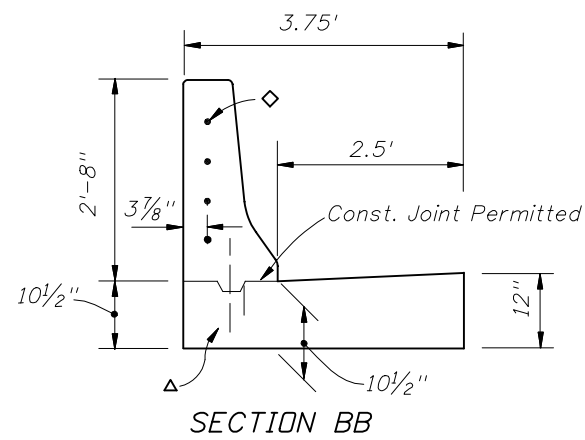


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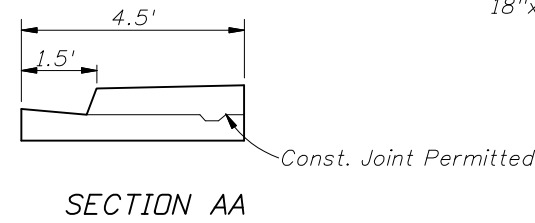
CONCRETE BARRIER WALL

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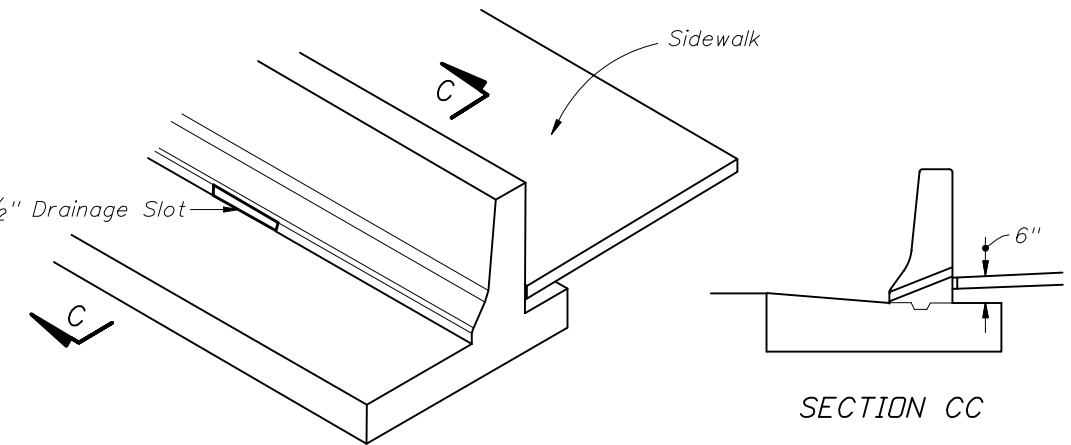


WITH OR WITHOUT UTILITY STRIP  
NEAT LINE PICTORIAL VIEW



SECTION AA

18"x2 1/2" Drainage Slot



SECTION CC

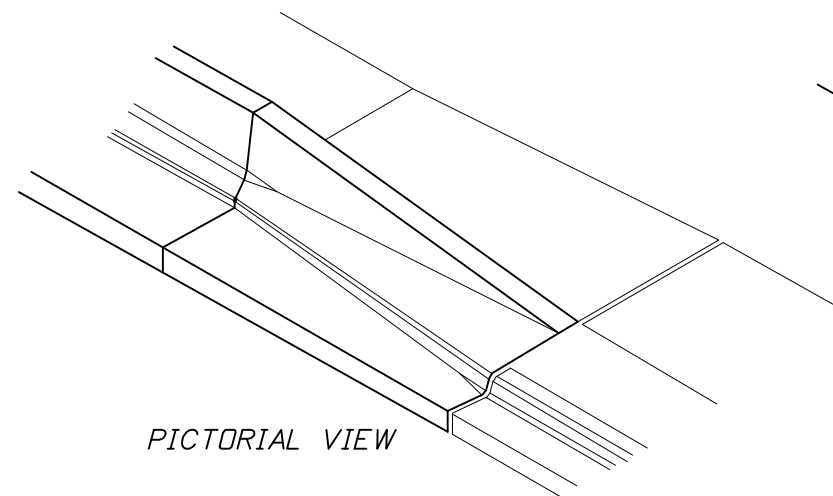
NEAT LINE PICTORIAL VIEW

NOTE: Drainage slots shall be located at all low points along the sidewalk, and, unless otherwise shown in the plans, slots shall be spaced at intervals not exceeding 50' in fill sections and 20' in cut sections. Slots shall be located such that only one bar is cut away or deleted in front and back lines of vertical reinforcement.

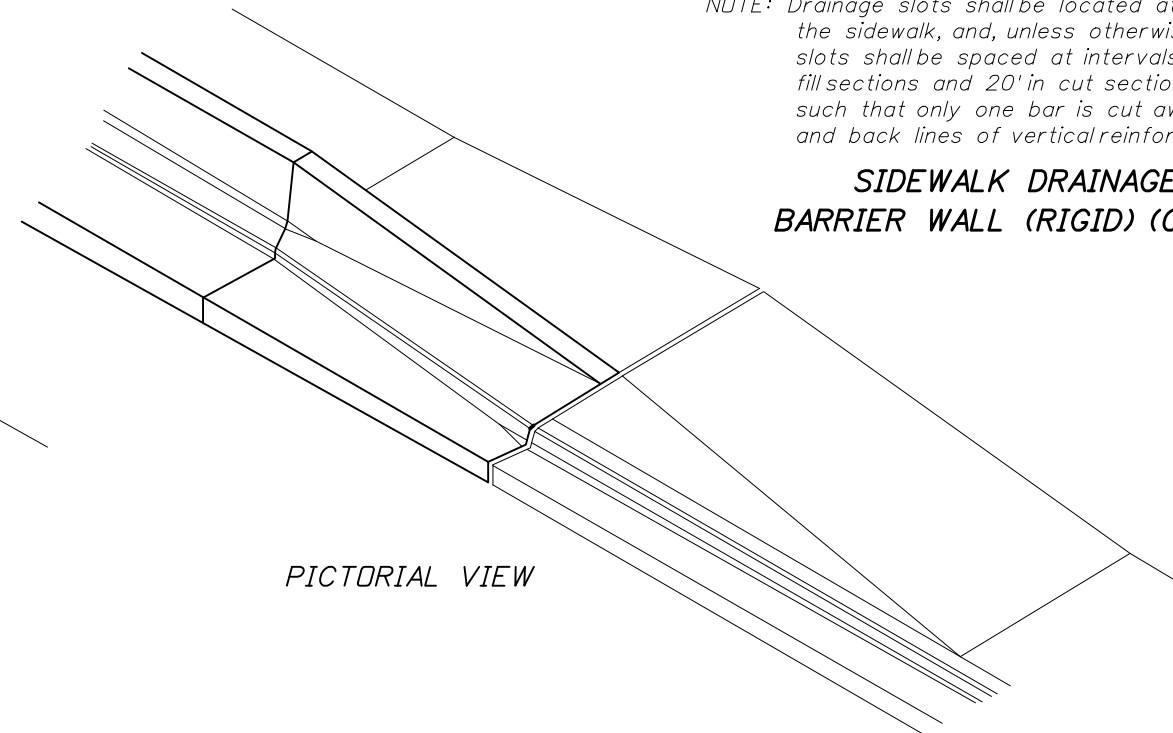
SIDEWALK DRAINAGE SLOT FOR  
BARRIER WALL (RIGID) (CURB & GUTTER)

◇ Transition Segments Shall Be Doweled Into The End Of The Barrier Wall In The Following Manner: Four 1" diameter holes 6" deep on 6" centers shall be drilled in the end of the barrier and #6 bars 15" long set in an Adhesive Bonded Material System. The ends of the dowels extending into the transition segment shall be wrapped with one layer of 15 lb. Type I asphalt-saturated roofing felt with the ends crimped.

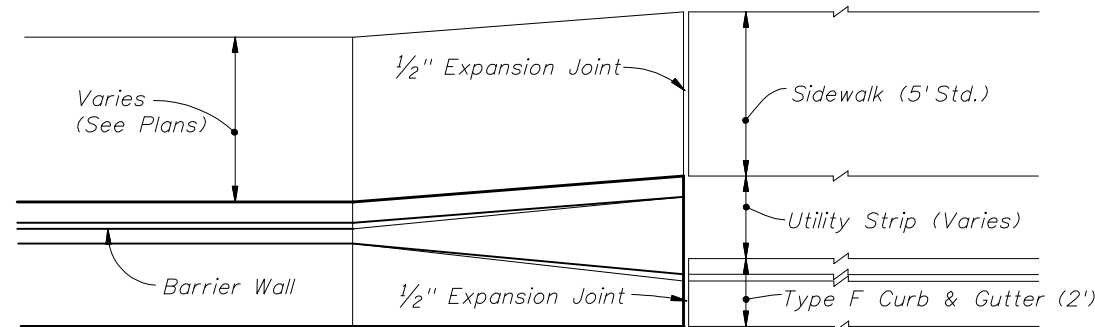
△ When Construction Joints Are Utilized For Transition Segment Construction The Stem Shall Be Doweled To The Footing In The Following Manner: Five #5 bars 15" long shall be embedded 7" into the footing. The dowels shall be spaced 15" on centers with the first dowel located 12" from the barrier wall. Dowels may be placed within or adjacent to the keyway.



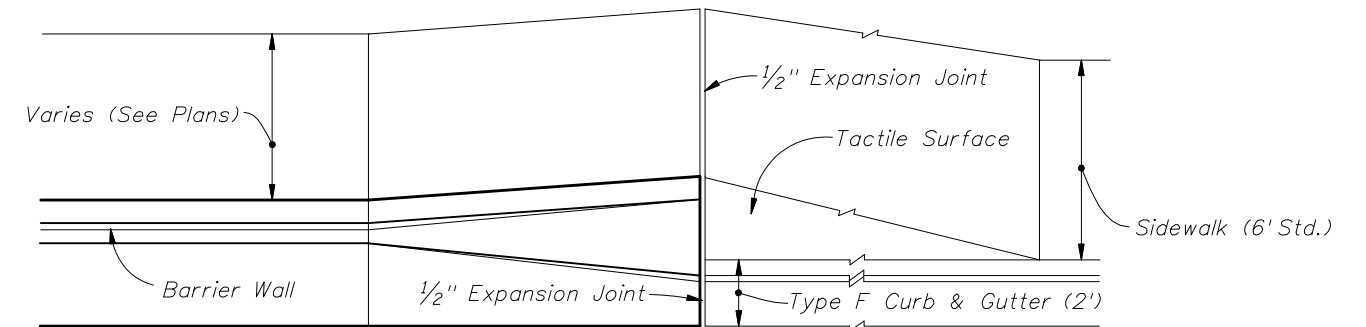
PICTORIAL VIEW



PICTORIAL VIEW



PLAN  
WITH UTILITY STRIP



PLAN  
WITHOUT UTILITY STRIP

RIGHT SIDE SHOWN, LEFT SIDE OPPOSITE HAND  
ONE-WAY AND TWO-WAY TRAFFIC (NEAR LANE APPROACH)

CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) ● TRANSITION SEGMENT ● WITHOUT ADJACENT BICYCLE LANE

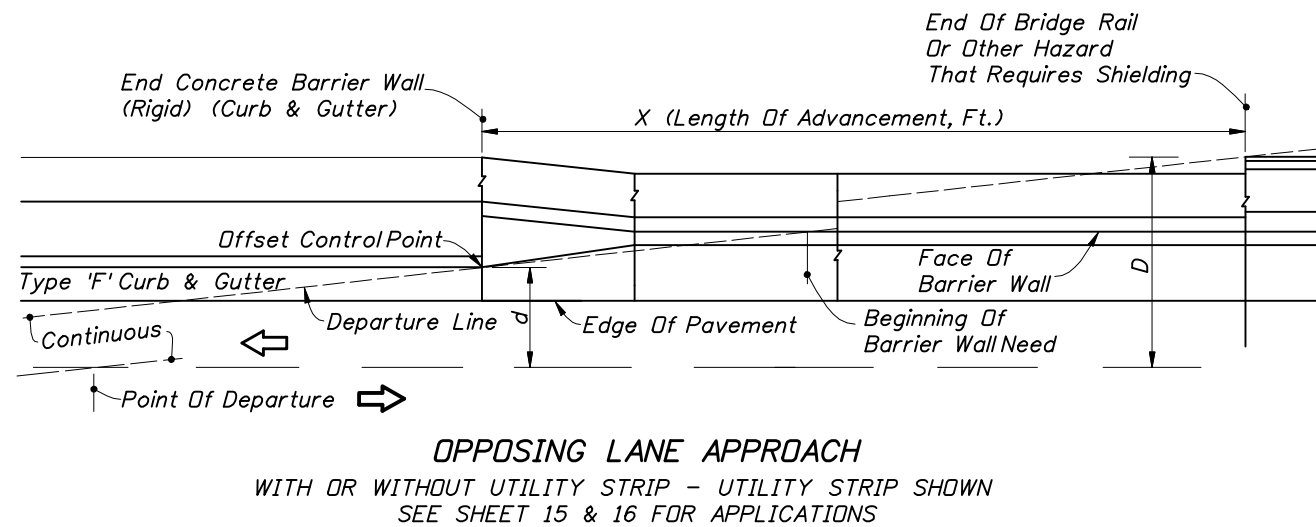
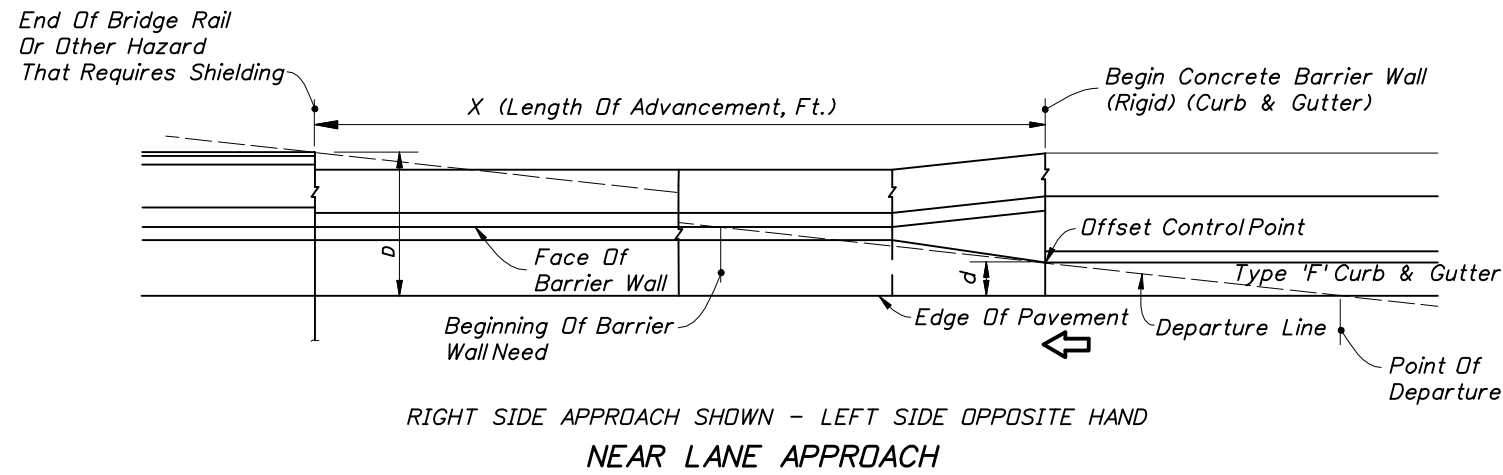


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CONCRETE BARRIER WALL

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Design Speed mph	Length Of Advancement, Ft. (X)
≤ 45	16 (D-d)

Note: The minimum length of advancement for both near and opposing lane approaches is 40'.

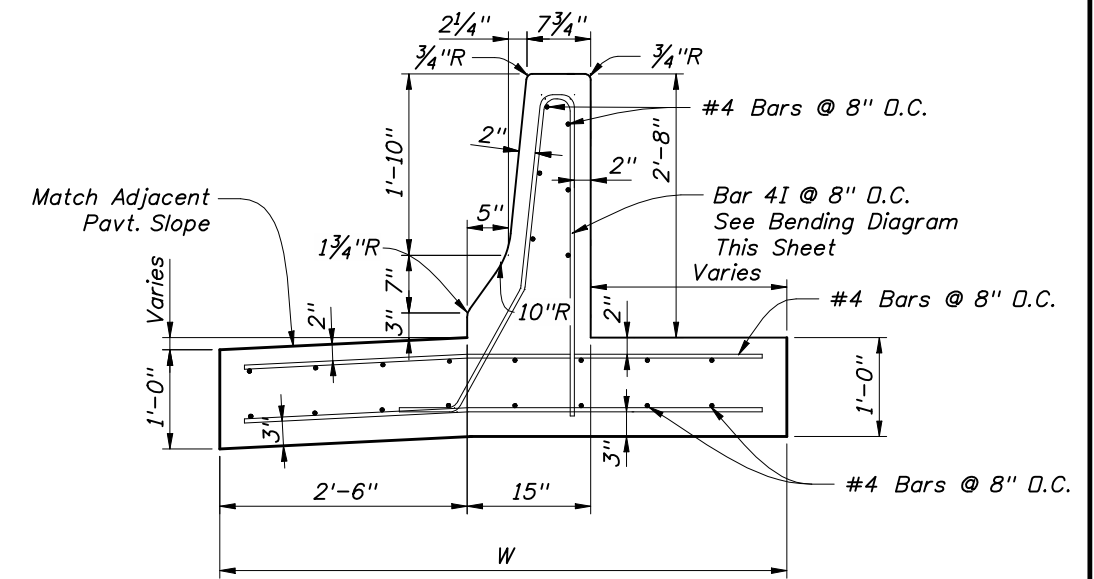
Equation Variables:

D = Distance in feet from near edge of the near approach traffic lane to back of hazard or clear zone width whichever is lesser. For left side hazards and clear zones on two-way undivided facilities D is measured from the inside edge of the near approach traffic lane.

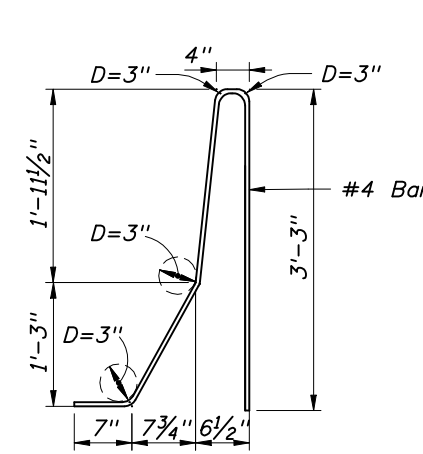
d = Distance in feet from near edge of the near approach traffic lane to the face of curb (at offset control point). For left side hazards on two-way undivided facilities d is measured from the inside edge of the nearest opposing traffic lane.

**LENGTH OF ADVANCEMENT**

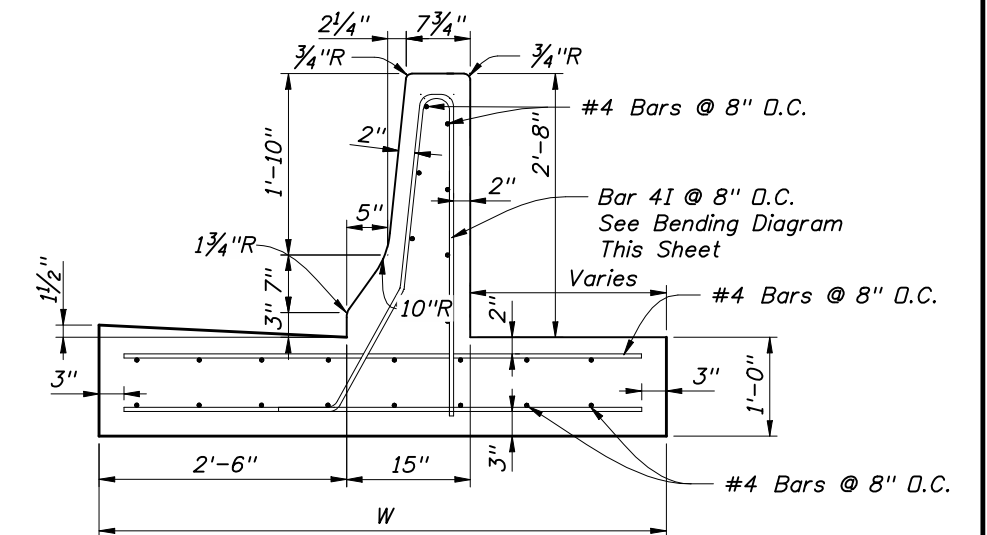
QUANTITIES			
Length* Of Barrier Wall	W	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.
>73'	4'-9"	0.26	29
56' to 73'	5'-6"	0.29	32
48' to 55'	6'-0"	0.31	34
41' to 47'	6'-6"	0.33	37
36' to 41'	7'-0"	0.35	39
29' to 35'	8'-0"	0.38	42



**FOR HIGH SIDE SECTION QQ**



**BAR 4I BENDING DIAGRAM**



**FOR LOW SIDE SECTION QQ**

Note: All longitudinal reinforcement #4 bars. Shorter segments due to construction or expansion joint shall be doweled in the manner described for 'Transition Segments' on Sheet 18.

Transverse expansion joints are to be constructed at the juncture of wall transitions and curb and gutter, and at intervals so that spacing will not exceed 100'.

For barrier wall inlet details see Index No. 219. Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Curb & Gutter), LF.

**CONCRETE BARRIER WALL (RIGID) (CURB & GUTTER) • WITHOUT ADJACENT BICYCLE LANE**

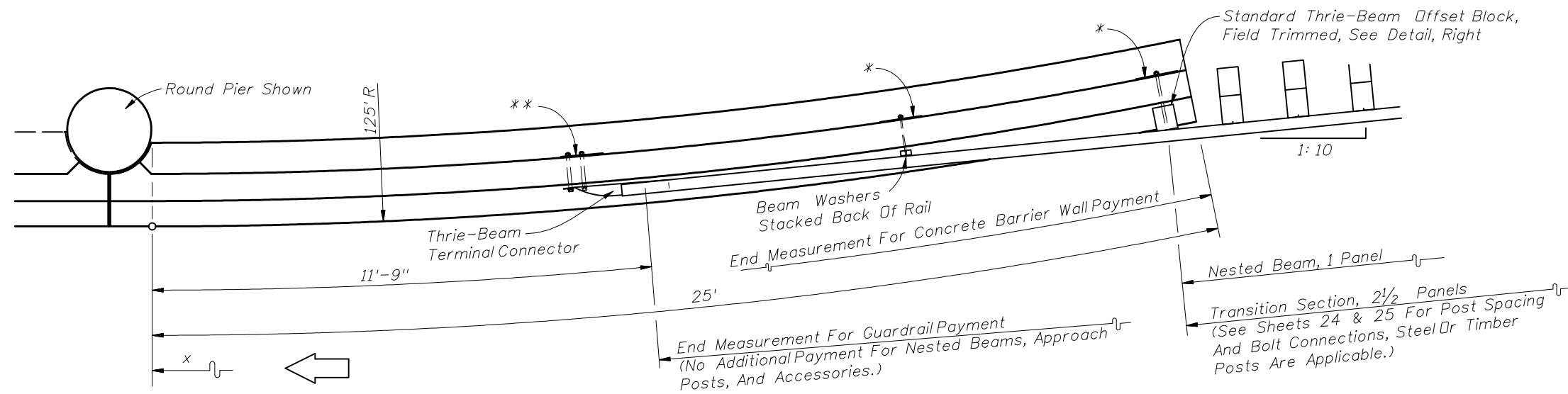


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**CONCRETE BARRIER WALL**

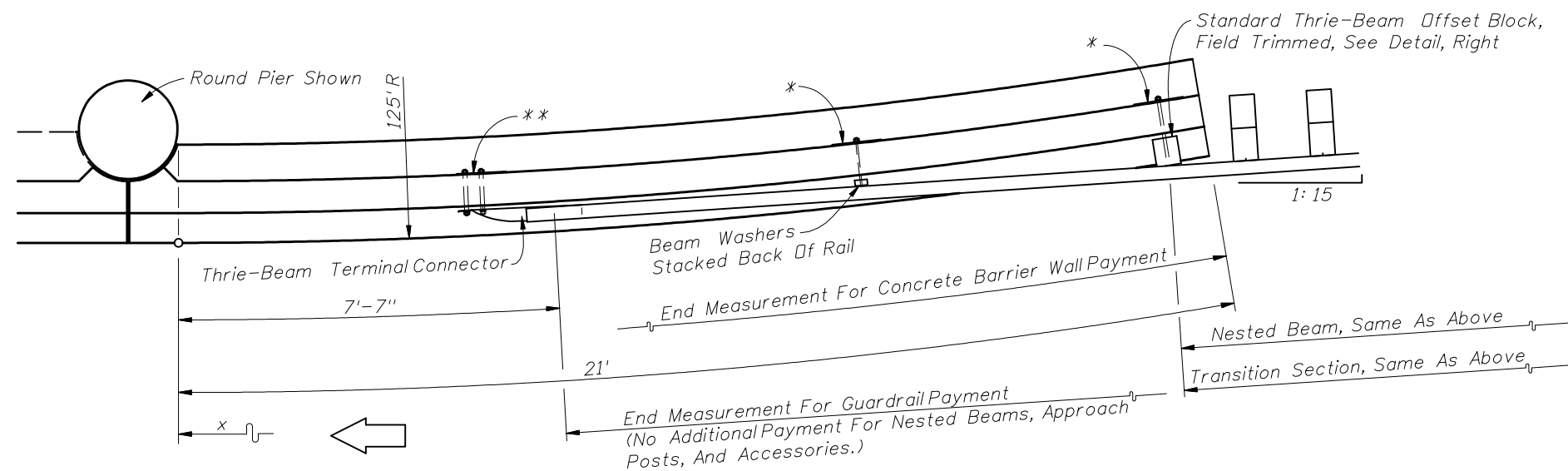
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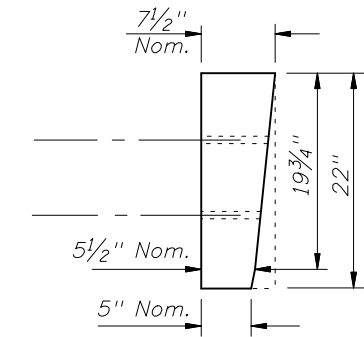
PLAN FOR DESIGN SPEED ≤ 45 MPH

NOTE:  
For details at Rigid Hazard see Sheet 21.



PLAN FOR DESIGN SPEED ≥ 50 MPH

Note: For continuous barrier between independent bents or single pier columns see Sheets 21-23.



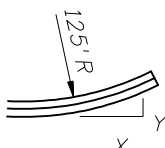
FOR USE WITH EITHER  
1:10 OR 1:15  
GUARDRAIL TRANSITIONS

STANDARD THRIE-BEAM  
OFFSET BLOCK  
(FIELD TRIMMED)

NOTES

1. This wall is intended for use where the wall has bearing against the hazard; when the length between bent supports or pier columns exceeds 13', the affected segments shall be constructed in accordance with the detail for 'Reinforced Concrete Barrier Wall (Shoulder)', 'Section TT' or 'Section QQ', this index. In cases where the barrier wall and slope pavement or other structure would occupy the same location, the wall and structure are to be modified as detailed in the plans.
2. The barrier wall radial segments are intended for use on approach and trailing ends of both one-way and two-way facilities. The guardrail connections shown on this sheet apply to one-way approaches and to the approaching and trailing ends of two-lane two-way facilities. On trailing ends of two-way multilane and one-way facilities the end connection on Sheet 1 may be used. For walls with normal offsets from hazards and their guardrail connections, see Sheet 24 & 25.
3. Refer to Index No. 400 for additional guardrail information.
4. Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Shoulder), LF.

ARC LENGTH (FT)	DISTANCE "x" (FT)	OFFSETS "y" (FT)
4	4.00	0.06
8	7.99	0.26
12	11.98	0.58
16	15.96	1.02
20	19.91	1.60
21	20.91	1.76
24	23.85	2.30
25	24.83	2.49



Note:  
Wall may be constructed in chords having lengths ≤ 4 feet.

\* 12"x12"x1/4" galvanized steel back-up plate with 5/8" post bolts (either 14" or 18" long) and nuts with 5/8" plain round washers under nuts.

\*\* Attach thrie-beam terminal connector to shoulder barrier wall with a 21"x12"x5/8" thrie beam terminal connector plate and 5-7/8"x12" long HS hex bolts and nuts with 7/8" plain round washers under heads and nuts.

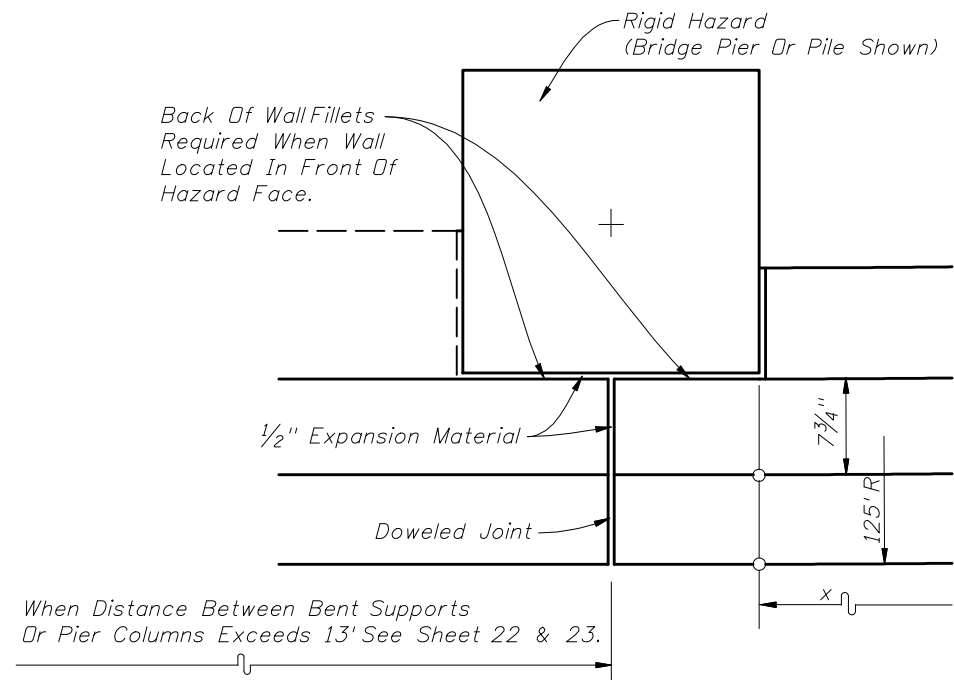
SHOULDER BARRIER WALL AT ABOVE GROUND RIGID HAZARDS  
WHEN GUARDRAIL OFFSET FROM HAZARD LESS THAN 3'



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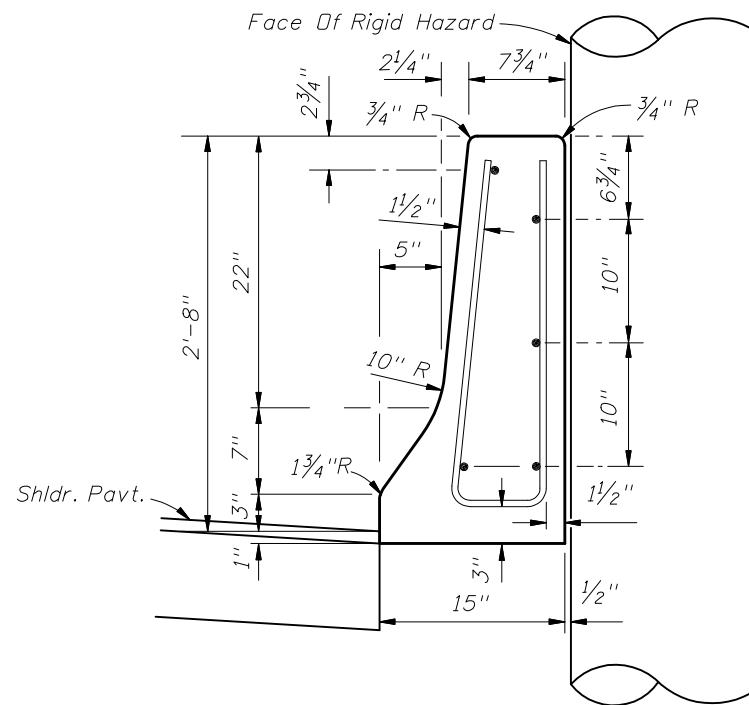
CONCRETE BARRIER WALL

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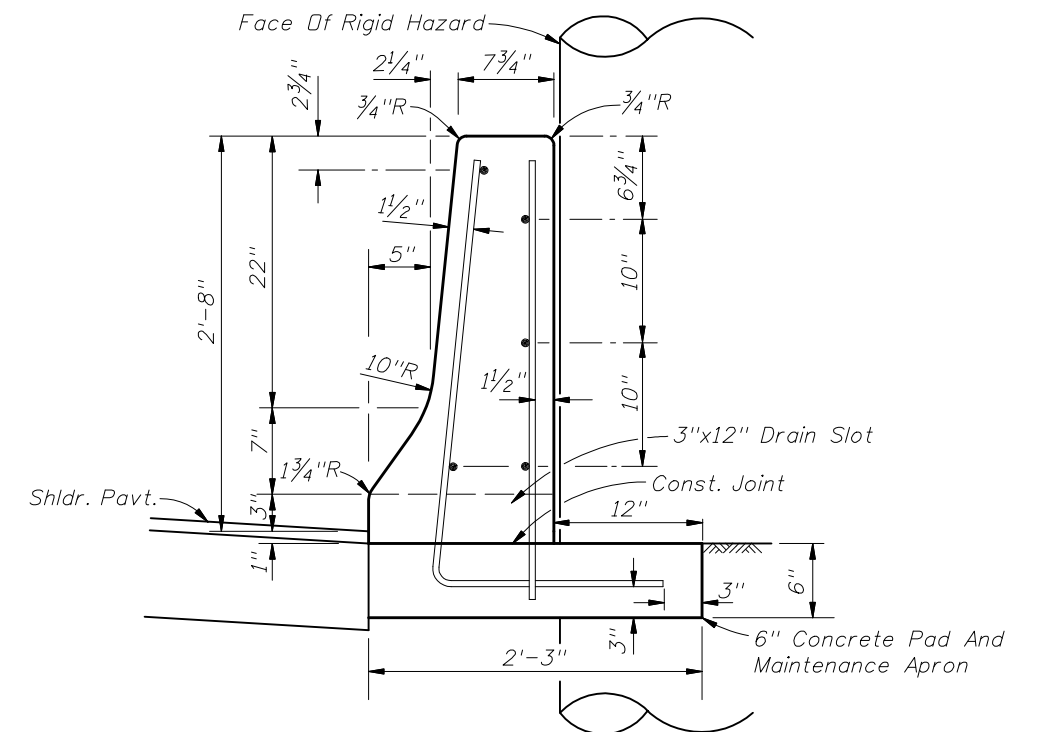


BARRIER WALL AT SQUARE OR RECTANGULAR SHAPED HAZARD

PARTIAL PLAN

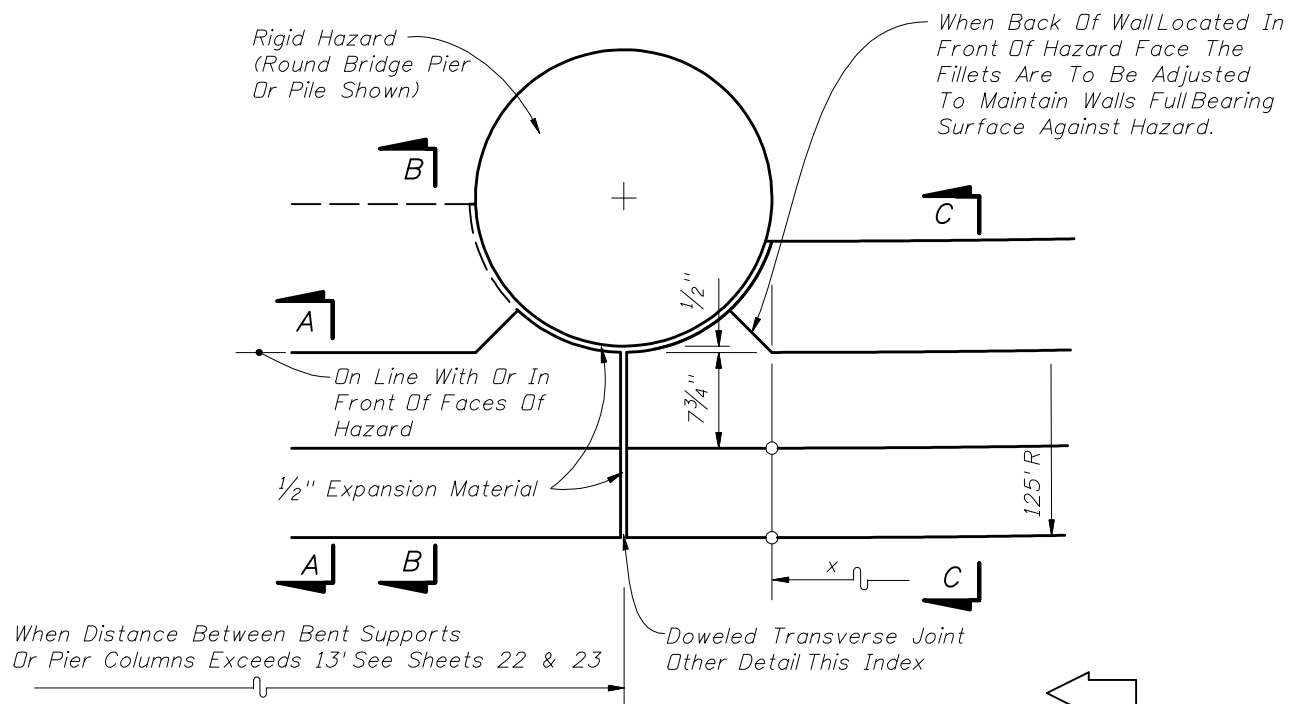


SECTION AA



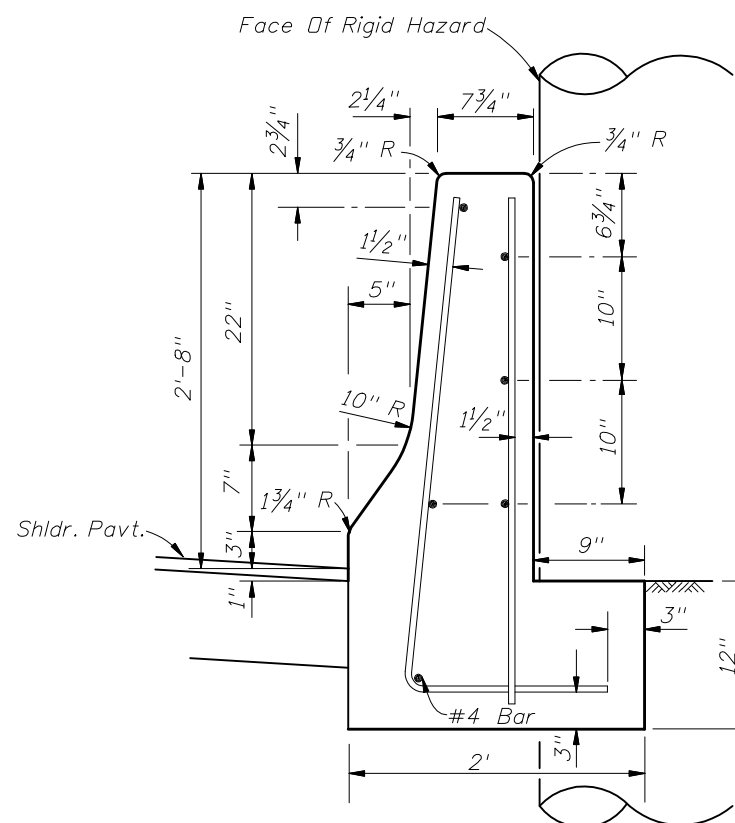
TO BE CONST. IN LIEU OF SECTION AA WHEN THRU DRAINAGE REQUIRED

SECTION BB



BARRIER WALL AT ROUND HAZARD

PARTIAL PLAN



SECTION CC

NOTE:  
All vertical reinforcement #4 bars at 12" centers.  
All horizontal reinforcement #5 bars.

SHOULDER BARRIER WALL AT ABOVE GROUND RIGID HAZARDS  
WHEN GUARDRAIL OFFSET FROM HAZARD LESS THAN 3'



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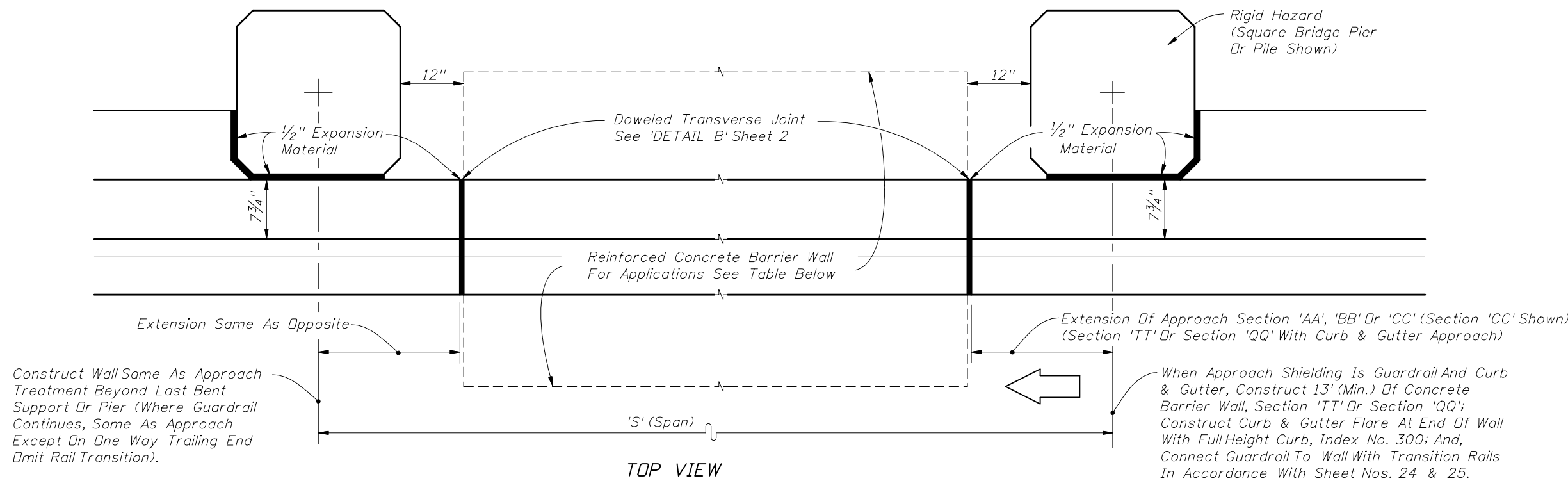
CONCRETE BARRIER WALL

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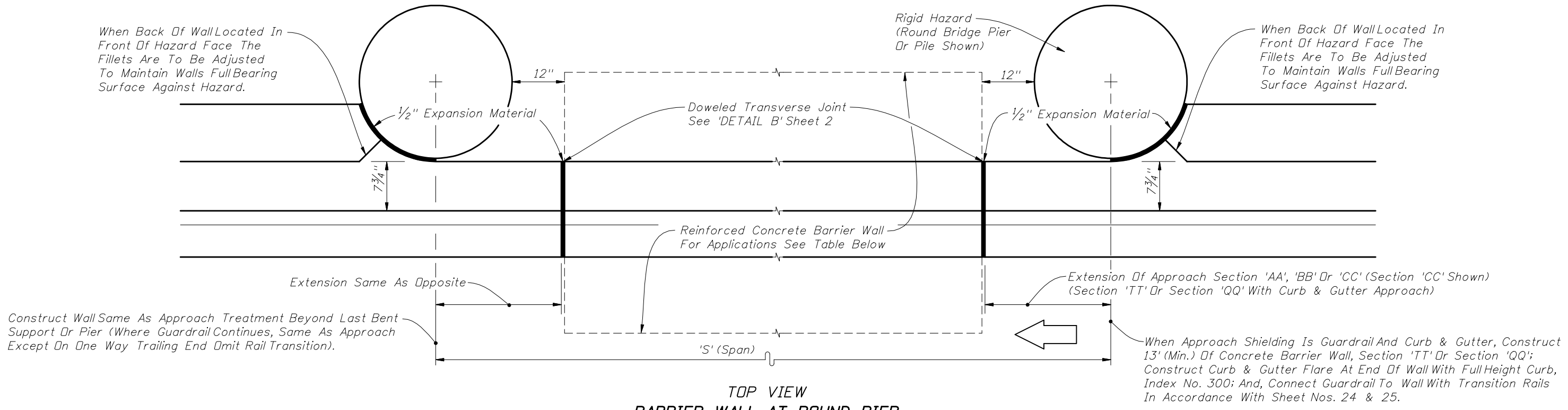
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TOP VIEW  
BARRIER WALL AT SQUARE PIER

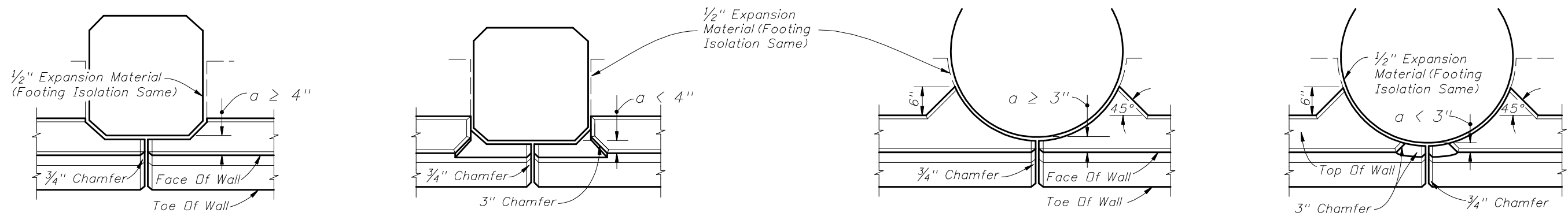


TOP VIEW  
BARRIER WALL AT ROUND PIER  
CONCRETE BARRIER WALL WHEN SPAN BETWEEN BENT SUPPORTS OR PIER COLUMNS EXCEEDS 13'

'S' Feet	REINFORCED CONCRETE BARRIER WALL APPLICATIONS
>13'	'Reinforced Concrete Barrier Wall (Shoulder)' With Flush Shoulders; Or, Section 'TT' Or Section 'QQ' With Curb & Gutter
Barrier wall footings that conflict with bent or pier foundations shall be modified as described in the plans.	

CONCRETE BARRIER WALL WHEN GUARDRAIL OFFSET FROM BENT OR PIER LESS THAN 3 FEET OR WHERE WALL STEM ABUTS SUPPORTS OR PIER COLUMN





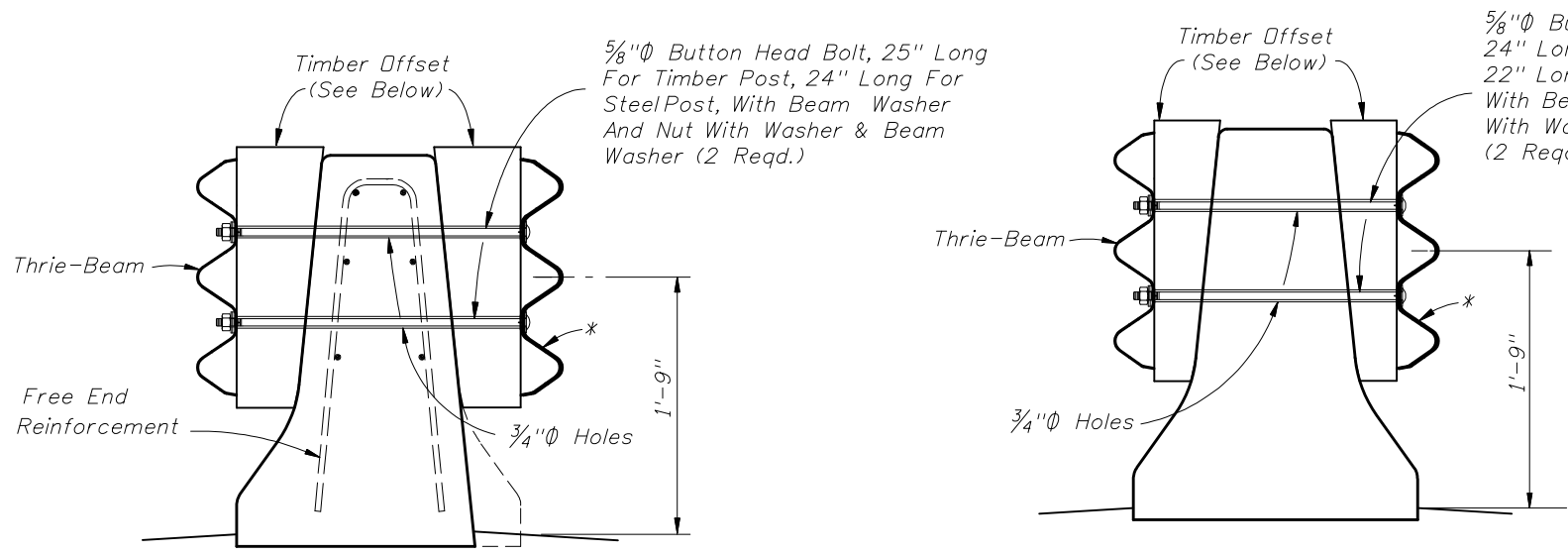
TOP VIEWS

'a' Varies (Circular Or Octagonal Hazard Not More Than 2" In Front Of Face Of Wall).  
 Applicable To Sections 'AA' And 'BB' With Spans Of  $\leq 13'$ , And To Section 'CC', Sheet No. 21.  
 Applicable To Other Rigid Walls Of This Index For Spans  $> 13'$  Unless Otherwise Shown In The Plans.

HAZARD PENETRATING STEM OF RIGID CONCRETE BARRIER WALLS

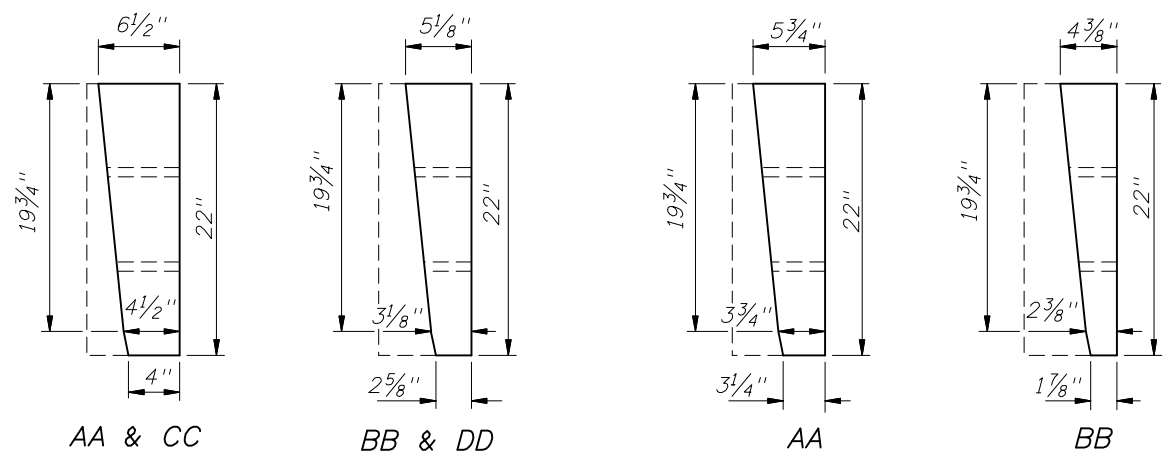
The details on sheets 22 & 23 are treatments to the F-shape concrete barrier walls depicted on Sheet Nos. 9 through 19, where site conditions impose reduced clearances between above ground hazards and the walls. Bridge bent supports and piers are shown. These treatments are not applicable to hazards that cannot provide lateral support for the walls. See the plans for limits of wall sections applied and other associated wall treatments.





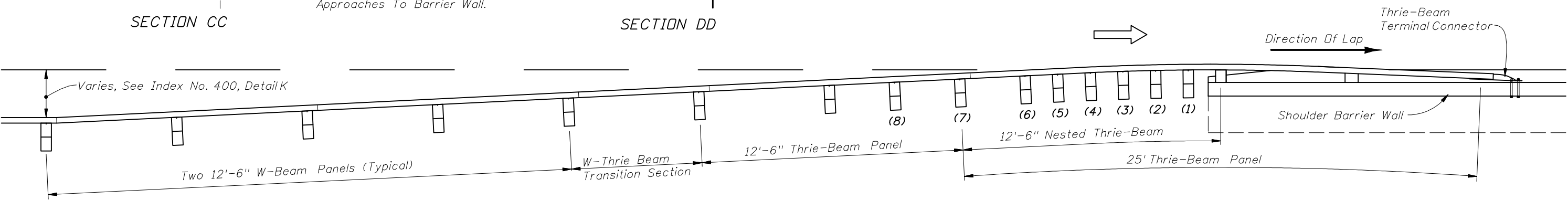
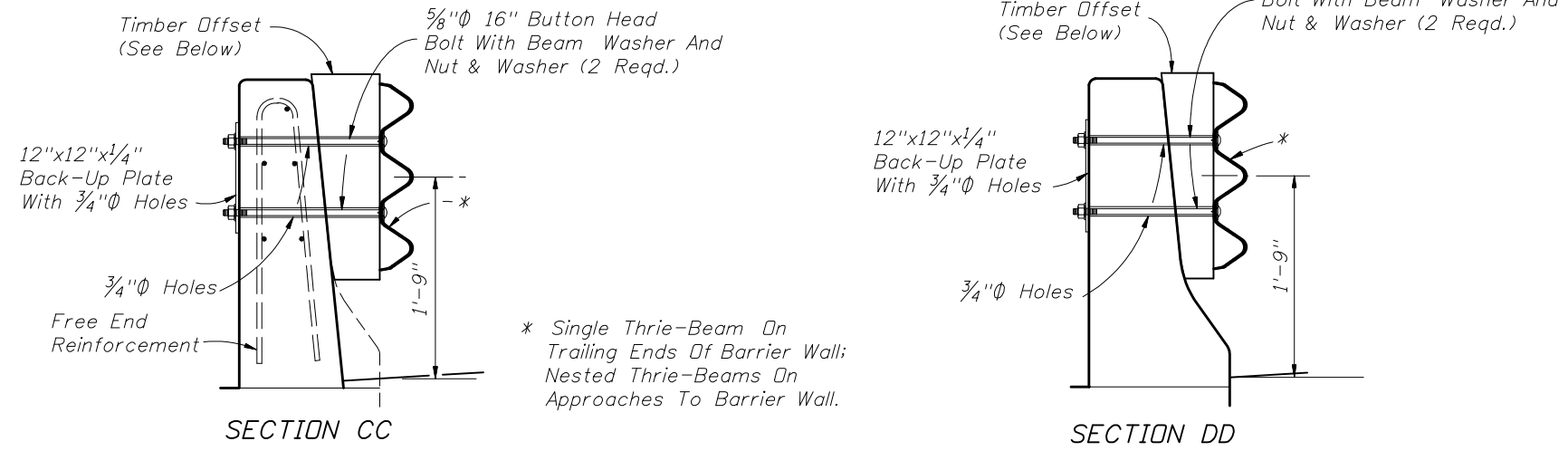
5/8"Ø Button Head Bolt, 25" Long For Timber Post, 24" Long For Steel Post, With Beam Washer And Nut With Washer & Beam Washer (2 Reqd.)

NOTE: See Sheet 25 For Locations Of Sections.



FOR DOUBLE FACED GUARDRAIL USING TIMBER POSTS AND FOR SINGLE FACED GUARDRAIL USING EITHER TIMBER OR STEEL POSTS

**STANDARD TIMBER OR PLASTIC OFFSET BLOCKS • FIELD TRIMMED FOR USE AT SECTIONS AA, BB, CC & DD**

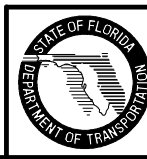


**STANDARD GUARDRAIL APPROACH TO SHOULDER BARRIER**

**NOTES**

1. The longitudinal dimensions and payment limits shown for median concrete barrier wall also apply to shoulder concrete barrier walls.
2. W-beam elements do not apply to these transition schemes. For barrier wall trailing end guardrail connections for one-way lanes, see Sheet 2.
3. Where reaming is necessary to fit nested beams the reamed surfaces shall be metalized in accordance with Index No. 400.
4. Either steel or timber guardrail post may be used, timber posts shown.
5. The nested beams shall not be bolted to blocks and posts at posts numbers (1), (3) and (5).
6. On the trailing side of MEDIAN BARRIER WALL, offset blocks may be omitted at posts numbers (1), (2), (3), (5), (6) and (8). (See Sheet 25)
7. For additional guardrail information refer to Index No. 400.

**GUARDRAIL CONNECTION TO CONCRETE BARRIER WALL APPROACH ENDS**

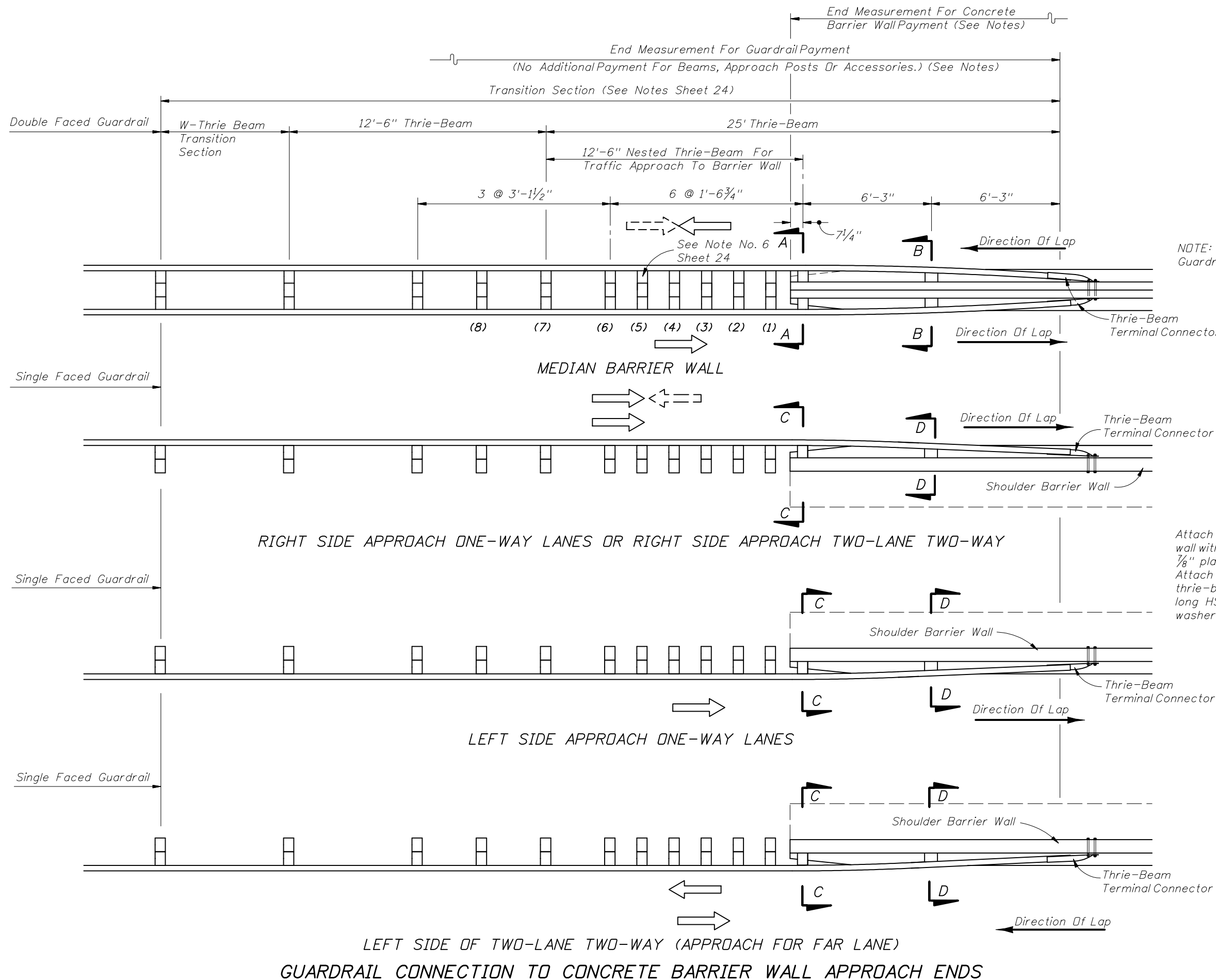


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**CONCRETE BARRIER WALL**

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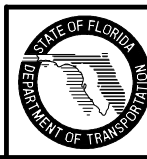




NOTE: See Sheet 24 For Section AA, BB, CC and DD Guardrail and Offset Block Views

Attach thrie-beam terminal connector to median barrier wall with 5- $\frac{7}{8}$ "x15" long HS hex bolts and nuts with  $\frac{7}{8}$ " plain round washers under heads and nuts. Attach to shoulder barrier wall with a 21"x12"x $\frac{5}{8}$ " thrie-beam terminal connector plate and 5- $\frac{7}{8}$ "x12" long HS hex bolts and nuts with  $\frac{7}{8}$ " plain round washers under heads and nuts.

GUARDRAIL CONNECTION TO CONCRETE BARRIER WALL APPROACH ENDS



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