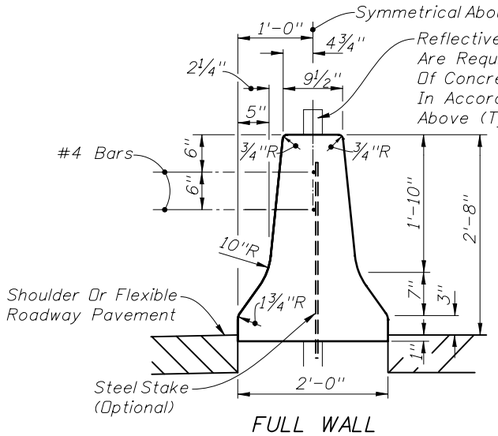
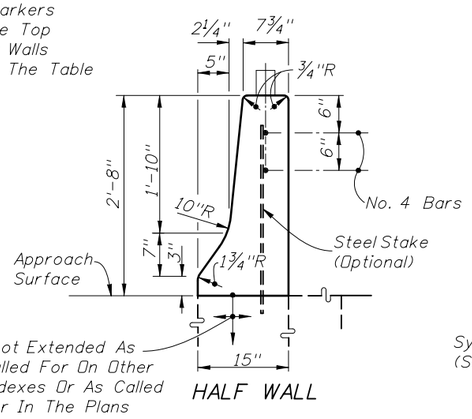
| REFLECTIVE BARRIER MARKER SPACING ON WALL | | |
|---|---|---|
| Distance– Edge of Travel Lane to Barrier Wall (ft) | Spacing (Ft.) | REMARKS |
| < 4' | 40' | 1. Reflectors shall conform to Section 993 of the Standard Specifications.<br>2. Reflector color (white or yellow) shall conform to the color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



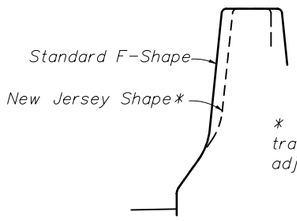

FULL WALL




HALF WALL

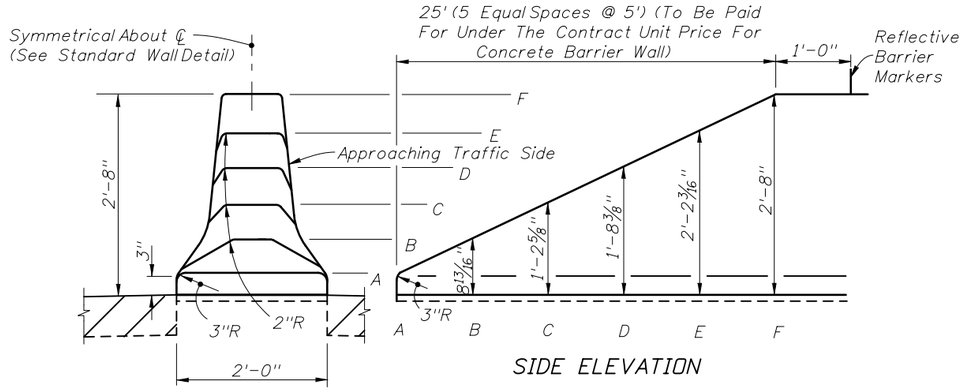
For concrete barrier wall details at piers, highway lighting and guardrail connections, see other sheets of this Index.
Standard barrier to be paid for under the contract unit price for Median Concrete Barrier Wall, LF.

## 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

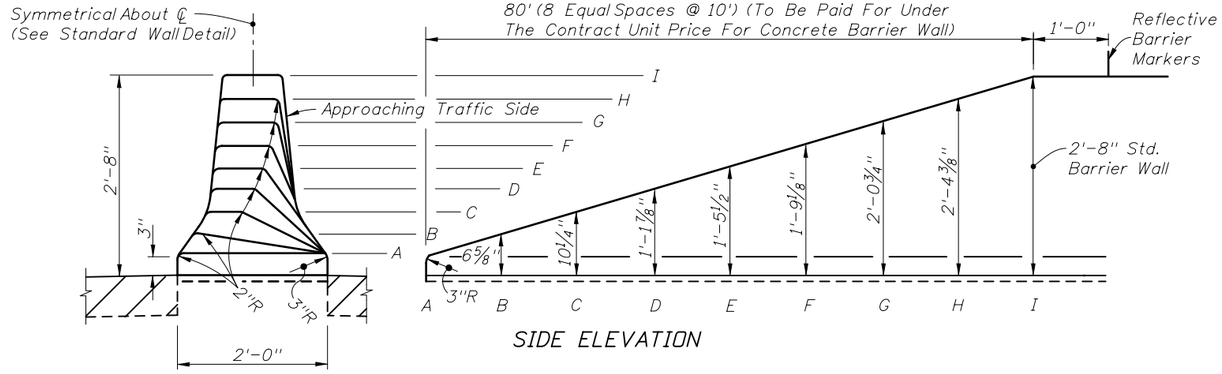



END ELEVATION

SIDE ELEVATION

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

## CONCRETE BARRIER WALL TERMINAL DETAIL II




END ELEVATION

SIDE ELEVATION

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

## GENERAL NOTES

1. 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 another finish is called for in the plans. The surfaces shall have a Class 5 Applied Finished Coating in accordance with Section 400 only when called for in the plans.

2. Concrete barrier wall terminal notes for design speeds ≥ 50 mph.
   a. Terminated outside clear zone of the approach traffic with 'Detail II' end treatment.
   b. Terminated within a shielded location.
   c. Terminal protection by the use of a crash cushion system.
   d. Terminated in conjunction with a suitably designed transition to another barrier.

3. 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.

4. 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.

5. For cast-in-place barrier wall segments constructed with the slip form method, score 3/8" deep crack control V-Grooves while the concrete is still plastic and mold them when walls are constructed with the stationary form method. All 3/8" deep V-Grooves shall be spaced at 20' intervals, the end of the side face grooves shall be in line with the ends of the top face groove and the long dimension of all grooves shall align at 90 degrees to the longitudinal axis of the wall. When wall segments are less than 40' in length, space the V-Groove equally between open joints. Dowel transverse construction joints for abutting segments less than 40' (See Detail B).

6. Precast construction is allowed as an alternate to cast-in-place construction. a. 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'. b. Bedding of the precast sections shall be facilitated by the use of sand-cement grout or equal method to assure uniform bearing. c. Reinforcement may be required for handling stresses.

7. 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.

8. 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.

9. For barrier wall inlet details see Indexes Nos. 217, 218 and 219.

10. Concrete barrier wall with New Jersey Safety Shape may not be substituted for the Standard F Shape Barrier.

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
| 01/01/11 | MTP | Added: A 1 ft. offset dimension to the barrier marker. Changed: Note 5 to include ⅜" V-Grooves on both faces and the top of barrier wall. Adjusted Reflective Barrier markers within Details II and III. | | | |

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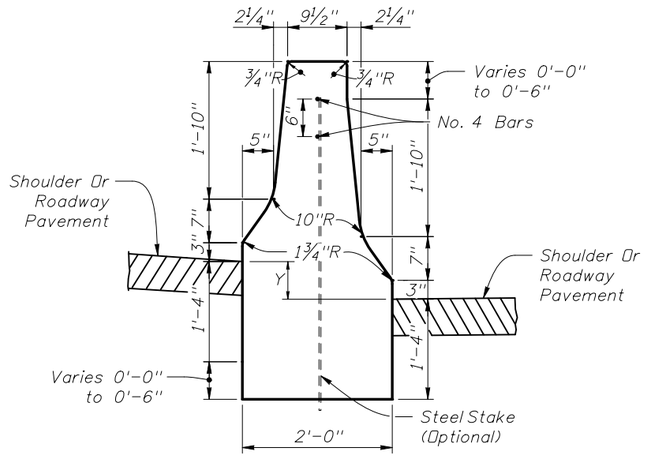
# CONCRETE BARRIER WALL

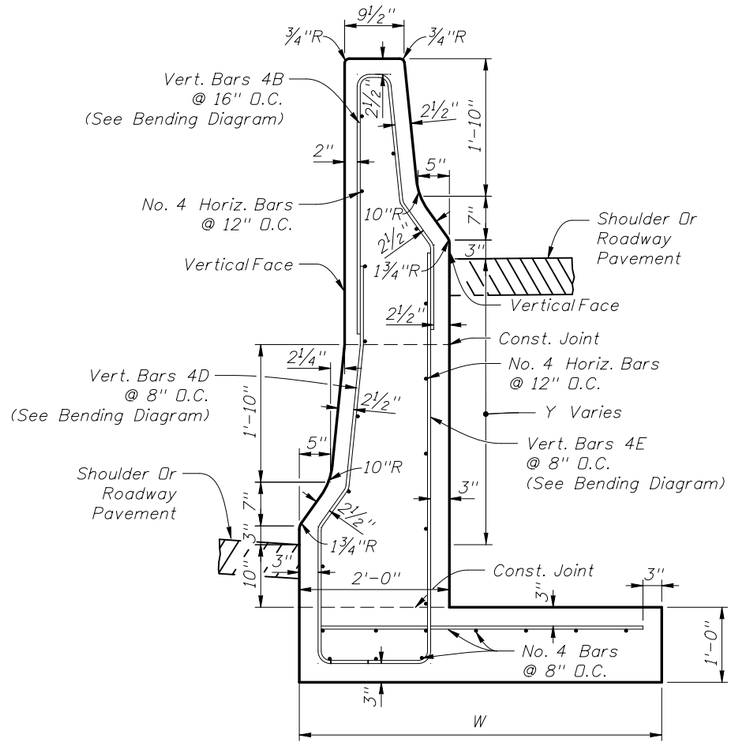
Interim Date 01/01/11

Sheet No. 1 of 25

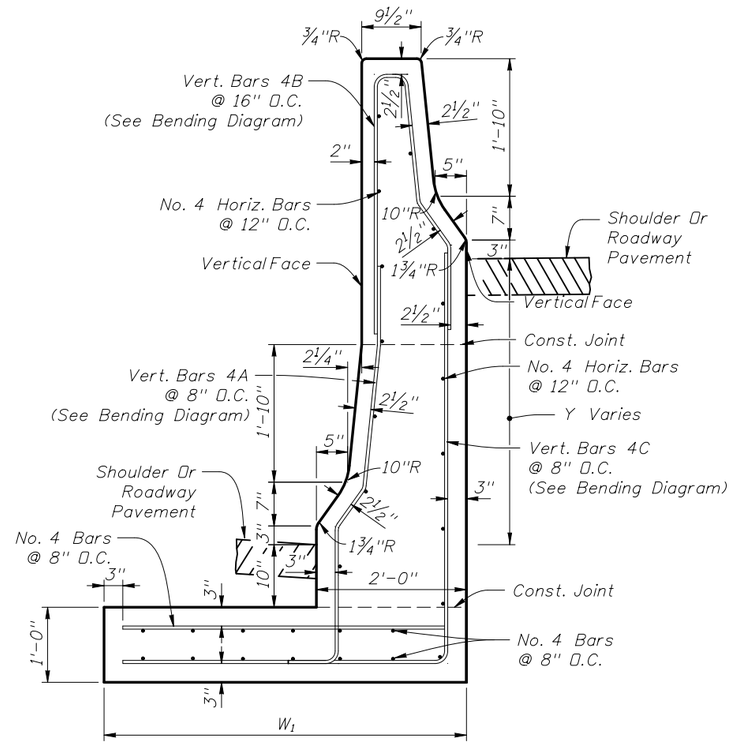
Index No. 410




F-SHAPE MEDIAN BARRIER
WHEN Y IS LESS THAN OR EQUAL TO 6 INCHES

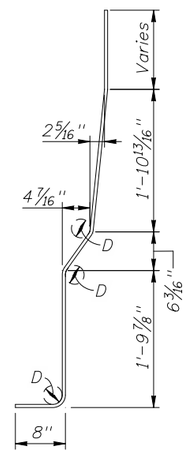



CANTILEVER WALL
SUPERELEVATED SECTION

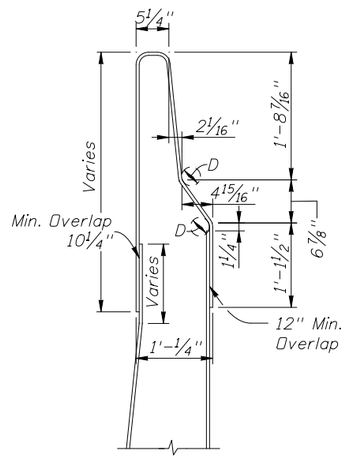



L-WALL
SUPERELEVATED SECTION

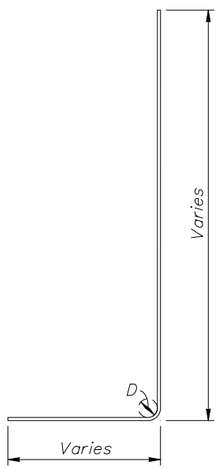
## BENDING DIAGRAMS



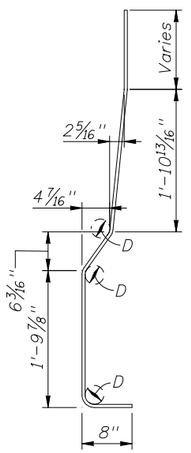

L-WALL
BAR 4A



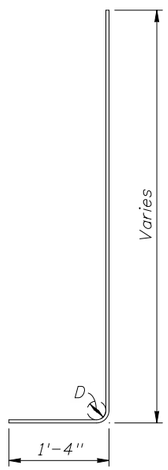

L-WALL & CANTILEVER WALL
BAR 4B




L-WALL
BAR 4C




CANTILEVER WALL
BAR 4D




CANTILEVER WALL
BAR 4E

*Design Criteria:*

*This barrier wall has been structurally evaluated to be equivalent or greater in strength to other safety shapes which have been crash tested to NCHRP Report 350 TL-4 criteria.*

*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.*

| Cantilever Wall | Height Y | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" |
|---|---|---|---|---|---|---|---|---|
| | Width W | 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' |

| "L" Wall | Height Y | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" |
|---|---|---|---|---|---|---|---|---|
| | Width $W_1$ | 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' |

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

**REVISIONS**

| DATE | BY | DESCRIPTION |
|---|---|---|
| 01/01/11 | MTP | Added: A Const. Joint & Horiz. Bar to Cantilevered Wall Footing. Changed: The Bottom widths of Bars 4A & 4D from 6" to 8" The 3'-6" dimension to "Varies" in the 4C Bending Diagram. |
| 01/01/11 | MTP | Changed: The 3'-5" dimension to "Varies" in the Bar 4B diagram. Bar Bending Diagrams 4A, 4B, 4D & 4E. Deleted: The Min and Max. designations for X1, X, and Y |

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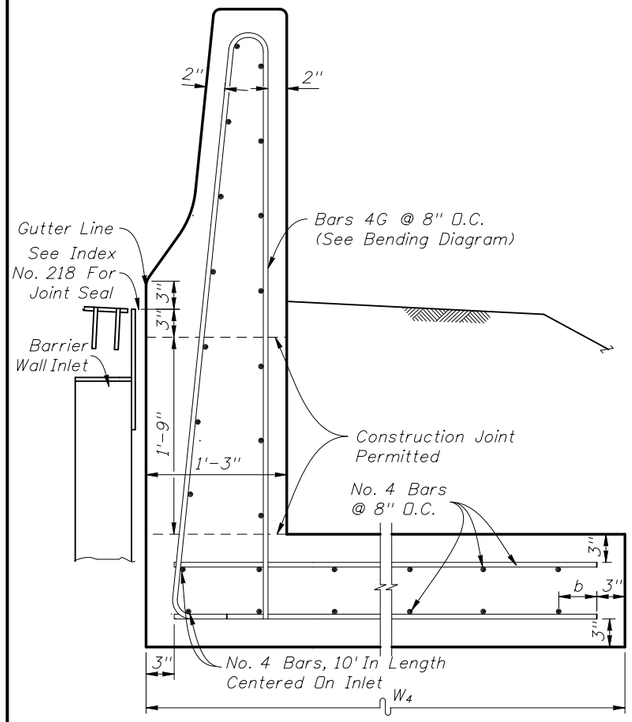
# CONCRETE BARRIER WALL

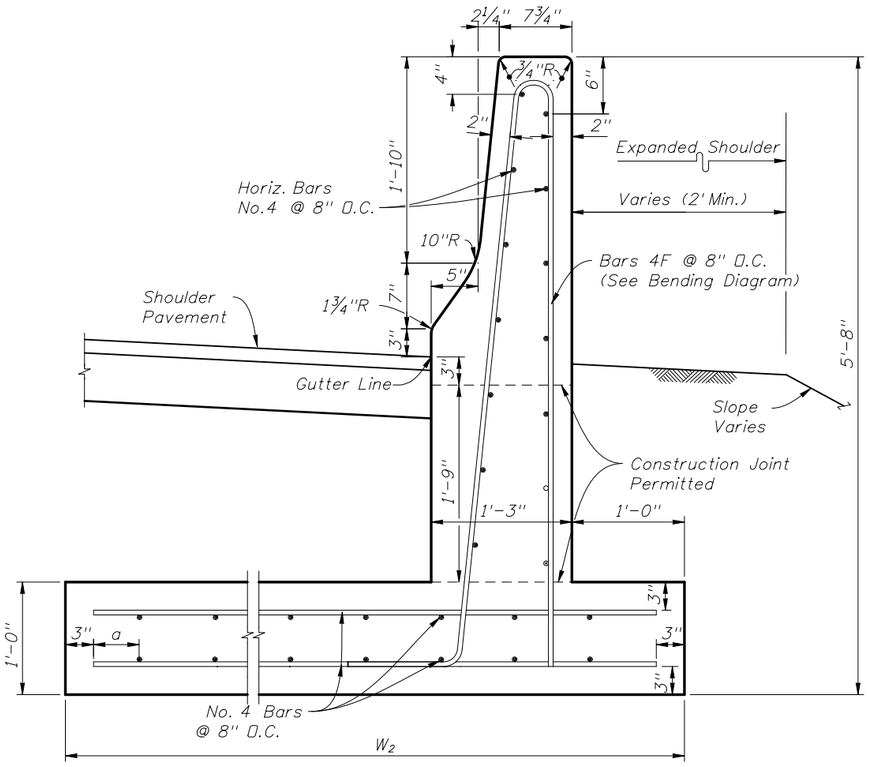
Interim Date 01/01/11

Sheet No. 3 of 25

Index No. 410

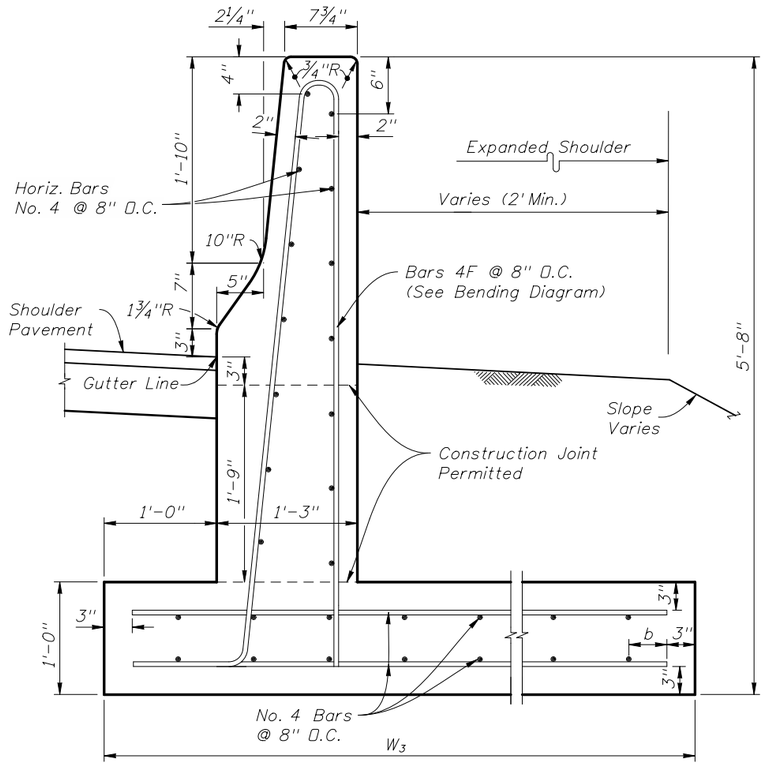



REINFORCING STEEL MODIFICATIONS
AT BARRIER WALL INLETS (INDEX NO. 218)



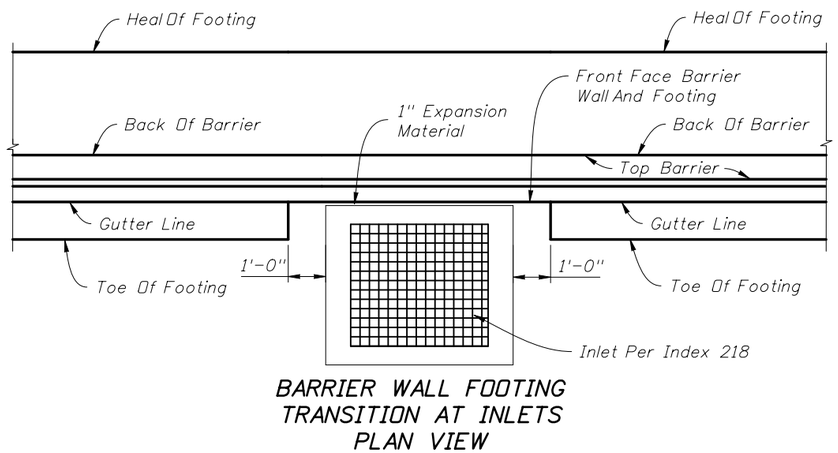

NOTE: All longitudinal reinforcement #4 bars.

CANTILEVER WALL




NOTE: All longitudinal reinforcement #4 bars.

L-WALL




BARRIER WALL FOOTING
TRANSITION AT INLETS
PLAN VIEW

GENERAL NOTES:

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

2. This barrier wall has been structurally evaluated to be equivalent or greater in strength to other safety shapes which have been crash tested to NCHRP Report 350 TL-4 criteria.

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

DIMENSIONS AND QUANTITIES

| CANTILEVER WALL | | | | | L-WALL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Length* Of Barrier Wall (LF) | $W_2$ (LF) | a | Class II Conc. CY Per LF | Rein. Steel Lbs. Per LF | Length* Of Barrier Wall | $W_3$ (LF) | $W_4$ (LF) | b | Class II Conc. CY Per LF | Rein. Steel Lbs. Per LF |
| ≥ 65' | 3'-3" | 5" | 0.30 | 31 | ≥60' | 3'-6" | 2'-6" | 7" | 0.31 | 32 |
| 57' to 64' | 3'-9" | 3" | 0.32 | 33 | 50' to 59' | 4'-0" | 3'-0" | 5" | 0.33 | 34 |
| 50' to 56' | 4'-3" | 3" | 0.33 | 35 | 40' to 49' | 4'-9" | 3'-9" | 6" | 0.35 | 37 |
| 41' to 49' | 5'-0" | 7" | 0.36 | 38 | 35' to 39' | 5'-3" | 4'-3" | 4" | 0.37 | 39 |
| 36' to 40' | 5'-6" | 5" | 0.38 | 40 | 30' to 34' | 5'-9" | 4'-9" | 2" | 0.39 | 42 |
| 28' to 35' | 6'-6" | 3" | 0.42 | 44 | 25' to 29' | 6'-6" | 5'-6" | 3" | 0.42 | 44 |
| 25' to 27' | 7'-0" | 7" | 0.44 | 46 | 20' to 24' | 7'-6" | 6'-6" | 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. Segments shall have dimensions same as walls above.

# REINFORCED CONCRETE BARRIER WALL (SHOULDER)

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
| 01/01/11 | MTP | Added: Plan View at Barrier Wall Inlets; "Gutter Line" points; Dimensions for Barrier Wall Inlet detail & a dimension between const. joints. Within the table, a column for the Width ($W_4$) at the barrier wall inlet. Changed: The Crash Test criteria (Note 2) | 01/01/11 | MTP | Changed: The reinf. steel (lbs/lf) for L/Cantilever walls & the construction joint. The top footing conc. cover to 3". The width designations ($W_2$ & $W_3$) on both walls. Deleted: Barrier wall limitation note. Within the table, the "x" columns. |

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CONCRETE BARRIER WALL

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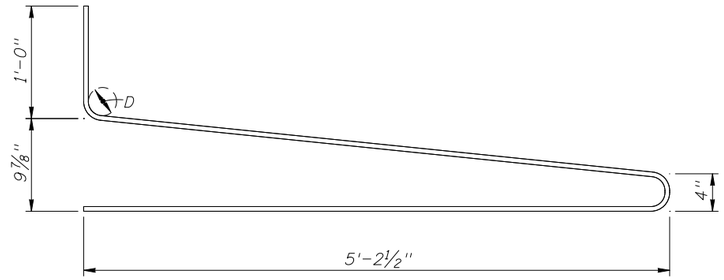
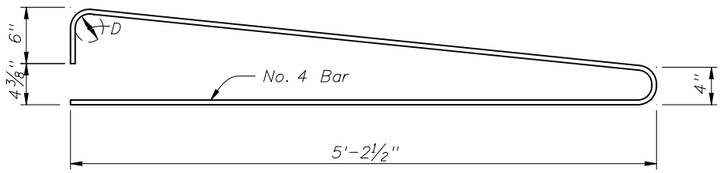
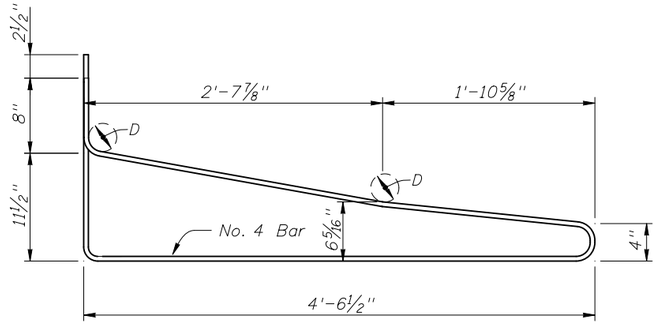


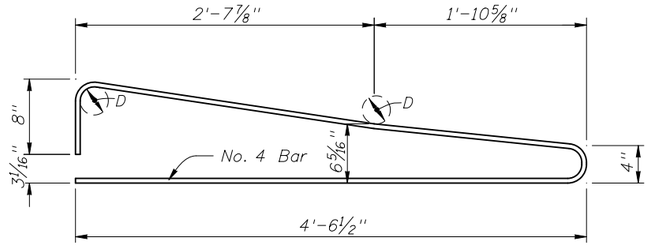

BAR 4F




BAR 4G



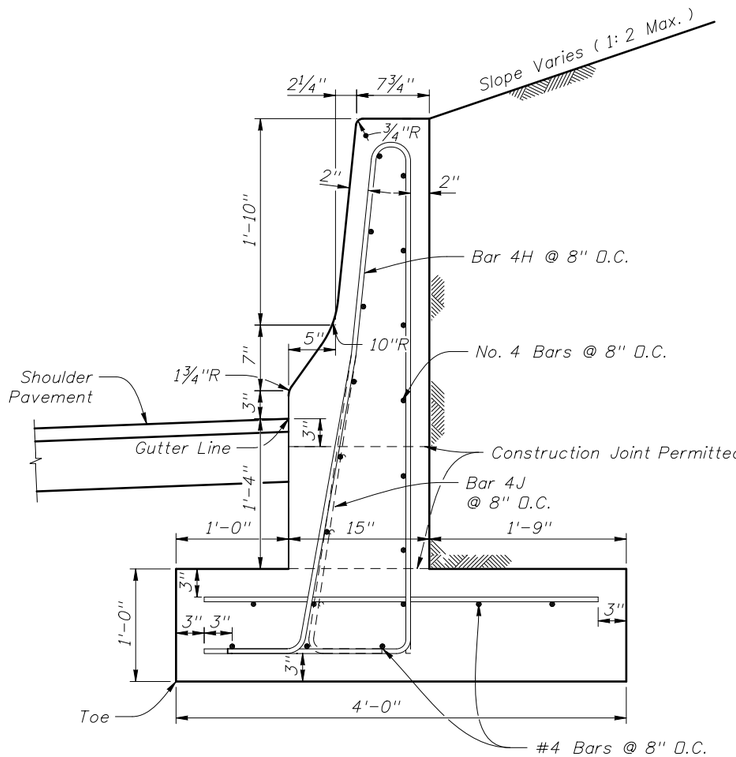

BAR 4H




For Use In Areas Where Obstructions Require Localized Omission Of Toe

BAR 4J

## BENDING DIAGRAMS




Note: All longitudinal reinforcement No. 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 (Bar 4H) 28.6 LBS/LF
Reinforcing Steel (Bar 4J) 26.8 LBS/LF

## REINFORCED CONCRETE BARRIER WALL (RETAINING)

**REVISIONS**

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|
| 01/01/11 | MTP | Added: "Gutter Line" designation, "Bar 4H" & "Bar 4J" to Reinforcing Steel Quantities & a dimension to "Bar 4J." Changed: Rebar bending diagrams. Renamed "Bar 4H Modified" to "Bar 4J." The top footing conc. cover to 3". | | | |

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# CONCRETE BARRIER WALL

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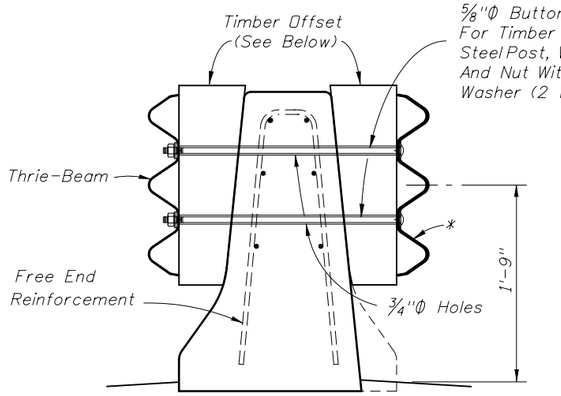
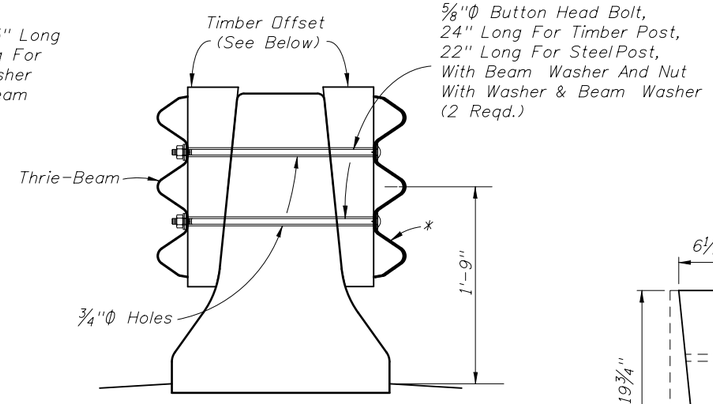
Sheet No. 8 of 25

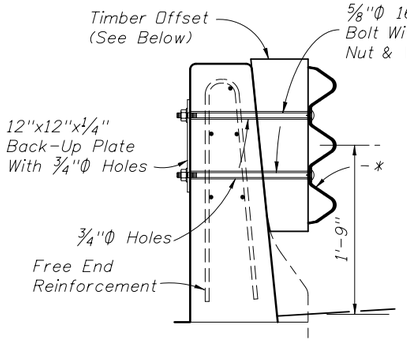
Index No. 410




SECTION AA

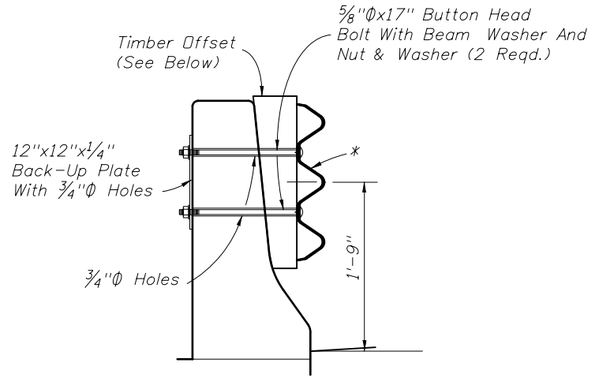



SECTION BB



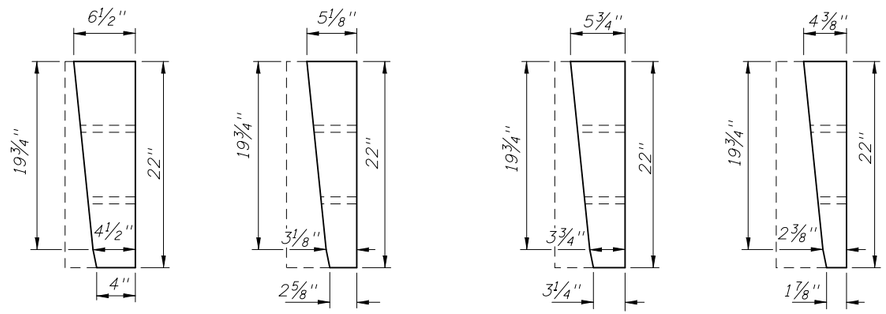

SECTION CC

* Single Thrie-Beam On Trailing Ends Of Barrier Wall; Nested Thrie-Beams On Approaches To Barrier Wall.




SECTION DD

NOTE: See Sheet 25 For Locations Of Sections.




AA & CC

BB & DD

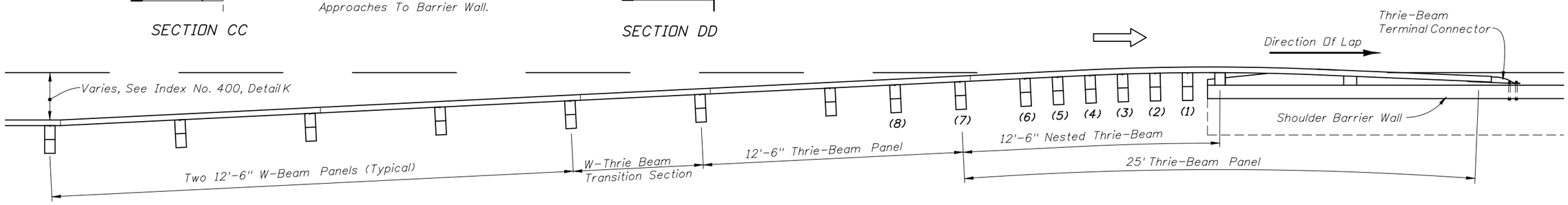
FOR DOUBLE FACED GUARDRAIL USING TIMBER POSTS AND FOR SINGLE FACED GUARDRAIL USING EITHER TIMBER OR STEEL POSTS

AA

BB

FOR DOUBLE FACED GUARDRAIL USING STEEL POSTS

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




## STANDARD GUARDRAIL APPROACH TO SHOULDER BARRIER

### TRANSITION SECTION 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 Section 562 of the Standard Specifications.

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

**REVISIONS**

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|
| 01/01/11 | MTP | Changed: Note 3, reference to "Index 400" with "Section 562 of the Standard Specifications." The "Notes" title to "Transition Section Notes." | | | |

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**CONCRETE BARRIER WALL**

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