NOTES

SPECIFICATIONS:

1. General Specifications:
   The Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", Current Edition and Supplements as Amended.
2. Design Specifications:
   a. Florida Department of Transportation (FDOT) "Structures Design Guidelines", Current Edition.
   b. American Association of State Highway and Transportation Officials (AASHTO) "LRFD Bridge Design Specifications", Current Edition.
   c. AASHTO-AGC-ARTBA Task Force 27 (Ground Modification Techniques), "Insitu Soil Improvement Techniques", January 1990.

DESIGN CRITERIA:

1. Design is based on the assumption that the material contained within the reinforced soil volume, methods of construction and quality of prefabricated materials are in accordance with Specification Section 548 and the reinforced backfill is free of subsurface drainage of water (seepage).
2. It is the responsibility of the Engineer of Record to determine that the maximum factored bearing pressure shown for the wall does not exceed the factored bearing resistance of the foundation for that specific wall location.
3. The Wall Company is responsible for internal stability of the wall. External stability design, including foundation and slope stability, is the responsibility of the Engineer of Record.

SOIL PARAMETERS:

1. See Wall Control Drawings for soil characteristics of foundation material to be used in the design of the wall system. The Contractor will provide soil design parameters for backfill material based on the actual soil characteristics utilized at the site. Provide the values of unit weight, cohesion and internal friction angle in the Shop Drawings.

MATERIALS:

1. Concrete class and minimum compressive strength (f'c):
   a. Except for precast wall facing panels and leveling pads, use Class II concrete for slightly aggressive environments and Class IV concrete for moderately or extremely aggressive environments. Provide all concrete, except for precast wall facing panels and leveling pads in accordance with Specification Section 346. Provide concrete for precast wall facing panels and leveling pads in accordance with Specification Section 548.
   b. For precast wall facing panels only, see Wall Control Drawings.
2. Provide reinforcing steel for systems with non-metallic soil reinforcement and metallic soil reinforcement above the 100 year flood elevation in accordance with Specification Section 548. For reinforcing steel requirements for systems with metallic soil reinforcement below the 100 year flood elevation see Wall Company Drawings.
3. Provide soil reinforcement in accordance with Specification Section 548.
4. Payment for Dowel Bars 4D used with precast or C.I.P. coping will be made under Retaining Wall System (Permanent).
5. For additional material notes see Wall Company General Notes.

CONSTRUCTION:

1. Walls will be constructed in accordance with Specification Section 548 and the Wall Company's Instructions.
2. For location and alignment of retaining walls, see Wall Control Drawings.
3. If present, consider in design and analysis and locate manholes and drop inlets as shown on wall elevations.
4. Refer to Wall Control Drawings of individual walls for minimum reinforcement strip/mesh length, factored bearing resistances, minimum wall embedment and anticipated long term and differential settlements.
5. The Contractor is responsible for water retention as needed during construction.
6. It is the Contractor's responsibility to determine the location of any guardrail posts behind retaining wall panels. Prior to placement of the top layer of soil reinforcement, individual reinforcing strips/mesh may be skewed (15° maximum) to avoid the post locations if authorized by the Engineer. No cutting of soil reinforcement is allowed unless shown on Shop Drawings and approved by the Engineer. Any damage done to the soil reinforcement due to installation of the guardrail will be repaired by the Contractor at the Contractor's expense. Repair method will be approved by the Engineer.
7. If existing or future structures, pipes, foundations or guardrail posts within the reinforced soil volume interfere with the normal placement of soil reinforcement and specific directions have not been provided on the plans, the Contractor will notify the Engineer to determine what course of action should be taken.
8. The Contractor is responsible for gradually displacing upper layer(s) of soil reinforcement downward (15° maximum from horizontal) to avoid cutting soil reinforcement and conflicts with paving and subgrade preparation. The Contractor's attention is directed especially to situations where roadway superelevation and/or soil mixing are anticipated.
9. Finish sidewalks in accordance with Specification Section 522.
10. All exposed concrete surfaces will receive a Class 5 Applied Finish Coating in accordance with Specification Section 400. Refer to Typical Sections at right and the following notes for limits of applied finish:
    a. The inside, backside and top of Traffic Railings and Pedestrian/Bicycle Railings.
    b. Exposed surfaces of coping on top of retaining wall. Other coatings, colors or textures will be applied as required in the Wall Control Drawings.
11. For concrete facing panel surface treatment, see Wall Control Drawings. Extend surface treatment a minimum of 6" below final ground line.
12. Piles within the soil volume will be driven prior to construction of the retaining wall. The portion of the pile within the soil volume will be wrapped with polyethylene sheeting in accordance with Specification Section 459. Drive piles located within the soil volume prior to construction of the retaining wall, unless a method to protect the structure, acceptable to both the Engineer and Wall Company, is proposed and approved in writing.
13. A structural extension of the connection of the retaining wall panel to soil reinforcement will be used whenever necessary to avoid cutting or excessive skewing (greater than 15°) of the soil reinforcement around obstructions (i.e. piles, pipes, etc.).
14. For Mechanically Stabilized Earth (MSE) Walls, steps in leveling pads will occur at panel interfaces. Panels will not cantilever more than 2" past the end of the leveling pad.
15. The top of the leveling pad or footing will be 2'-0" minimum below final ground line.

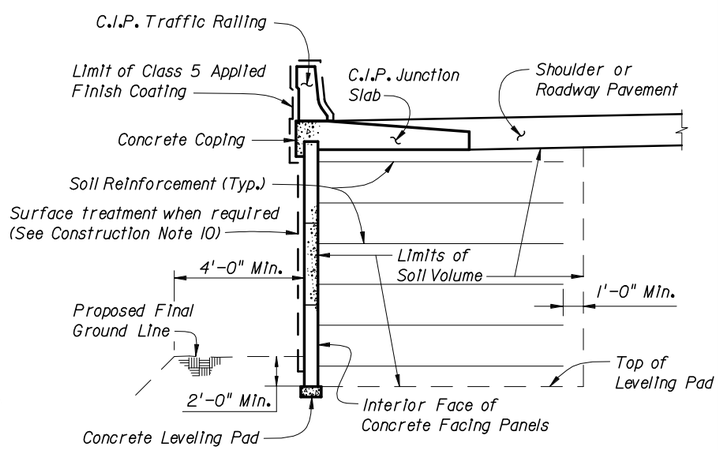
QUALIFIED PRODUCTS LIST:

1. Manufacturers seeking approval of proprietary retaining wall systems for inclusion on the Qualified Products List as pre-approved wall system suppliers must submit a QPL Product Evaluation Application along with design documentation, vendor drawings, wall system construction manual and other information as required in the Retaining Wall System QPL Acceptance Criteria showing the proprietary wall system is designed to meet all specified requirements. Project specific Shop Drawings are required for QPL approved wall systems (see Shop Drawing Requirements below).

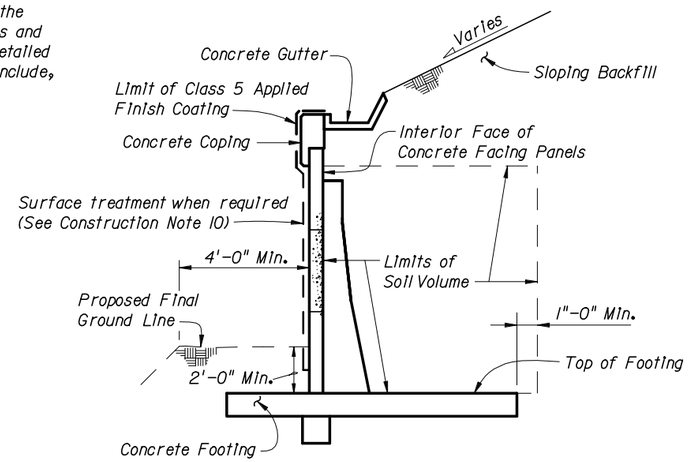
SHOP DRAWING REQUIREMENTS

The successful bidder will submit the final design of the wall for review as Shop Drawings. Details and Design Criteria shown on Shop Drawings shall not deviate from those shown on the approved QPL Vendors Drawings. The Shop Drawings will include detailed design computations and all details, dimensions and quantities necessary to construct the wall. The design and fully detailed plans will be prepared as required by current FDOT standards at time of bidding and will include, but not be limited to, presentation of required information as follows:

1. Provide an elevation view of the wall indicating:
   a. Elevations/Stations at the top of wall, top of leveling pad or footing and bottom of footing for Begin/End Retaining Wall, all breaks in vertical alignment, all whole stations and every 25 foot station increments.
   b. Panel designations and the length, size and designation of soil reinforcement in elevation view.
   c. Location of the proposed final ground line.
2. Provide a plan view detailing the horizontal alignment and offsets from the horizontal control line(s) to the exterior face of the wall.
3. Show in plan and elevation all utilities, sign supports, light pole pilasters, drainage structures, drainage pipes, etc. that affect the wall(s). Locate in the plan view all piles within the reinforced earth volume, including those for future widening, as shown on Foundation Layout Drawings.
4. Provide general notes and design parameters on the Shop Drawings. Include design soil characteristics and all other pertinent notes required for design and construction of the walls. Provide factored bearing resistances and factored bearing pressures for each wall height increment.
5. Show the limits of the soil volume (see Typical Sections at right for details).
6. Show complete details of each precast wall facing panel, slip joint and all other concrete elements incorporated in the wall. Include reinforcing bar size and spacing, complete bar bending diagrams and required embedment(s).
7. Show complete details of leveling pads and/or footings, including all steps in leveling pads.
8. Show complete details for construction of wall around obstructions. Show details for placement of soil reinforcement at acute corners and at interfaces with temporary walls.
9. Show complete details addressing conflicts between soil reinforcement, precast concrete facing panels and embedments in the reinforced soil volume. Provide full details of railings, coping, sign supports, light pole pilasters, acute corners, etc.
10. Show complete details where walls of different types intersect/influence one another.
11. Provide fully detailed design calculations for each wall height increment detailed in the Shop Drawings. Submit Shop Drawings and design calculations signed and sealed by a Professional Engineer registered in the State of Florida.

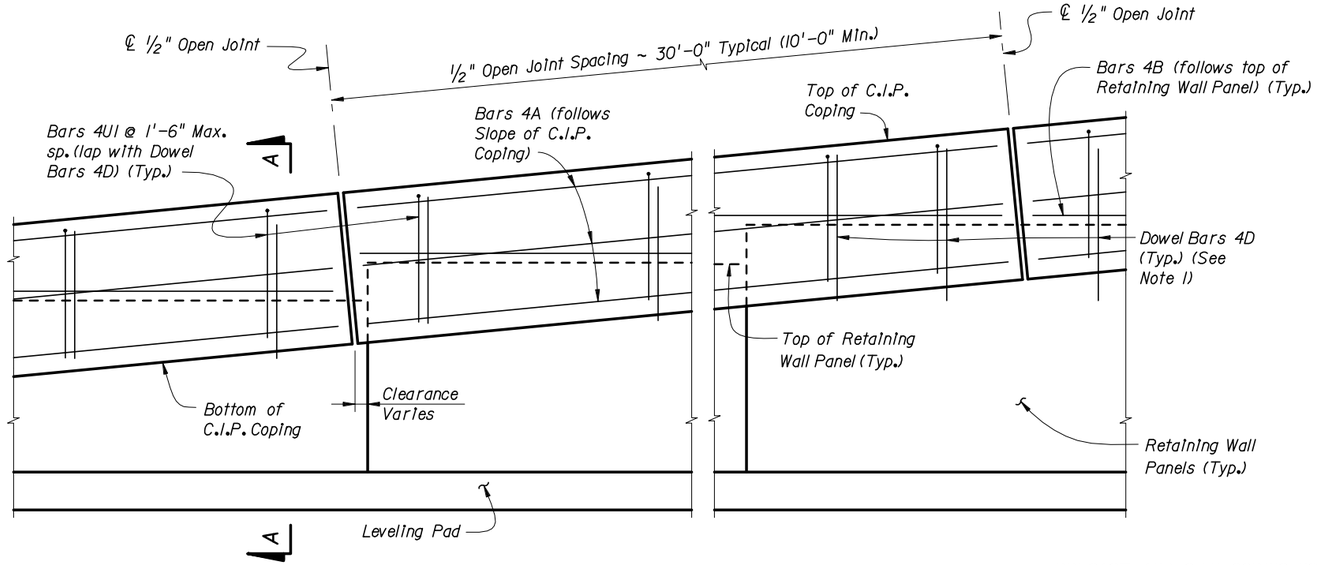


TYPICAL RETAINING WALL SECTION
WITH A TRAFFIC RAILING
(MSE Wall Type Shown, Others Similar)
(Showing Limits of the Reinforced Soil Volume)

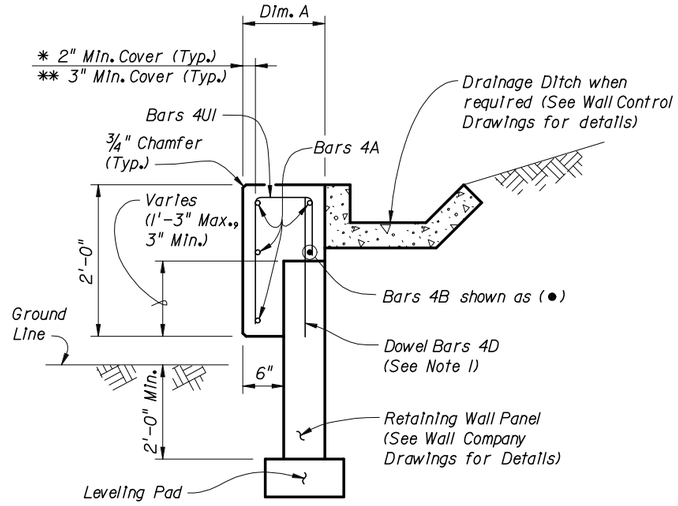


TYPICAL RETAINING WALL SECTION
WITHOUT A TRAFFIC RAILING
(Counterfort Wall Type Shown, Others Similar)
(Showing Limits of the Soil Volume)

GENERAL NOTES AND DETAILS



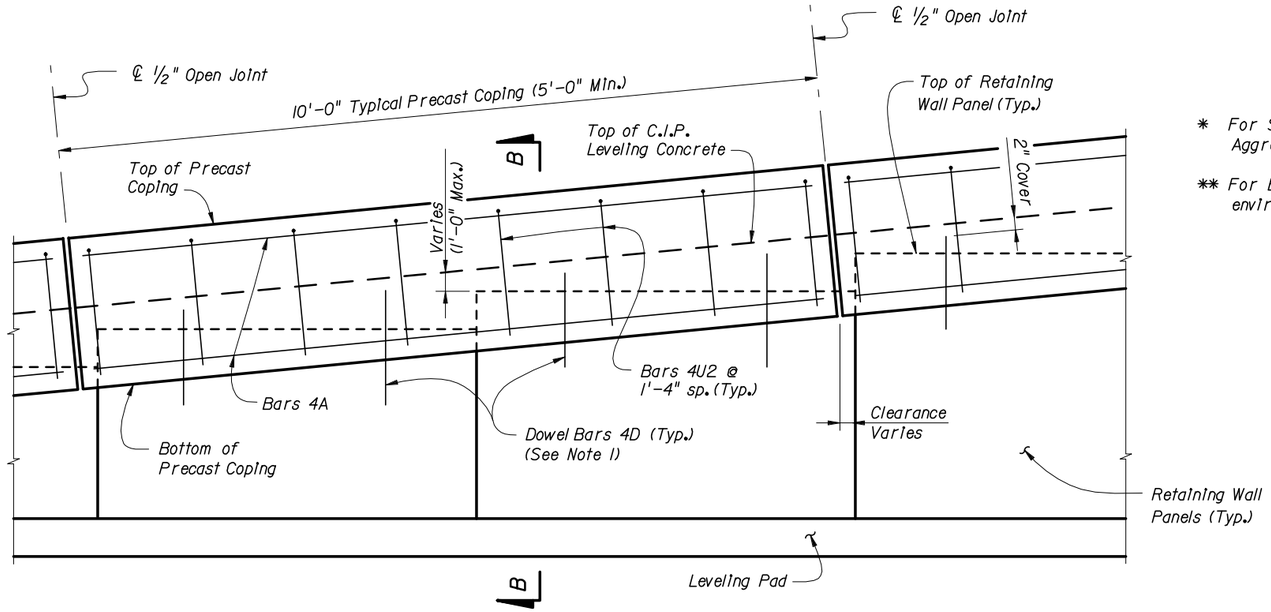
C.I.P. COPING - PARTIAL ELEVATION VIEW



SECTION A-A
C.I.P. COPING

PRECAST AND C.I.P. COPING NOTES:
1. Dowel Bars 4D extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover. See Wall Company Drawings for number and spacing of Dowel Bars 4D.

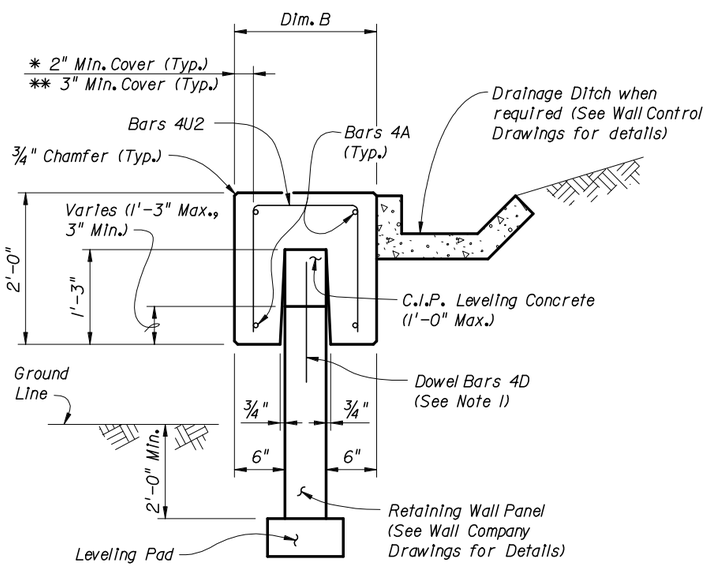
Dim. A	Panel width + 6"
Dim. B	Panel width + 1'-0"



PRECAST COPING - PARTIAL ELEVATION VIEW

* For Slightly and Moderately Aggressive environments

** For Extremely Aggrassive environments.



SECTION B-B
PRECAST COPING

PRECAST AND C.I.P. COPING DETAILS

REINFORCING STEEL BENDING DIAGRAMS - PRECAST AND C.I.P. COPINGS

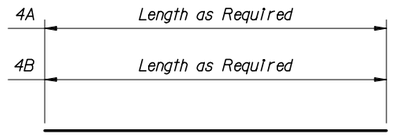
BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH # S or M	LENGTH # E
A	4	AS REQD.	AS REQD.
B	4	AS REQD.	AS REQD.
D	4	2'-0"	2'-0"
U1	4	Panel width + 4"	Panel width + 3"
U2	4	Panel width + 8"	Panel width + 6"
U3	4	Panel width + 4"	Panel width + 3"

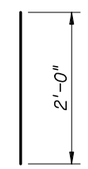
REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Bars 4A may be continuous or spliced at the construction joints. Lap splices for Bars 4A will be a minimum of 1'-8".
4. The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.

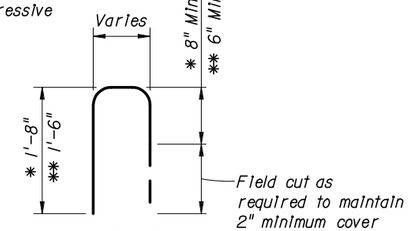
# S = Slightly Aggressive
M = Moderately Aggressive
E = Extremely Aggressive



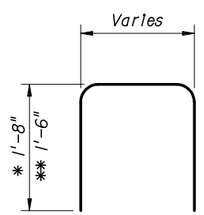
BARS 4A & 4B



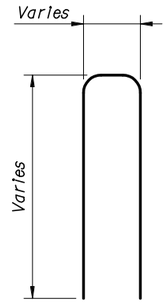
DOWEL BAR 4D



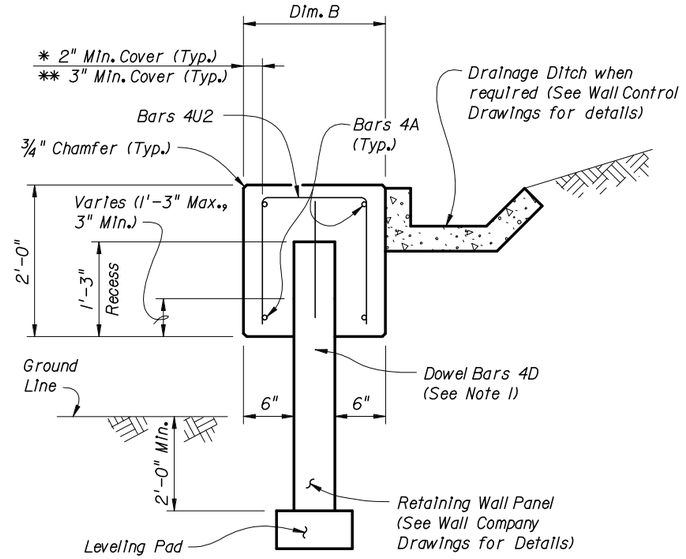
BAR 4U1



BAR 4U2

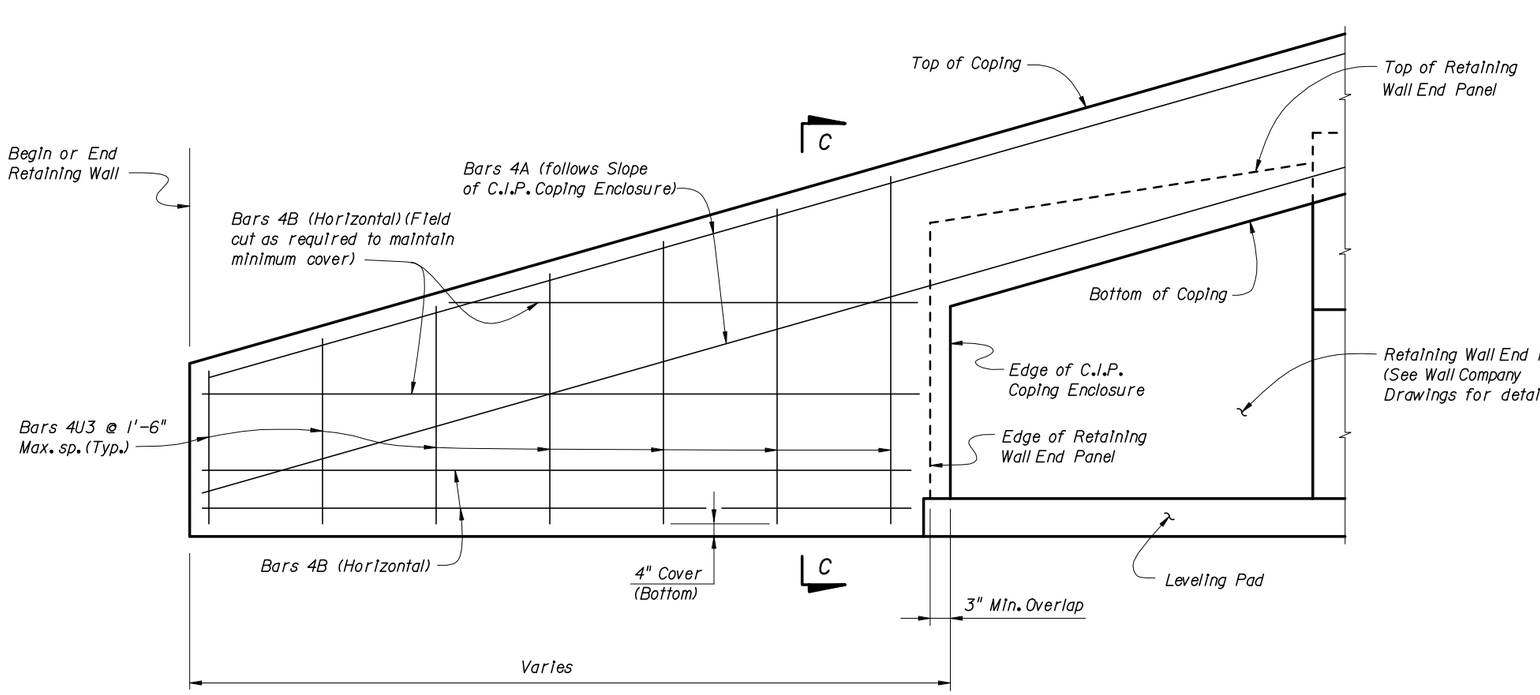


BAR 4U3

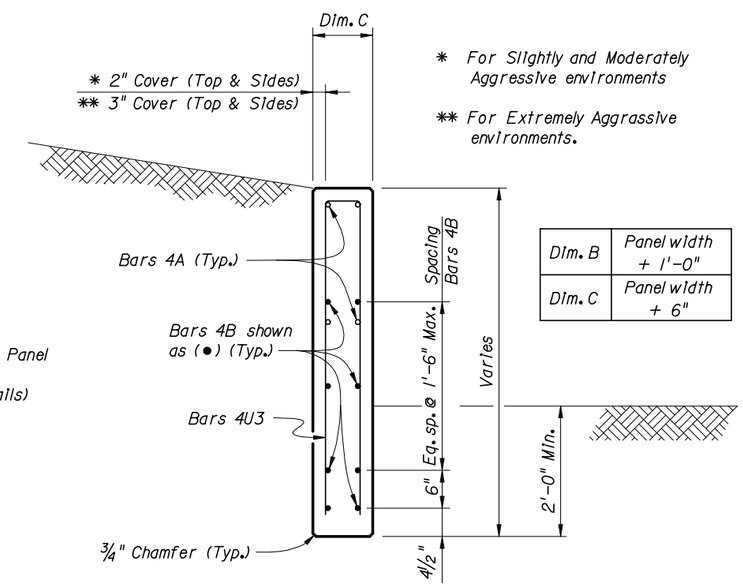


C.I.P. COPING USED WITH PRECAST COPING

Note: When precast coping units do not fit the entire length of the retaining wall, use this similar C.I.P. coping for short portions between precast coping units. This C.I.P. coping may also be used for vertical copings.

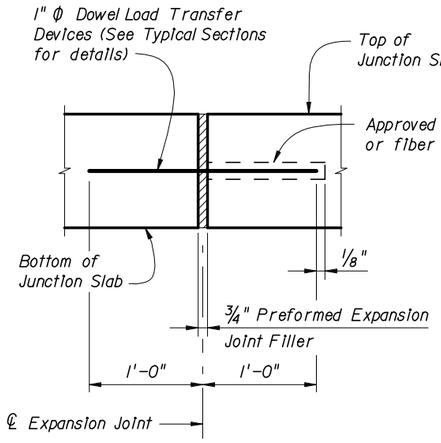


C.I.P. COPING ENCLOSURE DETAIL



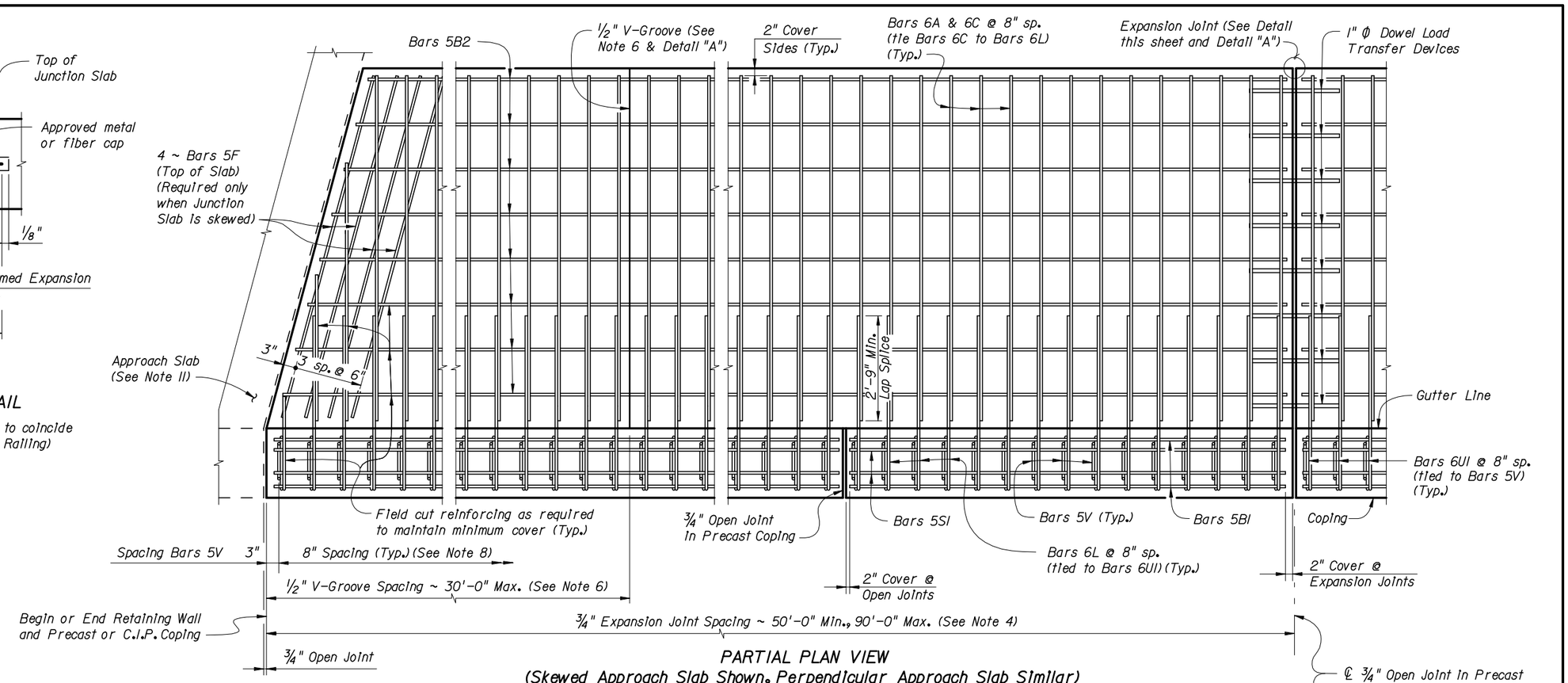
SECTION C-C

PRECAST AND C.I.P. COPING DETAILS



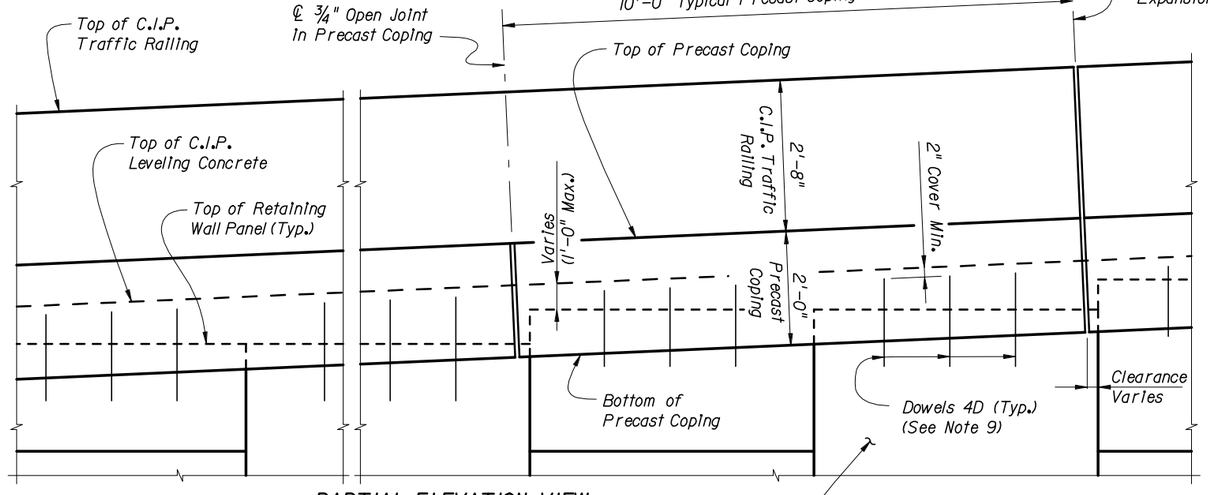
EXPANSION JOINT DETAIL

(Junction Slab expansion joints are to coincide with 3/4" open joints in Traffic Railing)



PARTIAL PLAN VIEW

(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C.I.P. Coping Similar) (Traffic Railing not Shown for Clarity)



PARTIAL ELEVATION VIEW

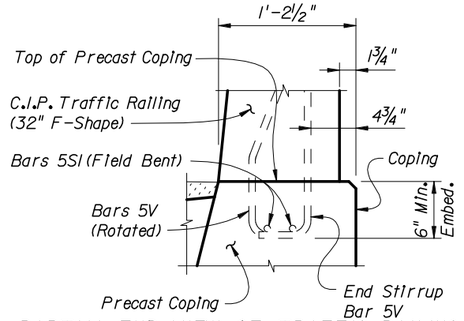
(Precast Coping and Junction Slab Reinforcing not Shown for Clarity)
(Precast Coping Shown, C.I.P. Coping Similar)

JUNCTION SLAB NOTES:

1. CONSTRUCTION REQUIREMENTS: Construct the Junction Slab level transversely and expansion joints plumb; do not construct the junction slab or C.I.P. coping perpendicular to the roadway surface. Slip forming is not permitted.
2. APPLICATIONS: This junction slab may only be used with Traffic Railings rated TL-4. Precast Traffic Railings are not allowed.
3. REINFORCING STEEL: Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 3/4" Expansion Joints in junction slabs and C.I.P. copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct 1/2" V-Grooves in junction slabs and C.I.P. copings plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Junction Slab. V-Groove locations are to coincide with V-Groove locations in the Traffic Railing.
7. FILL REQUIREMENTS: Shoulder or Roadway Pavement or Fill is required on top of the junction slab for its entire length on the traffic side of the Traffic Railing. See Typical Sections on Sheet Nos. 5 and 6 of 15 for details.
8. Spacing shown is along the Gutter Line.
9. For Precast Coping only, Dowel Bars 4D are to extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover to the top of the leveling concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
10. Work this Index with the following:
    Index No. 420 - Traffic Railing - (32" F-Shape).
11. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
    Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
    Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)

CROSS REFERENCE: For Detail "A", see Sheet 5 of 15.

PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS

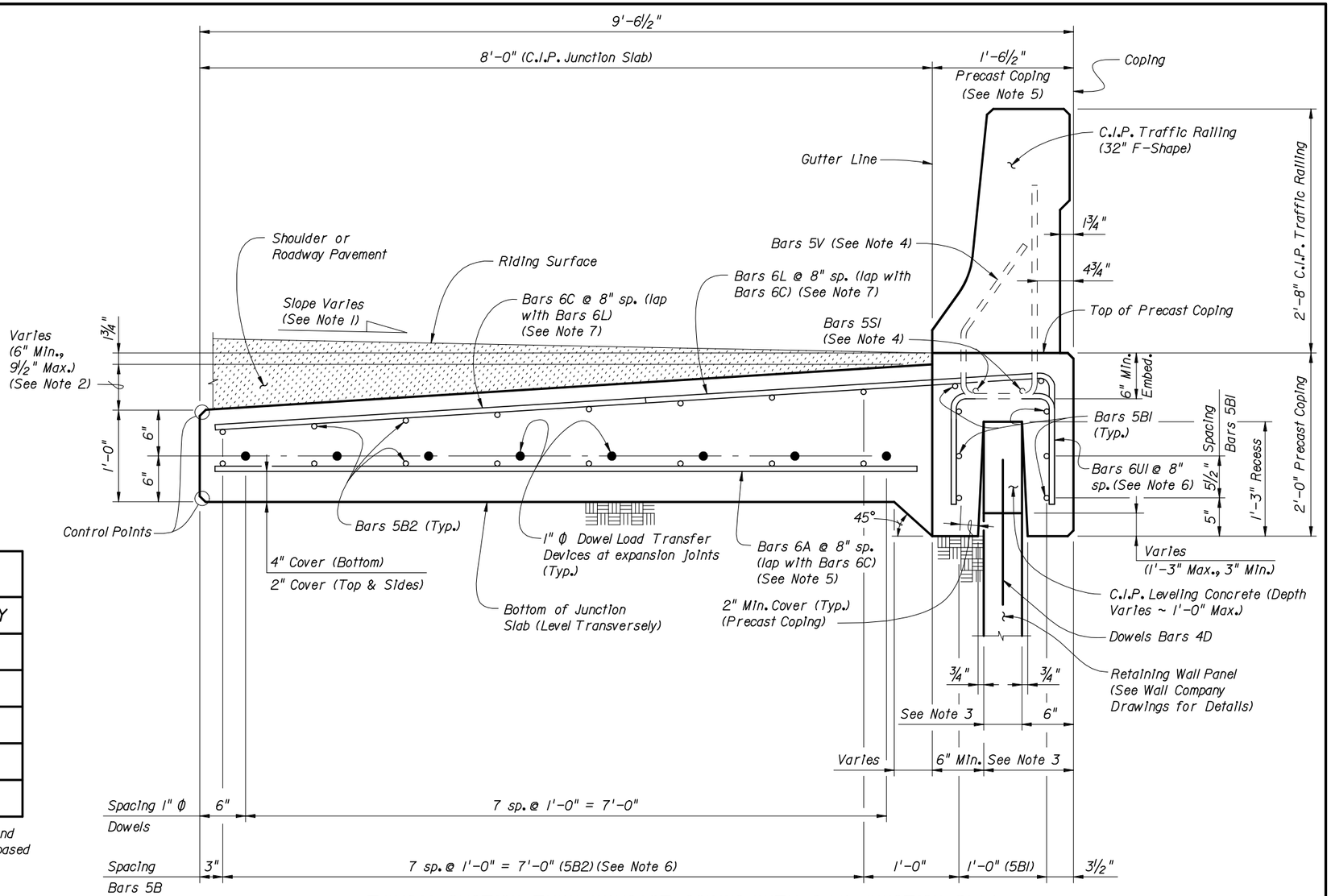


PARTIAL END VIEW OF TRAFFIC RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT
(Showing Bars 5V and Bars 5SI)
(Precast Coping Shown, C.I.P. Coping Similar)

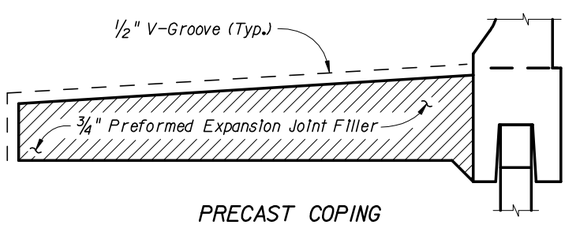
NOTE: See Index No. 420, Detail "A" for details.

ESTIMATED QUANTITIES FOR PRECAST COPING		
ITEM	UNIT	QUANTITY
Concrete (Precast Coping)	CY	0.952
Concrete (C.I.P. Junction Slab)	CY/FT	0.374
Reinforcing Steel (Precast Coping) excluding Bars 5V and 5SI (Typ.)	LB	278.28
Reinforcing Steel (C.I.P. Junction Slab) (Typ.)	LB/FT	33.40
Additional Reinf. @ Expansion Joints	LB	42.72

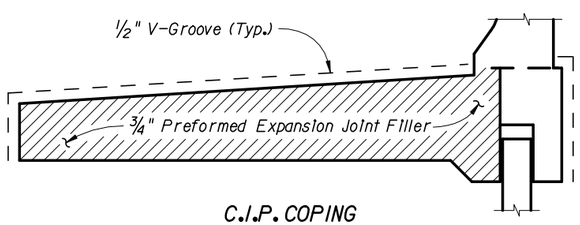
(The above concrete quantities are based on a superelevation of 6.25% and a 5" wide retaining wall panel. The above Precast Coping quantities are based on one 10'-0" Precast Coping segment.)



TYPICAL SECTION THRU PRECAST COPING WITH C.I.P. JUNCTION SLAB
AND RETAINING WALL AT EXPANSION JOINTS



PRECAST COPING



C.I.P. COPING

DETAIL "A"
(Showing Locations of ½" V-Grooves and ¾" Preformed Expansion Joint Filler)

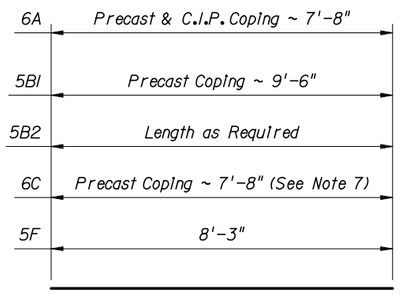
JUNCTION SLAB NOTES:
1. Match Cross Slope of Travel Lane or Shoulder.
2. The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension (i.e., shift control points down) as required to match roadway superelevation.
3. Actual width varies depending on type of Retaining Wall used.
4. See Index No. 420 for Bars 5SI and 5V.
5. The Precast Coping width is based on a maximum 6½" wide Retaining Wall Panel. If the Retaining Wall Panel is wider than 6½", increase the width by the difference between the two Retaining Wall Panel widths. Increase the length of Bars 6L and decrease the length of Bars 6A & 6C as required when the coping width is increased and adjust spacing of Bars 5B2 as required to maintain 2" minimum cover.
6. Increase the width (1'-2½") of Bars 6UI as required to maintain 2" minimum cover when recess width exceeds 8".
7. At the Contractor's option, mechanical couplers may be used to splice reinforcing. Complete details, including reinforcement lengths are required in the Shop Drawings. Mechanical couplers shall develop 125% of the bar yield strength.

PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS

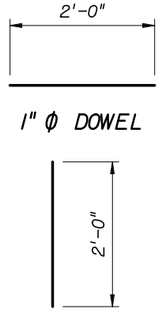
REINFORCING STEEL BENDING DIAGRAMS - JUNCTION SLAB

BILL OF REINFORCING STEEL

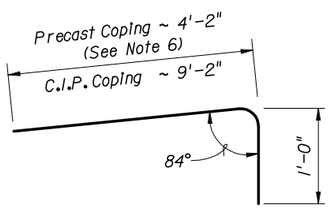
MARK	SIZE	LENGTH	
		PRECAST COPING	C.I.P. COPING
A	6	7'-8"	7'-8"
B1	5	9'-6"	N/A
B2	5	AS REQD.	AS REQD.
C	6	7'-8"	N/A
D	4	2'-0"	N/A
F	5	8'-3"	8'-3"
L	6	5'-2"	10'-2"
U1	6	3'-8"	3'-8"
1" ϕ Dowel	Smooth Steel Bar	2'-0"	2'-0"



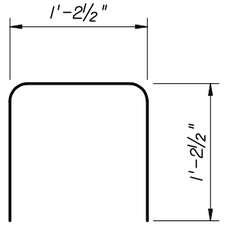
BARS 6A, 5B1, 5B2, 6C & 5F



DOWEL BAR 4D



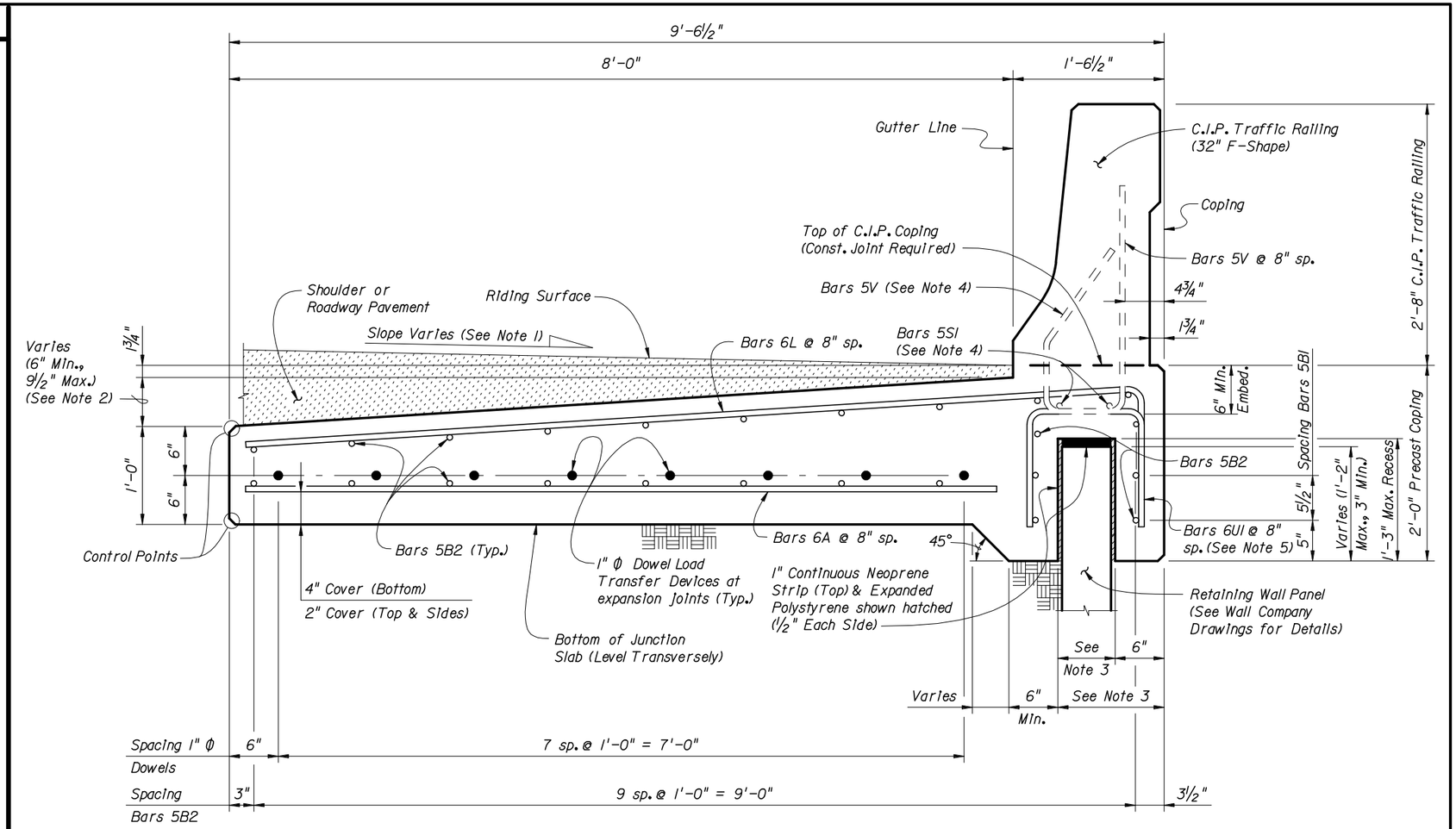
BAR 6L



BAR 6U1

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B2 will be a minimum of 2'-2".
4. For Precast Coping only, lap splice Bars 6L with Bars 6C. Lap splices will be a minimum of 2'-9".
5. See Index No. 420 for Bars 5S1 and 5V.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-4".
7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 7'-9".
8. The Contractor may use Welded Wire Fabric when approved by the Engineer. Welded Wire Fabric will conform to ASTM A 497.



TYPICAL SECTION THRU C.I.P. COPING AND JUNCTION SLAB AND RETAINING WALL AT EXPANSION JOINTS

ESTIMATED QUANTITIES FOR C.I.P. COPING

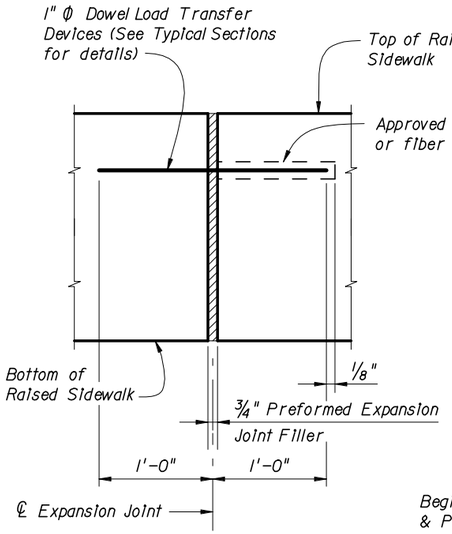
ITEM	UNIT	QUANTITY
Concrete	CY/FT	0.470
Reinforcing Steel (Typical) excluding Bars 5V and 5S1 (Typ.)	LB/FT	65.21
Additional Reinf. @ Expansion Joint	LB	42.72

(The above concrete quantities are based on a superelevation of 6.25% and a 5" wide retaining wall panel.)

JUNCTION SLAB NOTES:

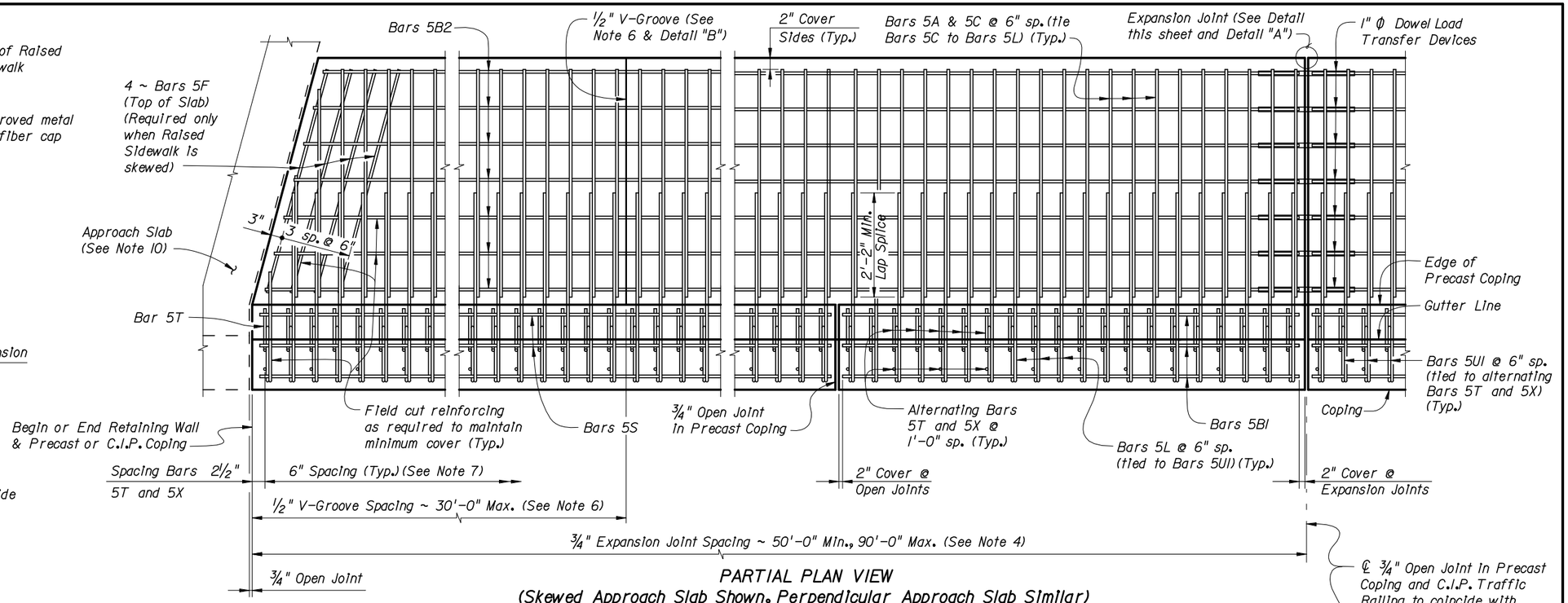
1. Match Cross Slope of Travel Lane or Shoulder.
2. The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension (i.e., shift control points down) as required to match roadway superelevation.
3. Actual width varies depending on type of Retaining Wall used.
4. See Index No. 420 for Bars 5S1 and 5V.
5. Increase the width (1'-2½") of Bars 6U1 as required to maintain 2" minimum cover when recess width exceeds 8".

PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS



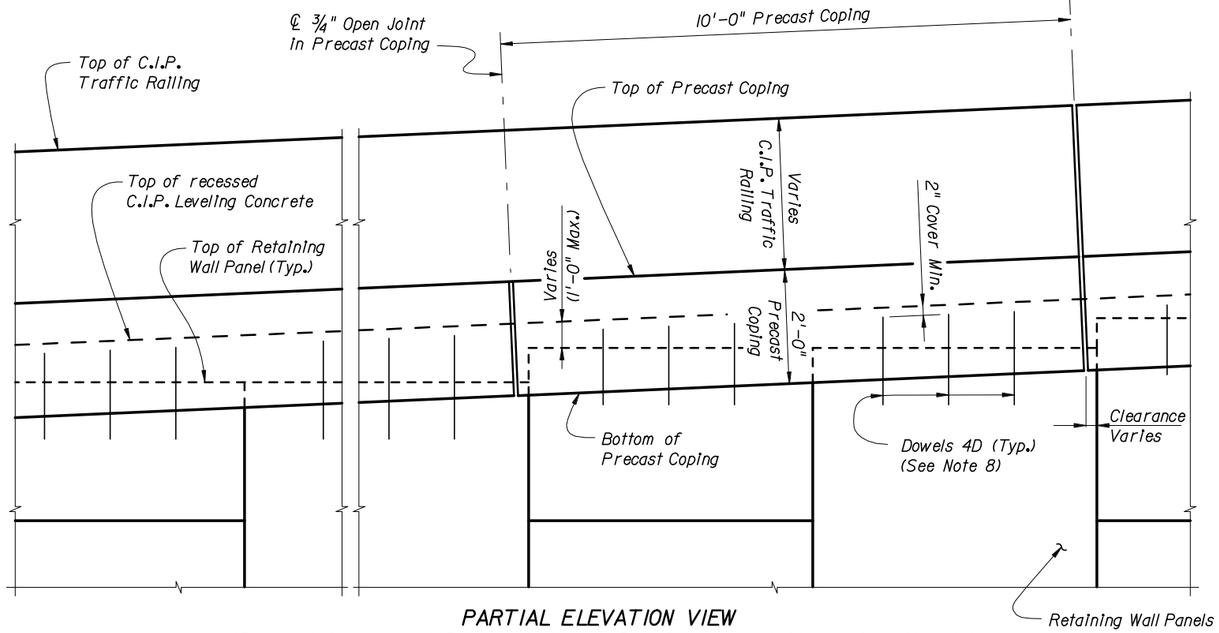
EXPANSION JOINT DETAIL

(Raised Sidewalk expansion joints are to coincide with 3/4" open joints in Traffic Railing)



PARTIAL PLAN VIEW

(Skewed Approach Slab Shown, Perpendicular Approach Slab Similar)
(Precast Coping Shown, C.I.P. Coping Similar) (Traffic Railing not Shown for Clarity)



PARTIAL ELEVATION VIEW

(Precast Coping and Raised Sidewalk Reinforcing not Shown for Clarity)
(Precast Coping Shown, C.I.P. Coping Similar)

RAISED SIDEWALK NOTES:

1. CONSTRUCTION REQUIREMENTS: Construct the raised sidewalk level transversely and expansion joints plumb; do not construct the raised sidewalk or C.I.P. coping perpendicular to the roadway surface. Slip forming is not permitted.
2. APPLICATIONS: This raised sidewalk may only be used with Traffic Railings rated TL-4. Precast Traffic Railings are not allowed.
3. REINFORCING STEEL: Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 962. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. Construct 3/4" Expansion Joints in raised sidewalk and C.I.P. copings plumb and perpendicular or radial to the Gutter Line. Provide at 90'-0" maximum intervals as shown.
5. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.
6. Construct 1/2" V-Grooves in raised sidewalk and C.I.P. coping plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/4" Expansion Joints and/or Begin or End Raised Sidewalk. V-Groove locations are to coincide with V-Groove locations in the Traffic Railing.
7. Spacing shown is along the Gutter Line.
8. For Precast Coping only, Dowel Bars 4D are to extend 1'-0" above the top of retaining wall panel. Field cut as necessary to maintain 2" minimum cover to the top of the leveling concrete. See Wall Company Drawings for number and spacing of Dowel Bars 4D.
9. Work this Index with the following:
   Index No. 423 - Traffic Railing - (32" Vertical Shape).
10. The following Indexes contain details of the intersection of the retaining wall at approach slabs:
    Index No. 20900 - Approach Slabs (Flexible Pavement Approaches)
    Index No. 20910 - Approach Slabs (Rigid Pavement Approaches)

CROSS REFERENCE: For Detail "B", see Sheet 8 of 15.

PRECAST OR C.I.P. COPING WITH C.I.P. RAISED SIDEWALK DETAILS