NOTES

A. DESIGN SPECIFICATIONS:
1. AASHTO LRFD Specifications for Highway Bridges.

B. CONSTRUCTION:
Meet the requirements of Standard Specification 534.

C. CONCRETE AND GROUT:
1. Concrete Class and Compressive Strength:
   a. Cast-In-Place Collars: Class IV (f’c = 5500 psi)
   b. Precast Panels, Collars and Post Caps: Class IV (f’c = 5500 psi)
   c. Posts: Class IV (f’c = 5500 psi)
2. Grout for Auger Cast Piles:
   a. Maximum Working Compressive Strength = 2200 psi
   b. Minimum 28 Day Strength = 5500 psi
3. Minimum Compressive Strength for Form Removal and Handling of Posts and Panels:
   a. 2,500 psi for horizontally cast post and panels.
   b. 2,000 psi for vertically cast panels or when tilt-up form tables are used for horizontally cast panels.

D. REINFORCING STEEL:
1. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
   a. Post Stirrups – Tie at all four corner bars and at every third interior bar intersection.
   b. Pile Stirrups – Tie to the main vertical reinforcing at alternate intersections for circular configurations and for rectangular configurations at the four corners and at every third interior bar intersection.
2. Provide 2" concrete cover unless otherwise noted.

E. SURFACE FINISHES AND AESTHETIC REQUIREMENTS:
1. See Noise Wall Data Tables in the Plans for project requirements.

F. PILING:
Construct Auger Cast Piling in accordance with the Plans and Specification Section 455.

G. UTILITIES:
Field verify the locations of all overhead and underground utilities shown in the Wall Control Drawings.

H. NEOPRENE PADS AND RESILIENT PADS:
1. Neoprene Pads for Collar Bearing Points:
   Neoprene Pads shall be Fiber Reinforced Pads between Grade 50 and Grade 80 durometer hardness in accordance with Specification Section 922. Plain Pads may be substituted for Fiber Reinforced Pads when sufficient bearing area is available on the concrete collar for the following:
   a. 10’ post spacing: 4” x 4” x 5” Plain Pads, Grade 50 durometer hardness.
   b. 20’ post spacing and < 18’ wall height: 4” x 4” x 5” Plain Pads, Grade 50 durometer hardness.
   c. 20’ post spacing and ≥ 18’ wall height: 4” x 5” x 5” Plain Pads, Grade 50 durometer hardness.
2. Provide 2" concrete cover unless otherwise noted.

I. CASTING TOLERANCES:
1. Overall Height & Width: +/- 1/8"
2. Thickness: +/- 1/16" per 4' horizontal length
3. Plane of side mold: +/- 1/32" per foot length
4. Openings: +/- 1/32"
5. Out of Square: 1/8" per 6' ft., but not more than 1/8" total along any side
6. Warping: 1/4" per foot distance to nearest corner
7. Bowing: 1/164' panel dimension
8. Surface Smoothness for Type "A" (Smooth) Surface Texture Option: +/- 1/32" along a 10 ft. straightedge.

J. NOISE WALL NOTES:
1. Post spacing is measured from centerline to centerline of auger cast piles. For this Index, post and pile spacing are designed for 10 ft. and 20 ft.
2. Total height of wall ranges from a minimum of 12 ft to a maximum of 22 ft. The height of individual panels must be a minimum of 12 ft and a maximum of 6 ft, except for the following: the panel height may be a minimum 4 ft when required due to low clearance conditions or when 8 ft. graphic panels must be accommodated in walls with total heights between 12 ft. and 14 ft.
3. Where special graphics are required, locate horizontal panel joints outside of graphics. Where possible, hold horizontal panel joints at a constant elevation.
4. Only when reduced overhead clearance between posts prohibits installation of panels from the top, side-installed panels are allowed. When flush face panels require side-installation, install panel from right of way side into H post. After panel is centered between posts, grout both ends between panel ends and post. See Sheets 4 and 5 for details.

GENERAL NOTES
**Type "A"**
SMOOTH

**Type "B"**
ASHLAR STONE

**Type "C"**
SPLIT FACE RUNNING BOND BLOCK

**Type "D"**
FRACTURED GRANITE

**Type "E"**
WIRE-CUT BRICK

**Type "F"**
PEA GRAVEL

**Type "G"**
VERTICAL FRACTURED FIN

**Type "H"**
TRAPEZOID VERTICAL FINS W/ FRACTURED FACE (COLORADO DRAG AGGREGATE)

**Type "I"**
CUT CORAL BLOCK (RUNNING BOND)

**TEXTURE OPTIONS**

1. Surfaces shall be formed, rolled, or pressed using form liners in accordance with the Plans and Specifications (Class 3 Surface Finish).
2. See Sound Barrier Data Tables for project aesthetic requirements.

NOTES:

- Amplitude
- Joint
- Front Face
- Back Face
- 1/2" Mortar Joint
- Depth
- Width
- Mortar Joint
**GRAPHICS & TEXTURE DETAILS**

**TYPICAL FORMING DETAIL**

(Front Face Panel Texture Type "H" shown)
(Back Face Panel Texture Type "D" shown)
(Post Forming Details Similar)

**NOTES:**
1. Submit specific form liner samples for approval by the Engineer.
2. Textures and graphics shown are for demonstration purposes only. See Noise Wall Data Tables in the plans for project specific texture and graphic requirements.
TYPICAL PANEL ELEVATION

* In lieu of utilizing the standard pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, pick points must be placed in the top of panels only and transported maintaining the vertical orientation. If these criteria are met, the vertical steel may be reduced to #4 Bars @ 1'-6" (As=0.15 in.²/ft.).

STANDARD PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)

Panel Height (H)

Panel Length (L)

Pick up points

1. See Sheet 3 for allowable methods of applying textures.
2. See plans for panel type and aesthetic requirements.
3. For equal post spacing, side-installed panel length will be shorter than top-installed length.
NOTE:
The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2Δ°) between panels exceeds 7°.

PIVOTING DETAILS
(Flush Panel)

NOTE:
The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2Δ°) between panels exceeds 7°.

PIVOTING DETAILS
(Recessed Panel)
FIRE HOSE ACCESS HOLE TYPICAL DETAIL
(Front Face of Wall Shown)

BAR BENDING DETAILS (#3 Bars)

PLUG DETAIL

SECTION F-F

SECTION E-E

NOTE: Fire Hose Access Hole only to be located at or near fire hydrants.

DRAINAGE HOLES TYPES A, B, C & D
(Front Face of Wall Shown)
(Two Holes Shown, One Hole Similar)

GRAATING NOTES:
2. Expansion Anchors: Use 3⁄8" Ø x 3" ASTM A307, vandal resistant, hot-dip galvanized expansion anchors to connect grates to panels.
3. Grating recessed with back face of wall.

FIRE HOSE ACCESS & DRAINAGE HOLE DETAILS
STANDARD POST REINFORCEMENT

(Standard Post Shown, 45° Corner Posts Similar)

NOTES:
1. For Table of Dimensions and Reinforcing Steel, see Sheets 15 and 16.
2. Extend Post 2' above top of high side wall panel when post caps are shown in plans. See Sheet 4, 'ELEVATION STEP AT TOP OF WALL'.

* Table of Dimensions and Reinforcing Steel, see Sheets 15 and 16.

- Extend Post 2' above top of high side wall panel when post caps are shown in plans. See Sheet 4, 'ELEVATION STEP AT TOP OF WALL'.

STANDARD POST DETAILS

FDOT 2014
DESIGN STANDARDS
PRECAST NOISE WALLS

INDEX NO. 5200
SHEET NO. 8 of 16
**DESCRIPTION:**

**REVISION**

**LAST REVISION**

**INDEX NO.**

**SHEET NO.**

**FDOT 2014 DESIGN STANDARDS**

**PRECAST NOISE WALLS**

**POST PLACEMENT & PILE REINFORCING STEEL DETAILS**

**TYPICAL POST**

**LOW CLEARANCE OPTION**

**STANDARD POST PLACEMENT IN AUGER CAST PILE**

(Standard Post Shown, 45° Corner Posts Similar)

1. **Post & Pile**
2. **Precast Post**
3. **Top of Wall**
4. **Post & Pile**

**SECTION P-P**

(Standard Post)

- **10 - #9 Bars (Typ.)**
- **Bars P3 (Typ.)**
- **Exposed Precast Post Reinforcement (Typ.)**

**SECTION N-N**

(Standard Post)

- **30° Ø Auger Cast Pile**
- **30° Auger Cast Pile**
- **10 - #9 Bars (Typ.)**
- **See Section P-P**

**SECTION M-M**

(Standard Post)

- **36° Ø Auger Cast Pile**
- **Projected Location of Bearing Pad (Typ.)**
- **(See Sheet 1, Note H)**

**NOTES:**

1. For Pile Lengths, see Sheets 15 and 16.
2. Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 6, "ELEVATION STEP AT TOP OF WALL".

1b "Max.

2" Min.

4" Cover

Pile Length (See Note 1)

Max.

Min.

Max.

Max.

Max.
1. For Post & Pile Lengths and Table of Reinforcing Steel, see Sheets 15 & 16.
2. Reference Sheets 8 & 9 for location of Sections.
3. For texture thickness, match with appropriate Panel face.

45° POST NOTES:

45° POST DETAILS

45° POST PLACEMENT IN AUGER CAST PILE

45° CORNER POST DETAILS

PRECAST NOISE WALLS

FDOT 2014 DESIGN STANDARDS

INDEX NO. 5200 SHEET NO. 10 of 16
**90° CORNER POST REINFORCEMENT**
*(Post Surface Features Not Shown For Clarity)*

1. For Table of Dimensions and Reinforcing Steel, see Sheet 15 & 16.
2. Reduce typical panel length by 3" at each 90° Corner Post.
3. For texture thickness, match appropriate Panel face.

* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".
NOTES:
1. For Pile Lengths, see Sheets 15 and 16.
2. Trowel Finish top of Collar to allow placement of Bearing Pads.

* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL"
NOTES:
1. For Pile Lengths, see Sheets 15 and 16.

2. Trowel Finish top of Pile to allow placement of Bearing Pads.

* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".
**PRECAST POST CAPITAL**

**PLAN VIEW**
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

**VIEW A-A SHOWN, VIEW B-B SIMILAR**
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

**SECTION C-C**

**TYPE "A" CAP DETAILS**

**SECTION C-C**

**TYPE "B" CAP DETAILS**

**SECTION C-C**

**TYPE "C" CAP DETAILS**

**CAP PLACEMENT DETAIL**
(Type "B" Cap Shown, Type "A" & "C" Caps Similar)
TABLE 1 - WIND SPEED = 110 MPH

POST AND PILE DIMENSIONS

<table>
<thead>
<tr>
<th>WALL TYPE</th>
<th>POST LENGTH WITHOUT CAP</th>
<th>POST LENGTH WITH CAP</th>
<th>PILE LENGTH (Feet)</th>
<th>N = 10 to 40</th>
<th>N = 4 to 9</th>
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<tbody>
<tr>
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TABLE OF REINFORCING STEEL

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<th>POST REINFORCING</th>
<th>10'-0&quot; POST SPACING</th>
<th>20'-0&quot; POST SPACING</th>
<th>20'-0&quot; POST SPACING</th>
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<td>BARS A</td>
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<td>DIM A</td>
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BAR BENDING DETAILS

**STANDARD POST (#4 Bars)**

Bar Length = 7'-5"

**PILE (Low Clearance) (#4 Bars)**

Bar Length = 8'-7"

**90° CORNER POST (#4 Bars)**

**CAST-IN-PLACE COLLAR (#5 Bars)**

**45° CORNER POST (#4 Bars)**

**BAR P7**

Bar Length = 3'-0"

**BAR P8**

Bar Length = 5'-3"

**TABLE NOTE:**

1. Bars D and Bars E are for 45° Corner Posts only.
**TABLE 2 - WIND SPEED = 130 MPH**

<table>
<thead>
<tr>
<th>WALL TYPE</th>
<th>POST LENGTH WITHOUT CAP</th>
<th>POST LENGTH WITH CAP</th>
<th>N = 10 to 60</th>
<th>N = 4 to 9</th>
<th>PILE LENGTH (Feet)</th>
<th>POST REINFORCING</th>
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**TABLE 3 - WIND SPEED = 150 MPH**

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<th>POST LENGTH WITH CAP</th>
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<th>N = 4 to 9</th>
<th>PILE LENGTH (Feet)</th>
<th>POST REINFORCING</th>
<th>POST SPACING</th>
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**TABLE OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>POST AND PILE DIMENSIONS</th>
<th>TABLE OF REINFORCING STEEL</th>
</tr>
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<tbody>
<tr>
<td>N = 10 to 60</td>
<td></td>
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<tr>
<td>Med. Dense Granular Soil</td>
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<tr>
<td>Loose Granular Soil</td>
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</tr>
<tr>
<td>N = 4 to 9</td>
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<tr>
<td>POST LENGTH (Feet)</td>
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<tr>
<td>30'</td>
<td></td>
</tr>
<tr>
<td>36'</td>
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</table>

**TABLE NOTE:**

1. Bars D and Bars E are for 45° Corner Posts only.

**PILE DEPTH & REINFORCING SUMMARY**

**FDOT 2014 DESIGN STANDARDS**

**PRECAST NOISE WALLS**

**INDEX NO.**

**5200**

**SHEET NO.**

16 of 16
PLAN (BRIDGE MOUNTED RAILING/NOISE WALL SHOWN, WALL OR FOOTING MOUNTED RAILING/NOISE WALL SIMILAR) (Reinforcing Steel not shown for clarity)

CROSS REFERENCE:
For Detail "B" and V-Groove Lettering Detail see Sheet 2
For Section A-A see Sheet 4
For Section C-C and Detail "A" see Sheet 5.
For Wall mounted Railing/Noise Wall Details see Index No. 5212.
For Footing mounted Railing/Noise Wall Details see Index Nos. 5213 (T-Shaped), 5214 (L-Shaped) or 5215 (Trench).

ELEVATION OF INSIDE FACE OF RAILING/NOISE WALL (BRIDGE MOUNTED RAILING/NOISE WALL SHOWN, WALL OR FOOTING MOUNTED RAILING/NOISE WALL SIMILAR) (Reinforcing Steel not shown for clarity)

* On Bridges see Superstructure and Approach Slab Sheets for actual dimensions and joint orientation. Open Railing/Noise Wall Joints at Deck Expansion Joint locations shall match the dimensions of the Deck Joint.
For treatment of Railing/Noise Walls on skewed bridges see Index No. 420. Deck Joint at Begin Bridge or End Bridge shown. Deck Joint at Pier or Intermediate Bent. Junction Slab or Footing similar.
** \( V \) Intermediate Open Joints shall be constructed plumb and provided at:
(1) - Superstructure supports where slab is continuous.
(2) - Construction Joints for Junction Slabs and Footings.
TRAFFIC RAILING/NOISE WALL NOTES

CONSTRUCTION REQUIREMENTS: The Traffic Railing/Noise Wall and joints shall be constructed plumb, they shall not be constructed perpendicular to the roadway surface. Slip forming is not permitted.

CONCRETE: For Railing/Noise Wall on bridges see General Notes. For Wall and Footing mounted Railing/Noise Wall, concrete shall be Class II for slightly aggressive environments and Class IV for moderately or extremely aggressive environments.

NAME, DATE AND BRIDGE NUMBER: For Railing/Noise Wall on bridges, the Name and Bridge Number shall be placed on the Traffic Railing so as to be seen on the driver's right side when approaching the bridge. The Date shall be placed on the driver's left side when approaching the bridge. The Name shall be as shown in the General Notes in the Structures Plans. The Date shall be the year the bridge is completed. For a widening when the existing railing is removed, use both the existing date and the year of the widening. Black plastic letters and figures formed by 3/4" V-Grooves. V-Grooves shall be formed by preformed letters and figures.

BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install Barrier Delineators 2'-6" above the railing surface in the area shown in the drawing below. Barrier Delineator color (white or yellow) shall match the color of the near edgeline. The cost of the Barrier Delineators shall be included in the Contract Unit Price for the Traffic Railing/Noise Wall.

INTERMEDIATE JOINT SEAL NOTES:
1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V or Category V sealant in accordance with Specification Section 932.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.

DETAIL "B" - SECTION AT INTERMEDIATE OPEN JOINT

TRAFFIC RAILING/NOISE WALL QUANTITIES

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<tr>
<td>Additional Reinfl @ Open Jnt</td>
<td>LB</td>
<td>430.24</td>
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(These above quantities are based on the bridge mounted typical section, 2% deck cross slope and railing on low side of deck.)

BARS 551 & 552

REINFORCING STEEL BENDING DIAGRAMS

BARS 551 & 552

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 551 may be continuous or spliced at the construction joints. Lap splices for Bars 551 shall be a minimum of 2'-0".
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specifications Section 931.
5. Bars 5R shall be one continuous bar. No mechanical couplers or lap splices are permitted.
6. See Index Nos. 5214 and 5215 for Bars 5V and 5T in L-shaped and Trench footings.

TRAFFIC RAILING/NOISE WALL (8'-0")

INDEX NO. 5210

TRAFFIC RAILING/NOISE WALL (8'-0")

INDEX NO. 5210

Sheet 2 of 5
ELEVATION OF RAILING/NOISE WALL REINFORCING STEEL
(INTERMEDIATE OPEN JOINT SHOWN, DECK JOINT SIMILAR)
(Bars 551 in Railing not shown for clarity)

ELEVATION OF RAILING/NOISE WALL END TAPER (ADJACENT TO TRAFFIC RAILING
SHOWN, GUARDRAIL ATTACHMENT SIMILAR SEE DETAIL "A", SHEET 5)
(Bars 551 in Railing not shown for clarity)

NOTES:
* Field Cut Bars 5R & 5S1 to maintain clearance.
** Terminate $\frac{3}{4}$“ V-groove at construction joint & cast top of
railings with End Taper.
*** Bar spacing shown for Bars 5V applies only to bridge mounted
Railin/Noise Wall. See Index No. 5212 for spacing of Bars 5V
in junction slabs and Index Nos. 5213 (T-shaped), 5214 (L-shaped)
or 5215 (Trench) for Bars 5V spacing in footings.
NOTES:
1. Bottom Bars SS1 and End Bar SV are not present in L-Shaped (Index No. 5214) or Trench (Index No. 5215) Footings. For Bridge Mounted Installations, see the Superstructure Sheets for Deck Steel.
DETAIL "A" NOTES:

1. Rotate Bars SP & SV in Railing End Transition to maintain cover. Begin placing Railing Bars SP and SV at the raling end and proceed toward the guardrail (thrie beam) terminal connector to ensure placement of guardrail bolt holes. Fair Bars SR with Bars SP as shown. Clearance of Bars SP, SR & SV to guardrail bolt holes shall be checked to prevent cutting of bars if holes are to be drilled. Shift bars locally where conflicts occur.

2. For Guardrail connection details see Design Standards Index No. 400.

3. Omit Railing End Transition if a 32" F-Shape Traffic Railing is used beyond the End Taper. See the Plan Sheets.

4. For L-Shaped (Index No. 5214) and Trench (Index No. 5215) footings, Bars SV and ST replace Bars SV as shown on left. Details and bar spacing shown apply except that it is not necessary to rotate Bars SV and ST to maintain cover and there is no field cut End Bar SV.

5. Bottom Bars SSI are not present in L-Shaped or Trench Footings.

PLAN - RAILING END TRANSITION
(Showing Bars SP, SR, and Bars SSI) (Bars SV, Noise Wall & Reinforcement not shown for Clarity)

PLAN - RAILING END TRANSITION
(Showing Bars SV and Bars SSI) (Bars SP, SR, Noise Wall & Reinforcement not shown for Clarity)
1. This railing has been structurally evaluated to be equivalent or greater in strength to a safety shape/Noise Wall combination railing which has been crash tested to NCHRP Report 350 TL-4 Criteria.

2. CONSTRUCTION REQUIREMENTS: Construct the Traffic Railing/Noise Wall and joints plumb; do not construct the Traffic Railing/Noise Wall perpendicular to the roadway surface. Slip forming is not permitted.

3. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for more aggressive environments. Concrete will be in accordance with Specification Section 356.

4. Construct 3⁄4" Open Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown. 3⁄4" Open Joint locations are to coincide with 3⁄4" Expansion Joints in footings.

5. Construct 3⁄4" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3⁄4" Open Joints and/or Begin or End Traffic Railing/Noise Wall. V-Groove locations are to coincide with V-Groove locations in footings.

6. 14'-0" Noise Wall End Taper is required when Railing/Noise Wall is adjacent to an 8'-0" Traffic Railing/Noise Wall End Taper is provided (see Index No. 5210 for details). See Roadway Plans for Traffic Railing/Noise Wall End Treatment.

7. Work this Standard Drawing with Index No. 5210 - Traffic Railing/Noise Wall (8'-0") and one or more of the following:
   a. Index No. 5213 - Traffic Railing/Noise Wall T-Shaped Spread Footing.
   b. Index No. 5214 - Traffic Railing/Noise Wall L-Shaped Spread Footing or
   c. Index No. 5215 - Traffic Railing/Noise Wall Trench Footing.

TRAFFIC RAILING/NOISE WALL NOTES

ELEVATION OF INSIDE FACE OF TRAFFIC RAILING/NOISE WALL
(Reinforcing Steel not shown for clarity)
(T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)

PLAN (Reinforcing Steel not shown for clarity)
(T-Shaped Spread Footing Shown, L-Shaped Spread Footing and Trench Footing Similar)
### DESIGN STANDARDS

**TRAFFIC RAILING/NOISE WALL (14'-0'')**

**DESCRIPTION:**

- **ELEVATION OF TRAFFIC RAILING/NOISE WALL REINFORCING STEEL**
  - Bars 5S1 in Railing not shown for clarity.

- **ELEVATION OF TRAFFIC RAILING/NOISE WALL END TAPER**
  - Bars 5S1 in Railing not shown for clarity.

**NOTES:**

1. Field Cut Bars 5R & 5S1 in Noise Wall End Taper as required to maintain minimum cover.
2. See Index Nos. 5213, 5214 and 5215 for footing reinforcement.
3. ½ Open Joint may be omitted when 8'-0" Traffic Railing/Noise Wall End Taper is adjacent to a 14'-0" Traffic Railing/Noise Wall End Taper as shown on Sheet 1. See Index No. 5210 for reinforcement details and spacing. Bars 5S2 are not required when ½ Open Joint is omitted.
4. Bar spacing shown is along the Gutter Line.

**INDEX NO.:** 5211

**REVISION:** 07/01/13

**LAST REVISION:** 07/01/13

**TRAFFIC RAILING/NOISE WALL 2014**
DESCRIPTION:

1. See Index Nos. 5213, 5214 and 5215 for footing reinforcement.
2. At ½ open joints, plug the lower 3” portion of the open joint by filling it with mortar in accordance with Specification Section 400.
3. Fire hose access holes are required at or near fire hydrant locations. Field cut reinforcement as required to maintain 2” minimum cover at access holes. Locate fire hose access holes at least 10'-0" from ½ open joints when possible.

NOTES:

1. See Index Nos. 5213, 5214 and 5215 for footing reinforcement.
2. At ½ open joints, plug the lower 3” portion of the open joint by filling it with mortar in accordance with Specification Section 400.
3. Fire hose access holes are required at or near fire hydrant locations. Field cut reinforcement as required to maintain 2” minimum cover at access holes. Locate fire hose access holes at least 10'-0" from ½ open joints when possible.

CROSS REFERENCE:
For locations of Section A-A and Detail "A", see Sheet 1.
SECTION A.A
SECTION THRU JUNCTION SLAB, BARRIER WALL INLET AND RETAINING WALL
(TYPE 1) Junction Slab Shown, TYPE 2 Similar

NOTES
1. CONSTRUCTION REQUIREMENTS: Construct the Junction Slab level transversely and expansion joints plumb; do not construct the junction slab perpendicular to the roadway surface. Slip forming is not permitted.
2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class III concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.
3. DOWELS: Dowel Load Transfer Devices will be ASTM A 36 smooth round bar and hot-dip galvanized in accordance with Specification Section 963. Install Dowel Load Transfer Devices in accordance with Specification Section 350.
4. EXPANSION JOINTS: Construct 3/8" Expansion Joints plumb and perpendicular to the Gutter Line. Provide at 30'-0" max intervals as shown.
5. Provide two layers of 30 Lb. Roofing Felt on top and Expanded Polystyrene (EPS) sheet on sides.
6. V-GROOVES: Construct 1/4" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 3/8" Expansion Joints and/or Begin or End Junction Slab V-Groove locations are to coincide with V-Groove locations in the Railing/Noise Wall.
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 Railing/Noise Wall. See Section B-B for details.
8. Actual location & width vary depending on type of Retaining Wall used.
9. Field cut Bars 5A and 5B as required to maintain minimum cover for skewed Approach Slab.
10. Spacing shown is along the Gutter Line.
11. See Index No. 5210 for Bars 5V and 5S1. See Plans for Junction Slab details.
12. Use Class IV concrete for moderately or extremely aggressive environments.

CROSS REFERENCE:
For Section B-B and Detail "A", see Sheet 2.
**BILL OF REINFORCING STEEL**

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<td>5</td>
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<tr>
<td>C</td>
<td>5</td>
<td>4'-8&quot;</td>
<td>5'-8&quot;</td>
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</tr>
<tr>
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<td>5</td>
<td>4'-5&quot;</td>
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<tr>
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<td>U2</td>
<td>5</td>
<td>12'-10&quot;</td>
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<td>DOWEL</td>
<td>1&quot; Ø Smooth Bar</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
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**REINFORCING STEEL BENDING DIAGRAMS**

1. All bar dimensions in the bending diagrams are cut out as shown.
2. All reinforcing steel at the open joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-0".
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

**DESCRIPTION:**

- Bar 5T
- Bar 5U
- Bar 5V
- Bar 5S
- Bar 5L
- Bar 5A
- Bar 5S1 (Field Bent)
- Bar 5S2 (Type 1 Only)
- Bar 4S4
- Bar 4S3 (Type 1 Only)
- Bar 4S2 (Type 2 Only)

**REMARKS:**

- 1" Ø Dowel Load Transfer Devices at expansion joints (Type 1)
- Shoulder or Roadway Pavement (Full depth asphalt or See Note 5)
- 3½" (Type 1) 4½" (Type 2) (See Note 2)
- Slope Varies (See Note 1)
- Top of Junction Slab (Const. Joint Req'd.)
- Gutter Line
- Optional Keyway
- Railing/Noise Wall (Const. Joint Req'd.)
- End Stirrup Bar 5V
- End Stirrup Bar 5S
- Expanded Polystyrene (Side(s))
- 2 Layers 30 lbs. Roofing Felt
- Retaining Wall (Varies)
- See Note 3
- 6" Cover
- 2'-0" Cover

**SECTION B-B**

**TYPICAL SECTION THRU JUNCTION SLAB AND RETAINING WALL**

**ESTIMATED JUNCTION SLAB QUANTITIES**

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<th>ITEM</th>
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<td>Additional Rein. @ Expansion Joint</td>
<td>LB</td>
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**NOTES:**

1. Match Cross Slope of Travel Lane or Shoulder.
2. The 3½" & 4½" dimensions correspond to a maximum super-elevation of 6.25%. For super-elevations exceeding 6.25%, increase this dimension as required to match roadway super-elevation.
3. Actual width varies depending on type of Retaining Wall used.
4. See Index No. 5210 for Bars 5V and Bars 5S.
5. For Rigid Pavement (Concrete), Junction Slab may be thickened to match finished grade.

**CROSS REFERENCE:**

- For location of Section B-B, see Sheet 1.
CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb. Do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.

CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.

DOWELS: 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.

EXPANSION JOINTS: Construct 2" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.

6. Provide and install Preformed Expansion Joint Filler in accordance with Specification Section 932.

5. Construct 2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 2" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Noise Wall.

4. Construct 1/2" Expansion Joints plumb and perpendicular or radial to Gutter Line. Provide at 90'-0" maximum intervals as shown.

3. Provide 1/2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 1/2" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Noise Wall.

2. DOWELS: 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.

1. CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb. Do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.

NOTES:

1. CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb. Do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.

2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.

3. DOWELS: 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 1/2" Expansion Joints plumb and perpendicular or radial to 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 2" V-Grooves plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equally between 1/2" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with V-Groove locations in the Railing/Noise Wall.

7. FULL REQUIREMENTS: Shoulder or Roadway Realignment or Fill is required on top (1'-0" minimum depth) for the entire length of the spread footing on both sides of the Railing/Noise Wall. See Section B-B for details.

8. See Index No. 5210 for Bars 5V and 5S1.

9. Place 6" Bars 5B inside Stirrup Bars 5V as shown.

10. Spacing shown is along the Gutter Line.

11. Work this Standard Drawing with one or both of the following:

a. Index No. 5210 - Traffic Railing/Noise Wall (1'-0').

b. Index No. 5211 - Traffic Railing/Noise Wall (14'-0').

CROSS REFERENCE:

For Section B-B and Detail "A", see Sheet No. 2.
DESCRIPTION:

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. Lap splices for Bars 5B will be a minimum of 2'-2".
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

REINFORCING STEEL NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 6 ~ Bars 5B inside Stirrup Bars 5V as shown.
3. See Index No. 5210 for Bars 5V and Bars 5S1.
4. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

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<td>B</td>
<td>5</td>
<td>AS REQ</td>
</tr>
<tr>
<td>U</td>
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<td>11'-0&quot;</td>
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</table>

DOWEL 1" Ø Smooth Bar 2'-0"

1' Ø DOWEL

BAR 5U

REINFORCING STEEL (SHOWING BARS 5V, BARS 5S1 AND BARS 5B INSIDE OF STIRRUP BARS 5V)

PARTIAL END VIEW OF RAILING END TRANSITION FOR GUARDRAIL ATTACHMENT

DETAIL "A"

(TOP SHOWING LOCATIONS OF 1½ V-GROOVES AND ½ PREFORMED EXPANSION JOINT FILLER)

SECTION B-B

TYPICAL SECTION THRU SPREAD FOOTING

(BARS 5P, 5R AND 5S1 IN TRAFFIC RAILING/NOISE WALL NOT SHOWN FOR CLARITY)

NOTES:

1.  Match Cross Slope of Travel Lane or Shoulder.
2.  Place 6 ~ Bars 5B inside Stirrup Bars 5V as shown.
3.  See Index No. 5210 for Bars 5V and Bars 5S1.
4.  The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

ESTIMATED T-SHAPED SPREAD FOOTING QUANTITIES

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Note: The reinforcing steel quantity accounts for the difference between the shorter Stirrup Bars 5V for junction slabs or bridges and the longer Stirrup Bars 5V for spread footings.

CROSS REFERENCE:

For location of Section B-B, see Sheet 1.
PLAN - OPTION B
SPREAD FOOTING ADJACENT TO SKEWED APPROACH SLAB AND WITH BARRIER WALL INLET
(Option A Similar)

NOTES

1. CONSTRUCTION REQUIREMENTS: Construct the Spread Footing level transversely and expansion joints plumb; do not construct the spread footing perpendicular to the roadway surface. Slip forming is not permitted.

2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class IV concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 346.

3. DOWELS: 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 1⁄2" Expansion Joints plumb and perpendicular or radial to 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 plumb and provide at 30'-0" maximum intervals as shown. Space V-Grooves equitably between 1⁄2" Expansion Joints and/or Begin or End Spread Footing. V-Groove locations are to coincide with 1⁄2" Expansion Joint Spacing ~ 30'-0" Max. (See Note 6). V-Groove locations in the Railing/Noise Wall.

7. FILL REQUIREMENTS: Shoulder or Roadway Pavement and Fill is required on the traffic side of the spread footing for a distance of 4'-0" and the full length of the spread footing 3'-0" minimum depth, on the backside of the spread footing for Option A. Fill is required for a distance of 4'-0" on the backside of the spread footing and the full length of the spread footing 3'-0" minimum depth on the traffic side of the spread footing for Option B. See Typical Sections on Sheet Nos. 2 and 3 for details.

8. Spacing shown is along the Gutter Line.

9. Work this Standard Drawing with one or both of the following:
   a. Index No. 5210 - Traffic Railing/Noise Wall (8'-0').
   b. Index No. 5211 - Traffic Railing/Noise Wall (14'-0').

CROSS REFERENCE:
For Detail "A", see Sheet 3.
For Section 6-A and Estimated Quantities, see Sheet 4.
TYPICAL SECTION THRU SPREAD FOOTING - OPTION A
(Bars 5P, 5R and 5S1 in Traffic Railing/Noise Wall not shown for clarity)

NOTES:
1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 10 = Bars 5P inside Bars 5U1 as shown.
3. For Reinforcing Steel spacing, see Typical Section Thru Spread Footing - Option A this Sheet.
4. Provide 3" Lip when optional construction joint is used.

TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION A
(Reinforcing Steel not shown for clarity (See Note 3))
TYPICAL SECTION THRU SPREAD FOOTING - OPTION B
(Bars 5P, 5R and 5S in Traffic Railing/Noise Wall not shown for clarity)

NOTES:
1. Match Cross Slope of Travel Lane or Shoulder.
2. Place 10 - Bars 5B inside Bars 5U1 as shown.
3. Provide 3" lip when optional construction joint is used.
**TYPICAL SECTION THRU SPREAD FOOTING AND BARRIER WALL INLET - OPTION B**

(Bars 5P, 5R and 5S1 in Traffic Railing/Noise Wall not shown for clarity)

**NOTES:**

1. Place 10’ – Bars 5B inside Bars 5U1 as shown.
2. All reinforcing steel at the open joints will have a 2’ minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2’-2”.
4. Lap splices Bars 5T and 5V with 5U1 will be a minimum of 2’-2”.
5. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

**CROSS REFERENCE:**

For location of Section A-A, see Sheet 1.

---

**BILL OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>MARK</th>
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<th>LENGTH</th>
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<tr>
<td>B</td>
<td>5</td>
<td>AS REQ.</td>
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<tr>
<td>C</td>
<td>5</td>
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</tr>
<tr>
<td>S3</td>
<td>5</td>
<td>3'-10&quot;</td>
</tr>
<tr>
<td>S4</td>
<td>5</td>
<td>4'-3&quot;</td>
</tr>
<tr>
<td>T</td>
<td>5</td>
<td>6'-2&quot;</td>
</tr>
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<td>U1</td>
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<td>U2</td>
<td>5</td>
<td>12'-11&quot;</td>
</tr>
<tr>
<td>U3</td>
<td>5</td>
<td>12'-10&quot;</td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>2'-10&quot;</td>
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**REINFORCING STEEL BENDING DIAGRAMS**

**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. Lap splices for Bars 5B will be a minimum of 2’-2”.
4. Lap splices Bars 5T and 5V with 5U1 will be a minimum of 2’-2”.
5. The Contractor may use Welded Wire Reinforcement (WWR) when approved by the Engineer. WWR must consist of Deformed wire meeting the requirements of Specification Section 931.

---

**IRESTIMATED L-SHAPED SPREAD FOOTING QUANTITIES**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>Concrete (Footi)</td>
<td>CY/FT</td>
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<tr>
<td>Reinforcing Steel (Typical)</td>
<td>LB/FT</td>
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<tr>
<td>Additional Rein. @ Expansion Joint</td>
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(Subtract 12.88 lb/ft from typical reinforcing steel quantity shown on Index No. 5210 to account for the absence of Stirrup Bars 5V and 5S1 in L-Shaped Spread Footings.)

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**SECTION A-A**

**REFERENCE:**

For location of Section A-A, see Sheet 1.
REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

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<td>A</td>
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<td>SW</td>
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<td>B</td>
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<tr>
<td>V</td>
<td>3&quot;</td>
<td>1'-0&quot;</td>
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<tr>
<td>DOWEL</td>
<td>1&quot; Ø Smooth Bar</td>
<td>2'-0&quot;</td>
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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. Lap splices for Bars 5B will be a minimum of 2'-2".
4. Lap splice Bars 5T and 5V with 5U1 as shown.
5. Lap splices for Bars 5B will be a minimum of 2'-2".
6. The Contractor may use Welded Wire Reinforcement (WWR) when minimum of 2'-2" cover.
7. The Contractor must consist of Deformed wire meeting the requirements of Specification Section 931.

NOTES
1. CONSTRUCTION REQUIREMENTS: Construct the Trench Footing and expansion joints plumb, do not construct the Trench Footing perpendicular to the roadway surface. Slip forming is not permitted.
2. CONCRETE: Use Class II concrete for slightly aggressive environments. Use Class III concrete for moderately or extremely aggressive environments. Concrete will be in accordance with Specification Section 300.
3. DOWELS: 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 1/2" Expansion Joints plumb and perpendicular or radial to 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 plumb and 30'-0" maximum intervals as shown. Space V-Grooves equally between 1/2" Expansion Joints and/or Begin or End Trench Footing. V-Grooves locations are to coincide with V-Groove locations in the Railing/Noise Wall.
7. Fill REQUIREMENTS. Fill is required a distance of 4'-0" on both sides for the entire depth of the trench footing. See Typical Section for details.
8. Reach Crown Slope of Travel Lane or Shoulder.
9. Spacing shown is along the Souter Line.

ESTIMATED TRENCH FOOTING QUANTITIES

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<thead>
<tr>
<th>ITEM</th>
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ESTIMATED TRENCH FOOTING QUANTITIES

PLAN

EXPANSION JOINT DETAIL

(Trench Footing expansion joints are required at 1/2" open joints in Traffic Railing/Noise Wall)

TYPICAL SECTION THRU TRENCH FOOTING

(Bar 5P, 5R and 5S1 in Traffic Railing/Noise Wall not shown for clarity)