1. Construct the Trench Footing plumb, do not construct the Trench Footing perpendicular to the roadway surface.
2. Concrete will be in accordance with Specification Section 346.
   A. Class II concrete for slightly aggressive environments.
   B. Class VI concrete for moderately or extremely aggressive environments.
3. Dowel Load Transfer Devices will be hot-dip galvanized ASTM A36 smooth round bar or GFRP smooth round bars with a minimum shear strength of 22 ksi in accordance with ASTM D7617.
4. Shear Keys in footing are required when GFRP bars are used for Dowel Transfer Devices and are optional with steel dowel bars. Tongue Slope on Shear Key must be constant and between 5° to 45° from the transverse vertical plane.
5. Construct V-Grooves, Expansion joints, and perpendicular or radial to Gutter Line.
6. Construct V-Grooves plumb and provide at 30'-0" maximum intervals as shown.
7. 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. Match Cross Slope of travel lane or shoulder.
9. Spacing shown is along the Gutter Line.
10. Work this Index with one or both of the following:
   a. Index 521-510 - Concrete Barrier/Noise Wall (14'-0")
   b. Index 521-511 - Concrete Barrier/Noise Wall (14'-0")

**ESTIMATED TRENCH FOOTING QUANTITIES**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete (Footing)</td>
<td>CF/FT</td>
<td>0.241 0.446</td>
</tr>
<tr>
<td>Reinforcing Steel (Typical)</td>
<td>LB/FT</td>
<td>38.76 49.19</td>
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<tr>
<td>Additional Rein. @ Expansion Joint</td>
<td>LB</td>
<td>21.36 21.36</td>
</tr>
</tbody>
</table>

**DETAIL "A"**

1" Ø Dowel Load Transfer Devices at expansion joints (Typ.) (See Note 3)

**EXPANSION JOINT DETAIL**

(Trench Footing expansion joints are required at 6" open joints in Concrete Barrier/Noise Wall)

**TYPICAL SECTION THRU TRENCH FOOTING**

(Bars SR and SSI in Concrete Barrier /Noise Wall not shown for clarity)