DESIGNER NOTES - NOISE BARRIER DESIGN AND PLAN LAYOUT

THE FOLLOWING NOTES ARE PROVIDED AS GUIDELINES FOR THE DESIGNER'S USE TO PROPERLY LAY OUT AND DESIGN NOISE BARRIERS ACCORDING TO STANDARD-BASED DRAWING 99-1/10. REFER TO NDS-1/09 SHEET 4 OF 13 FOR AN EXAMPLE NOISE BARRIER PLAN AND ELEVATION.

1. Establish the horizontal geometry and stationing for the centerline of the noise barrier alignment using the preliminary data from the project noise analysis report.

2. Using a combination of type A, B, C, D, E, F, or G posts, lay out the initial noise barrier alignment along the roadway centerline. Keep the centerline of the barrier panels as close as possible to the roadway centerline. NDS-1/09 SHEETS 8 & 9 OF 13 PROVIDE GUIDANCE AS TO POST DEFINITIONS.

- Type A: Posts permit deflection angles of 90° to 75°.
- Type B: Posts permit deflection angles from 52° to 75°.
- Type C: Posts permit deflection angles from 52° to 67°.
- Type E: Posts permit deflection angles equal to 60°.

3. Use the maximum post spacing of 24'-0" to the greatest extent possible. The minimum post spacing shall be 8'-0".

4. After the initial noise barrier alignment is complete, adjust post spacings and locations as necessary to avoid limited areas of poor soil and conflicts with utilities such as underground utilities, drainage facilities, etc.

5. When the wall crosses over drainage to Q.D. from a conduit under the roadway, place a catch basin at the end of the conduit and extend the conduit under the wall. When the wall crosses over drainage in rigid/structured systems, place a properly sized, 20'-0" minimum length section of conduit under the wall.

6. Determine the final ground elevation of the starting point at each post location as shown on NDS-1/09 SHEETS 4 & 12 OF 13.

7. Using the starting point elevation and the acoustic profile elevation from the project noise analysis report, determine the initial post height at each location. Place the bottom of post elevation 6'-8" above the starting point, and then round off the post height to the nearest foot. The final post height must exceed or exceed the acoustic profile elevation.

8. Check and adjust adjacent post heights and elevations as necessary to limit the change in the top of barrier elevation to a maximum of 1'-0" at any post. Elevation changes can exceed 1'-0" AT TYPE C AND TYPE E POSTS. IN RELATIVELY FLAT TERRAIN WITH CROSS-SLOPES 1%-9%, PROVIDE A COHESIVE TOP OF BARRIER ELEVATION FOR A MINIMUM OF 96'-0".

9. For posts with non-integral caps, adjust the final post height to provide for the non-integral cap addition. NDS-1/09 SHEET 7 OF 13.

10. The precast concrete posts are limited to a maximum height based on the post spacing as shown on NDS-1/09 SHEETS 8 & 9 OF 13. Check the initial post heights to determine if they exceed the maximum heights shown on the design tables. If the post height exceeds the maximum allowed, either decrease the post spacing until the final post height is acceptable, or place the noise barrier on an earth berm as shown on NDS-1/09 SHEET 2 OF 13 TO DECREASE THE POST HEIGHT REQUIRED.

11. Layout additional lengths of noise barrier to provide transition sections at each end that step the barrier down in 2'-0" increments to a height of 1'-0" above the top of barrier elevation below the adjacent roadway elevation, end the barrier when the top of grade barrier elevation is 5'-0" above the elevation of the adjacent roadway.

12. Except for transition sections, check and adjust the barrier height as necessary to provide a minimum post height of 8'-0" 17'-0" minimum above the final ground line.

13. If the noise barrier is located in terrain with a cross-slope 5'-0", decrease the post spacing and/or use step blocks as necessary to limit the maximum post deflection angle. The alternative, place the noise barrier on an earth berm as shown on NDS-1/09 SHEET 2 OF 13 TO DECREASE THE CROSS-SLOPE RATE.

14. If the actual panel, bury depth or ground back slope exceeds the allowable values shown in the table, either decrease the post spacing, use step blocks, or decrease the max. height. Set the top of drilled shaft elevation using a standard 30'-0" base plate or drilled shaft. Set the top of drilled shaft elevation using the following equation:

   \[ \text{Top of Drilled Shaft Elevation (TSE) = Bottom of Barrier Elevation (BRE) + Base Plate Thickness (BPT) + Cap Dimension (GAP)} \]

15. If the calculated design length of a 30'-0" diameter drilled shaft exceeds 90'-0", decrease the post spacing until the 30'-0" diameter drilled shaft length is less than or equal to 90'-0". As an alternative, to decrease the post spacing, obtain approval from the root office of structural engineers for the use of a longer diameter drilled shaft.
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<tr>
<th>NOISE WALL 1</th>
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<th>NOISE WALL 3</th>
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**NOTE:** Drilled shafts to be included with item special - noise barrier for payment.