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### 3.2.12 Noise Walls

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The noise wall design process is described in [OD DM 11D-2](#). In general, the Office of Design is responsible for the noise wall geometry, and the OBS is responsible for the structural design. The wall type may be pre-determined by aesthetic guidelines and will require coordination between the Office of Design, the District and the Office of Bridges and Structures. Consistent with the selected wall type, noise wall geometry including horizontal alignment, top of wall profile, bottom of wall profile and proposed grading surface will be provided by the Office of Design.

The preliminary bridge design engineer will initiate the structural design process, including design number assignment and creation of TSL. Preliminary design shall include several responsibilities:

- Verify that the proposed geometry is consistent with the wall type and structural design needs.

A common noise wall type may be a precast column/panel system with 4 foot height full panels and 2 foot high half panels. An “H” shaped concrete column (typical spacing on 16’-0 center to center) embedded into a drilled shaft will secure each end of the panels. Bends in the wall horizontal alignment can be accommodated at center column locations. Wall top profile steps up or down should be made in two foot increments, except in some cases at the end of the wall where a 4 foot top step can be used. If a half panel is required, it is typically placed at the bottom. However, in final design panel positions may be shifted to accommodate final details or aesthetics. One foot of panel embedment below proposed ground surface is desired (6 inches min.) to reduce the possibility of gaps forming under the wall.

- Verify horizontal alignment adequacy with respect to Vehicle Collision Force guidelines listed in AASHTO LRFD Section 15.8.4: Design of Sound Barriers (see Commentary).

Cases where vehicle collision forces need not be considered are summarized below.

- Noise walls located beyond the acceptable clear zone.
- Noise wall/barrier rail systems within the clear zone that have been successfully crash tested.
- Noise walls behind a crashworthy traffic railing with a setback of more than 4.0 feet.
- Noise walls or portions thereof at locations where the collapse of the wall has minimal safety consequences, as determined by the Owner.

The typical noise wall precast column/panel design is not conducive to collision force design. If AASHTO guidelines would require consideration of vehicular collision force in the design, the preliminary designer should coordinate with the Office of Design to determine an acceptable solution.

- Verify that the noise wall does not conflict with utilities

Depending on the confidence level of survey data, a request to have the utility depth and location potholed at the crossing may be prudent. Input from the utility owner may also be requested if there is a question relative to the adequacy of design vertical or horizontal clearance. In some cases, utilities may need to be relocated. To avoid conflicts with drilled shafts in precast column and panel designs, a “utility bridge” can be considered. In other cases the utility can pass under

the noise wall panels between drilled shafts without being impacted (a minimum of 2 feet of vertical clearance is desired, but less can be considered on a case by case basis).

- Verify that surface water drainage is addressed
- Review design to identify spilt profiles with differential grading

It is desired to keep the difference in proposed grade on each side of a wall to less than 2 feet. When proposed grade differences greater than 2 feet are required, the noise wall will also need to function as a retaining wall. These areas should be noted on the TSL.

- Additional coordination will be required between OBS and OD when a noise wall is located in close proximity behind a retaining wall.