Index 521-511 Concrete Barrier/Noise Wall (14'-0")

Design Criteria

NCHRP Report 350 TL-4; ***AASHTO LRFD Bridge Design Specifications***; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

The Concrete Barrier / Noise Wall (14'-0") is a non-proprietary concrete barrier / noise wall combination that is based on the crash tested Concrete Barrier/ Noise Wall (8'-0"). It can only be used for ground mounted applications, usually within the clear zone, and cannot be used on bridges or retaining walls. This railing is first and foremost a barrier that also serves as a noise barrier. To preserve the crashworthiness of the design, this railing must be used in accordance with the requirements of ***SDG*** 6.7 for all applications.

Work this Index 521-511 - Concrete Barrier / Noise Wall (14'-0") with one or more of the following:

Index 521-513 - Concrete Barrier / Noise Wall T-Shaped Spread Footing,
Index 521-514 - Concrete Barrier / Noise Wall L-Shaped Spread Footing or
Index 521-515 - Concrete Barrier / Noise Wall Trench Footing

The details as shown for installing for 2" diameter conduits and associated Embedded Junction Boxes (EJBs) in traffic railings have been determined to be crashworthy in accordance with the requirements of ***NCHRP Report 350***, ***AASHTO Manual for Assessing Safety Hardware (MASH)*** and the ***AASHTO LRFD Bridge Design Specifications***. To preserve the crashworthiness of Concrete Barrier / Noise Walls, no more than two 2" diameter conduits and associated EJBs, as shown on Index 630-010, may be installed within the barrier portion (only) of the Concrete Barrier / Noise Walls.

Form liners providing a textured finish are permitted on the outside face of the Concrete Barrier / Noise Wall (14'-0") with the following provisions: (1) The maximum amplitude of the form liner on the lower 3'-0" section shall be limited to ½ " depth; (2) Any form liner used above 3'-0", must provide a thickened concrete section to maintain 2" cover. Full details of this thickened section and the form liner shall be provided in the plans. Form liners complying with the requirements of ***SDG*** 6.7 are allowed on the upper vertical portion of the inside face of the Concrete Barrier / Noise Wall but are not recommended.

Project specific details are required for the use of 10'-0" and 12'-0" tall Concrete Barrier / Noise Walls on footings. Base these details on Indexes 521-510 and 521-511.

Plan Content Requirements

In the Roadway Plans when the Concrete Barrier / Noise Wall (14'-0") is used for ground mounted applications:

In the Materials Note on the General Notes Sheet, specify the use of Class II or IV concrete in accordance with the environmental classification. See ***SDG*** 1.4.

Show and label, by name or Index number, the Concrete Barrier / Noise Wall (14'-0") on the Plan and Profile, Cross Section and other sheets as required. Include cross references to ***Standard Plans*** Index 521-510, 521-513, 521-514 and 521-515 as appropriate.

When the approach end of the Concrete Barrier / Noise Wall (14'-0") is within the roadway clear zone, use one of the following treatments:

- Provide a Concrete Barrier / Noise Wall (8'-0") End Taper adjacent to the Traffic Railing / Noise Wall (14'-0") End Taper. Continue the footing for Concrete Barrier/Noise Wall (14'-0") as the foundation for the Concrete Barrier/Noise Wall (8'-0") End Taper. Maintain the same slope for both tapers; approximately 1:8 (vert. : horiz.). Select the low end of the Concrete Barrier/Noise Wall (8’-0”) taper height to accommodate the height of the continuing Traffic Railing or Concrete Barrier, or if guardrail or crash cushions are required, include the Barrier End Transition as shown in Index 521-510.
- Flare the full height Concrete Barrier / Noise Wall (14'-0") out beyond the clear zone. Flare rates vary based on both design speed and highway application (i.e., Interstate, urban or rural installations). See ***Standard Plans*** and FDM for applicable flare rates.
- Terminate the full height Concrete Barrier / Noise Wall (14'-0") within the clear zone and shield the end with a wide crash cushion. Ensure the traffic face of the wide crash cushion is offset at least 24-inches from vertical face of Concrete Barrier / Noise Wall (14'-0").

When the trailing end of the Concrete Barrier / Noise Wall (14'-0") ends along the roadway within the clear zone of adjacent traffic, and the trailing end is not within the clear zone of opposing traffic, the Concrete Barrier / Noise Wall (14'-0") can remain full height all the way to the end or the End Taper can be used. Provide Guardrail or Concrete Barrier as required to shield hazards beyond the end of the Concrete Barrier / Noise Wall.

Include project specific details for 10'-0" and 12'-0" tall Concrete Barrier / Noise Walls.

Payment

Item number	Item Description	Unit Measure
521-72-25	Shoulder Concrete Barrier/Noise Wall, 14'	LF
521-72-22	Concrete Barrier/Noise Wall, 12’ (Shoulder)	LF
521-72-21	Concrete Barrier/Noise Wall, 10’ (Shoulder)	LF
630-2-16	Conduit, Furnish & Install, Embedded	LF
635-3-13	Junction Box, Furnish & Install, Embedded	EA