Index 411 Pier Protection Barrier

Design Criteria

AASHTO LRFD Bridge Design Specifications, 6th Edition; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

Use the Pier Protection Barrier to shield bridge piers that theoretically do not have sufficient strength to resist the ***LRFD*** equivalent static impact force and for other specialized applications. If the minimum set back requirements of this standard cannot be met, see ***SDG*** Chapter 2 for options.

If the bridge pier can withstand the ***LRFD*** equivalent static impact force, Index 400 or Index 410 would be applicable.

Although intended for shielding bridge piers, the Pier Protection Barrier can be used on a project specific basis to shield other critical roadside objects when deemed necessary or appropriate.

As used in this standard, setback distance is as defined by ***LRFD***. See ***PPM*** Volume 1, Chapter 4 for minimum clear zone width and lateral offset requirements.

Establish the offset from the Pier Protection Barrier to the bridge pier, column or pile bent based on project constraints.

Determine the required Pier Protection Barrier height, i.e. 42" or 54", in accordance with the requirements of ***LRFD*** and the ***SDG***.

Determine the appropriate limiting stations of the Pier Protection Barrier and its end treatment(s) using the Pier Protection Barrier Length of Advancement diagrams provided on the standard.

Select Pier Protection Barrier terminal treatment for design speeds greater than or equal to 50 mph from the following options:

a. Terminated outside of the clear zone of any approach traffic;

b. Terminated within a shielded location;

c. Terminal protection by the use of a crash cushion system; or,

d. Terminated in conjunction with a suitably designed transition to another barrier.

Determine the appropriate footing configuration(s) (T, Front Cantilever or Back Cantilever) for a continuous run of Pier Protection Barrier using the Pier Protection Barrier Footing Layout Schematics. Select the footing configuration(s) based on traffic control needs and locations of piers, pier footings, utilities, drainage structures, etc. as shown. Footing configurations along a continuous run of Pier Protection Barrier may be intermixed as shown on the standard.

If the existing adjacent pier footing is too shallow to provide the 6 inch minimum clearance between footings as shown, reduce the riser dimension between the barrier and the barrier footing and prepare project specific details to supplement the standard. The Pier Protection Barrier itself should not be modified, only its footing and riser should be modified adjacent to the pier footing so as to provide adequate clearance. A project specific shallow footing must provide comparable overturning and sliding resistance to the standard footing.

In absence of continuous concrete barrier, determine guardrail requirements in accordance with Indexes 400 and 410.

Plan Content Requirements

In the Structures or Roadway Plans:

Designate the Pier Protection Barrier height, footing configuration(s) and limiting stations on the Plan-Profile, Plan and Elevation and or Pier sheets, e.g.:

Begin 42" Pier Protection Barrier with Front Cantilever Footing, Sta. 100+00.00

Indicate Crash Wall locations (when required) and lengths on the Plan-Profile sheets. Designate Crash Wall height to match height of adjacent Pier Protection Barrier.

Show Cross Sections as required to locate Pier Protection Barrier, Crash Wall (when required) and footings adjacent to bridge piers, columns or footings, drainage structures, utilities, etc.

Prepare Traffic Control Plans to accommodate Pier Protection Barrier, Crash Wall (when required) and footing construction.

Prepare project specific footing and riser details as required.

Payment

Item number	Item description	Unit Measure
521-72-10	Shoulder Concrete Barrier Wall, Rigid Shoulder 42"	LF
521-72-11	Shoulder Concrete Barrier Wall, Rigid Shoulder 54"	LF