Washington State Department of Transportation
Bridge and Structures Office

# Design Memorandum

TO: All Design Section Staff
FROM: Amy Leland
DATE: April 19, 2024
SUBJECT: Standard Plan Barrier and Moment Slabs on Structures
NUMBER: 2024-03

This design memorandum provides clarification and revisions to the Bridge Design Manual M 23-50.22 and shall be considered active after the date of this memorandum. This memorandum provides clarification on use of Standard Concrete Barrier (C70.10 and C81.10) as well as additional information on moment slabs.

## Bridge Design Manual Revisions

Section 10.3.2.A General of the Bridge Design Manual is revised as follows:

*Revise Section 10.3.2.A with:*

### 10.3.2.A General

*The following modifications and additions shall be made. Content not reproduced here remains unchanged.*

~~The options included in standard plan C81.15 are limited to cast in place slab applications.~~

Standard Plan C81.15 was developed for cast-in-place construction. Many of the details may also work for precast design. Other considerations such as weight revisions, shipping and picking considerations, super-elevation considerations, base friction variations, moment slab and/or barrier jointing details would need to be addressed by the Engineer of Record with stamped calculations and plans.

*The following section shall be added:*

### 10.3.4 Miscellaneous Items

Standard Concrete Barrier (see Standard Plans C-70.10 & C-80.10) are only permitted on MSE walls and embankment slopes. Standard Concrete Barrier are prohibited for use on all other structures. See WSDOT Design Manual Chapter 1610 for additional placement and use criteria for standard concrete barrier.

For walls placed behind Differential Grade Concrete Barriers or Moment Slab Traffic Barrier, provide a minimum distance of 5-feet of widening with a 20:1 or flatter slope from the back of

barrier to the inner face of wall. Moment Slab Traffic Barrier which copes over the wall or wall facing are also allowed.

For design of walls (except for MSE walls) which are not integral with the barrier and are placed behind Differential Grade Concrete Barriers or Moment Slab Traffic Barrier, the minimum horizontal vehicular collision load (CT) for extreme event limit state shall be the Equivalent Static Load, ESL (10 kips for TL-3, 15 kips for TL-4, and 23 kips for TL-5).

## Background

This memo serves to provide clarity on the use conditions in current manuals and standards for Standard Concrete Barrier (C-70.10 and C-80.10). Design Manual Exhibit 1610-3, keynote 6 explicitly includes MSE walls and embankment slopes for the use of Standard Concrete Barrier. No other structure types are mentioned. Furthermore, Standard Plan C-70.10 and C-80.10 do not contain reference, mention, or schematics over any structure. This section of the Design Manual, paired with exclusion in the standards themselves, prohibits the use of the Standard Concrete Barrier on structure types not listed.

Slight modification to moment slab use criteria to allow precast moment slabs when friction is assessed by the user, as well as to provide additional metrics on use of moment slabs on structures, is provided.

Use of Moment Slab Traffic Barrier on or above a structure, other than when coping over a wall, represents a modification to WSDOT standards. Modifications are allowed in accordance with BDM 10.2.1 when reviewed and accepted for use within the state of Washington.

## Contact Information

If you have any questions regarding this policy memorandum, please contact:

Amy Leland (amy.leland@wsdot.wa.gov) at (360) 705-7181

Patrick O'Neill (Patrick.oneill@wsdot.wa.gov) at (360) 233-6294