



Road & Bridge Design Publications

Monthly Update – August 2026

Revisions for the month of **August** are listed and displayed below and will be included in projects submitted for the **December** letting. The special detail index for **July** will remain in effect.

Email road related questions to MDOT-Road-Design-Standards@Michigan.gov.

Email bridge related questions to MDOT-Bridge-Design-Standards@Michigan.gov.

Road Design Manual

Chapter 6:

Reformatted the full chapter to comply with ADA accessibility which includes changing from a two column format to a single column. No other content changes except for what's noted in this update.

6.03.09A1b: Superpave Mixture Number Designation and Thickness Guidelines:

In the HMA Mixture Selection Guidelines Table, increased the maximum application of Mixture #3 to 440 lbs/syd from 410 lbs/syd to provide more mix-type flexibility, increasing the maximum allowable lift thickness from 3.75" to 4". Also, revised the ASCRL Application Rate range from (255 to 425 lbs/syd) to (300 to 500 lbs/syd) which will ensure a 3" minimum thickness per application of 100 lbs/syd/inch.

6.03.09A1d: Asphalt Binder Selection:

Added a note to the Binder table to remind designers that the binder tables are not absolute fixed guidance and that there may be specific design rationale for binder adjustments.

Chapter 8:

Reformatted the full chapter to comply with ADA accessibility which includes changing from a two column format to a single column. No content changes.

Chapter 9:

Reformatted the full chapter to comply with ADA accessibility which includes changing from a two column format to a single column. No content changes.



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Bridge Design Guides

Please Note:

The Bridge Design Guides are currently being updated to use Arial font for compatibility with Bentley (GEOPAK) and Microsoft Office applications. In addition, sheet borders are being revised to align with current formatting standards. Titles that include symbols are also being revised to replace the symbols with words for increased accessibility. Reformatted guides are being issued as completed; however, they are not included in the Monthly Update publication unless substantive content changes are required. The original "Issued" and "Supersedes" dates are being retained for all reformatted guides in which the content has not changed.

6.29.06: Bridge Railing, 2 Tube:

Revised ED06 bar callout in Notes section.

Updates to the MDOT Cell Library, Sample Plans, and other automated tools may be required in tandem with some of this month's updates. Until such updates can be made, it is the designer's/detailer's responsibility to manually incorporate any necessary revisions to notes and plan details to reflect these revisions.

This document contains complex files, plans, and/or information. If you require assistance accessing this information or require it in an alternative format, contact the Michigan Department of Transportation's (MDOT) Americans with Disabilities Act (ADA) coordinator at www.Michigan.gov/MDOT-ADA.

MICHIGAN DESIGN MANUAL ROAD DESIGN

6.03.09 Hot Mix Asphalt (HMA) Mixture Selection Guidelines

(revised 8-24-2026)

This guide is to aid in the selection of Hot Mix Asphalt (HMA) mixtures, asphalt binders and Aggregate Wear Index values. It is the ultimate responsibility of the Region Soils/Materials Engineer to provide appropriate hot mix asphalt and thickness recommendations. Any questions regarding these guidelines should be addressed to either the HMA Unit or the Pavement Design Engineer in the Construction Field Services Division.

6.03.09A Rehabilitation, Reconstruction (R&R) and New Construction Projects

6.03.09A1 Mainline Paving

6.03.09A1a Mixture Selection

All mainline paving shall be composed of Superpave mixtures.

Computed Design BESALs (HMA Equivalent Single Axle Load) will be used to identify the appropriate Superpave mixture type.

Superpave Mix Type	Design BESAL (millions)
EL	Less than 0.3
EML	Between 0.3 and 3.0
EMH	Between 3.0 and 30.0
EH	Between 30.0 and 100.0
SMA	Between 10.0 and 100.0

SMA is to only be used as a top course mixture.

Design BESALs are calculated using the following information:

- Commercial Traffic
- Traffic Growth Rate
- Lane Distribution of Commercial Traffic
- BESAL Axle Load Equivalency for Flexible Pavement
- Total accumulated BESALs for 20 year design

The method for calculating ESALs for flexible pavements (BESALs) is explained in the **AASHTO Guide for Design of Pavement Structures**, 1993. Design BESALs should be requested from the Project Planning Section of the Project Planning Division. The Pavement Design Engineer of the Pavement Management Section of the Construction Field Services Division can provide an approximate BESAL value (for estimating purposes only). Show the 20 year design BESALs on the design plans.

6.03.09A1b Superpave Mixture Number Designation and Thickness Guidelines

After mixture selection has been determined, based on design BESALs, the mixture number for use in the various pavement courses can be determined. The mixture number will be 2, 3, 4 or 5 depending on the nominal maximum size aggregate. Following are the mixture numbers, minimum/maximum application rates and course type application:

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Mixture #	Minimum Application	Maximum Application	Course Application
2	435 lbs/syd	550 lbs/syd	Base
3	330 lbs/syd	440 lbs/syd	Base and/or Leveling
4	220 lbs/syd	275 lbs/syd	Leveling and/or Top
5	165 lbs/syd	220 lbs/syd	Top
SMA ($\frac{3}{8}$ " Nom. Max.)	165 lbs/syd	225 lbs/syd	Top
SMA ($\frac{1}{2}$ " Nom. Max.)	220 lbs/syd	275 lbs/syd	Top
ASCRL	300 lbs/syd	500 lbs/syd	Base

NOTES:

1. Estimated application rate of 110 lbs/syd. per inch of compacted thickness. When using GGSP contact the HMA Unit at the Construction Field Services Division for the estimated application rate. When using ASCRL the estimated application rate is 100 lbs/syd per inch of compacted thickness.
2. Pavement designs requiring greater thickness than the specified maximum will require multiple lifts.
3. Crush and Shape: Use a minimum of two lifts over crushed materials. A minimum of 220 lbs/syd for the first lift is required for construction purposes.
4. Rubblized Concrete: The first lift over the rubblized concrete will be a minimum of 220 lbs/syd. For freeways and divided highways, traffic should not be allowed on the rubblized section until at least two courses have been placed. In those situations where the rubblized roadway must be opened to traffic at the end of each day, traffic may be allowed on the first course provided there is a minimum thickness of 265 lbs/syd.

The following are the Superpave definitions for Top, Leveling and Base course. This definition should be referred to when making the asphalt binder and mixture selections:

- The Top and Leveling courses are defined as the mixture layers within 4 inches of the surface.
- The Base course is defined as all layers below 4 inches of the surface.
- For mixture layers which fall within the 4 inch threshold, If less than 25% of a mixture layer is within 4 inches of the surface, the mixture layer should be considered to be a base course.

Below are examples of Superpave Pay Items and descriptions:

- HMA 3EML - A leveling or base course with a minimum application rate of 330 lbs/syd on a project that has design BESALs between 3 and 30 million
- HMA 4EL - A top or leveling course with a minimum application rate of 220 lbs/syd on a project that has design BESALs less than 3 million

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6.03.09A1d Asphalt Binder Selection

The following pages contain the Asphalt Binder usage table for all Superpave mixtures and High Stress HMA. Asphalt Binders with the suffix P denotes that polymer modified performance grade binder is required. It is the responsibility of the designer to select the appropriate binder for each mixture and course. The selected binder (including the suffix P when applicable) needs to be clearly identified in the binder column of the HMA Application Estimate Table.

Metro, North, Grand, Bay, Southwest and University Region

Mixture Type	HMA Mainline and Ramps		High Stress HMA	
EMH [^] , EH, SMA	PG 70-28P PG 64-22*	Top & Leveling Course Base Course	PG 76-28P PG 64-22*	Top & Leveling Course Base Course
EML, EMH ^{^^}	PG 64-28 PG 58-22**	Top & Leveling Course Base Course	PG 70-28P PG 58-22**	Top & Leveling Course Base Course
EL	PG 58-28 PG 58-22**	Top & Leveling Course Base Course	PG 64-28 PG 58-22**	Top & Leveling Course Base Course

Superior Region

Mixture Type	HMA Mainline and Ramps		High Stress HMA	
EL, EML, EMH ^{^^}	PG 58-34 PG 58-28	Top & Leveling Course Base Course	PG 64-34P PG 58-28	Top & Leveling Course Base Course

[^] Greater than 10 Million ESALs

^{^^} Less than 10 Million ESALs

* Use PG 64-28 for North Region

** Use PG 58-28 for North Region

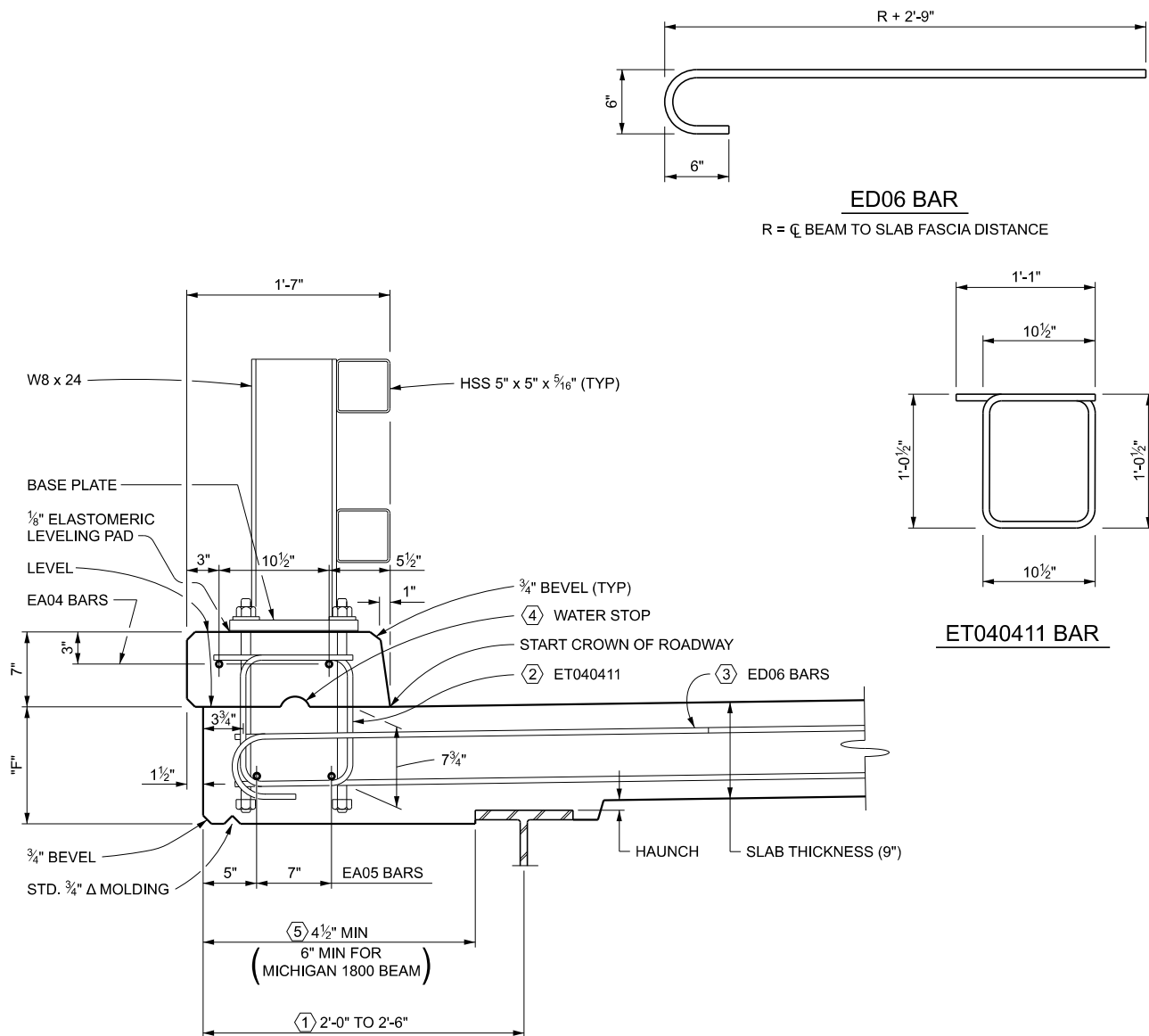
NOTES:

- For shoulders paved greater than or equal to 8 feet or in a separate operation, use PG 58-28 for top and leveling course and PG 58-22 for base course for all Regions
- For Temporary Roads, commercial and private Approaches, Wedging, and Hand Patching, use PG 64-22 for all Regions except Superior and North, use PG 58-28.
- This table represents standard selection guidance. Variations may occur subject to approval by the Bituminous Section, Pavement Design Engineer, or designated pavement design personnel.

DRAWN BY: BLT
 CHECKED BY: CWC
 APPROVED BY: BMW

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 BRIDGE RAILING, 2 TUBE

ISSUED: 08/24/26
 SUPERSEDES: 07/27/26



NOTES:

"F" CONSTANT EQUALS SLAB THICKNESS PLUS THICKEST FASCIA BEAM FLANGE PLUS 1/2" PLUS AMOUNT OF FASCIA BEAM DROP REQUIRED TO MAINTAIN MINIMUM SLAB THICKNESS AT CURB PLUS HAUNCH (1").

IF "F" BECOMES GREATER THAN 12" USE A HAUNCH DETAIL ON THE FASCIA SIDE OF THE BEAM SIMILAR TO THE HAUNCH DETAIL ON THE INTERIOR SIDE. ADDITIONAL REINFORCEMENT MAY BE REQUIRED IN THE AREA OVER THE BEAM FLANGE IF THE HAUNCH BECOMES EXCESSIVE.

THE DETAILED REINFORCEMENT IN THE SLAB (EA05 & ED06 BARS) IS THE MINIMUM FOR THE RAILING. THE DESIGN OF THE SLAB OVERHANG MAY REQUIRE ADDITIONAL REINFORCEMENT (OR INCREASING THE REINFORCEMENT AREA (DIAMETER) SHOWN). BARS WITH PREFIX "E" ARE TO BE EPOXY COATED.

FOR ADDITIONAL DETAILS OF RAILING, SEE STANDARD PLAN B-21-SERIES.

- (1) IT IS PREFERRED TO PROVIDE A MINIMUM OF 1'-0" OF CLEARANCE FROM THE ET BARS TO THE FASCIA BEAM CENTERLINE TO PERMIT SUPPORT OF THE SCREED RAIL ALONG THE TOP OF THE FASCIA BEAM. IF SUPERSTRUCTURE GEOMETRY DOES NOT ALLOW FOR THIS 1'-0" MINIMUM DISTANCE, ALTERNATE SCREED RAIL SUPPORT METHODS MAY BE REQUIRED. IF THIS SCENARIO APPLIES, CONTACT BOBS BRIDGE CONSTRUCTION TO DISCUSS ALTERNATE SCREED RAIL OPTIONS, BRIDGE DECK FINISHING OPTIONS, AND PROPOSED SUPERSTRUCTURE CONSTRUCTABILITY.
- (2) SPACE AT ALTERNATE TRANSVERSE SLAB BARS (1'-6" MAX). PLACE ADDITIONAL ET040411 BARS 9" EACH SIDE OF CL RAILING POST.
- (3) AT EACH POST PLACE 7 - ED06 BARS SPACED AT 9".
- (4) 2" HIGH x 4" WIDE (±). FORMING NOT REQUIRED.
- (5) 4 1/2" MINIMUM APPLIES TO CURVED GIRDERS ONLY.

PREPARED BY
 DESIGN DIVISION

6.29.06