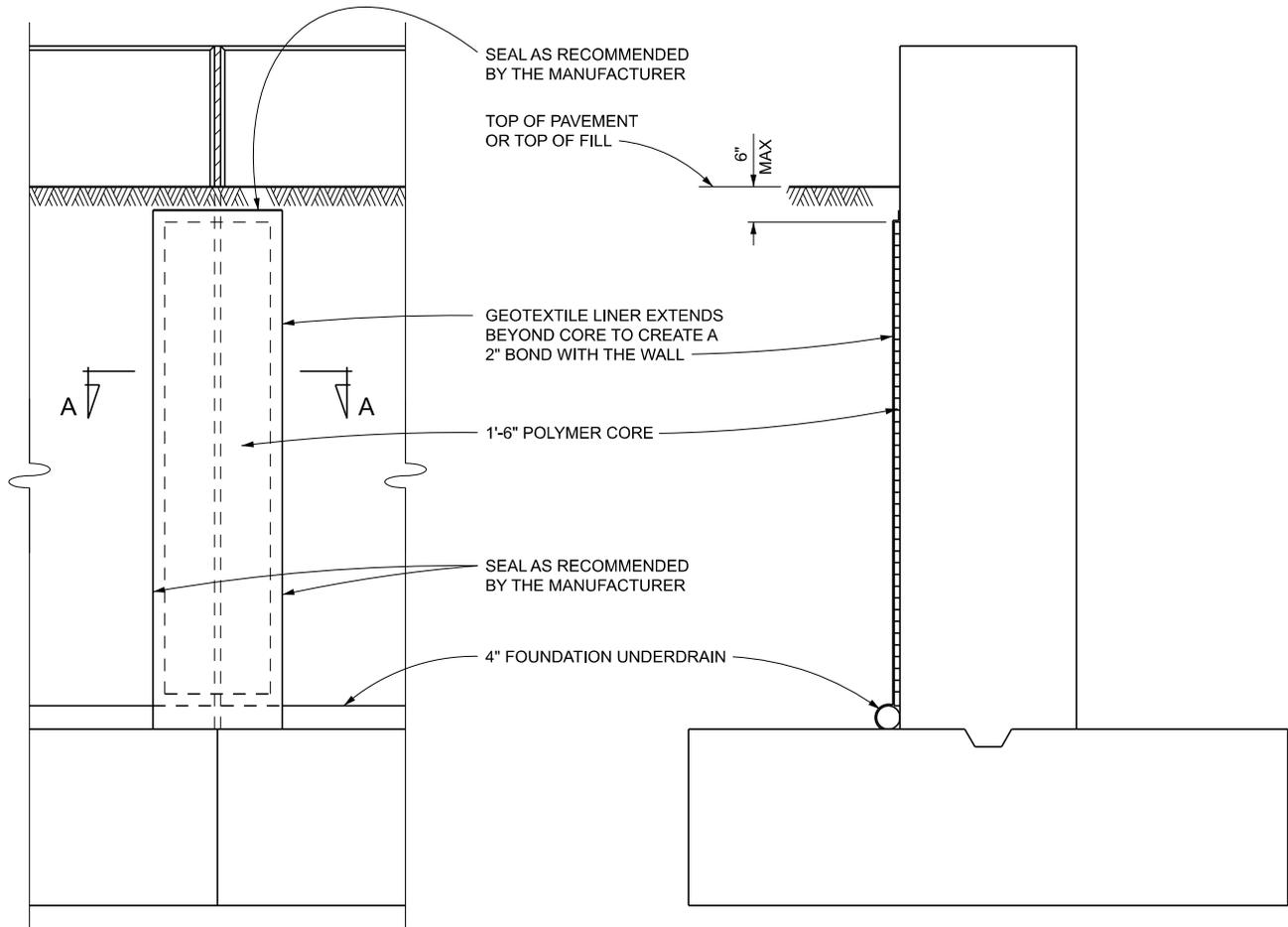


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MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 WALL EXPANSION JOINT DRAIN

ISSUED: 08/26/24
 SUPERSEDES: 06/25/12



WALL ELEVATION

WALL SECTION

NOTE TO DETAILER:

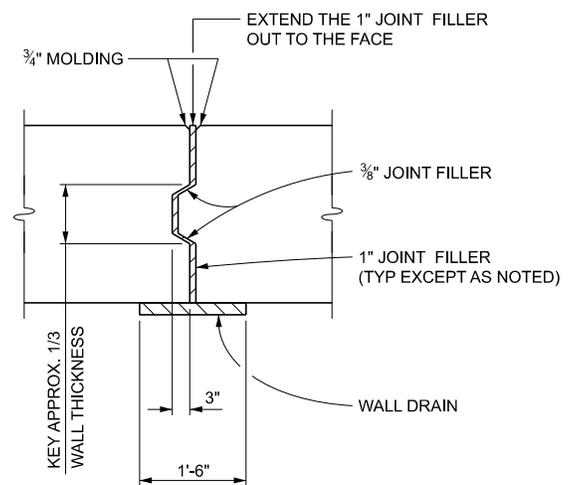
WALL DRAINS SHOULD BE USED AT EXPANSION JOINTS IN RETAINING WALLS AND FULL HEIGHT ABUTMENTS BUT SHOULD NOT BE PLACED ON STRUCTURES CROSSING WATERWAYS.

NOTES:

GEOCOMPOSITE DRAIN SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATION 910.05.

THE ITEM "WALL DRAIN" INCLUDES FURNISHING AND ATTACHING THE POLYMER CORE AND GEOTEXTILE LINER AS DETAILED.

THE FOUNDATION UNDERDRAIN SHALL BE PAID FOR SEPARATELY AS "UNDERDRAIN, FDN, 4 INCH."



SECTION A-A

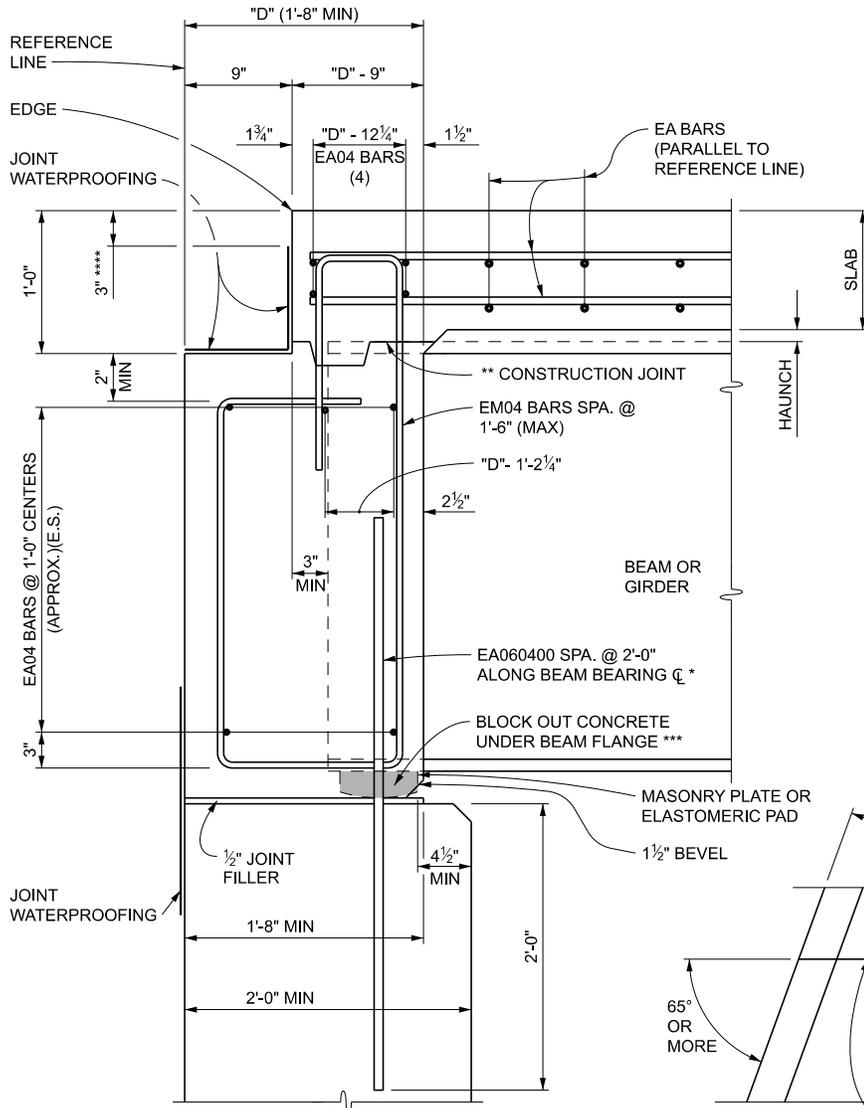
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5.20.02

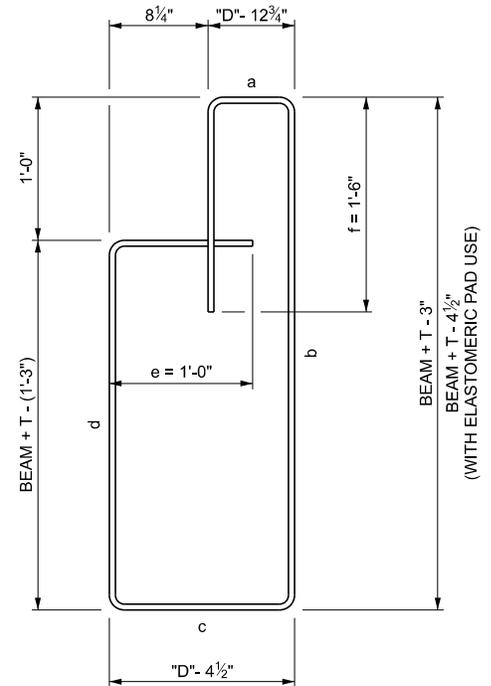
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 APPROVED BY: KCK

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 TYPICAL SECTION THRU DEPENDENT BACKWALL

ISSUED: 08/26/24
 SUPERSEDES: 06/24/24

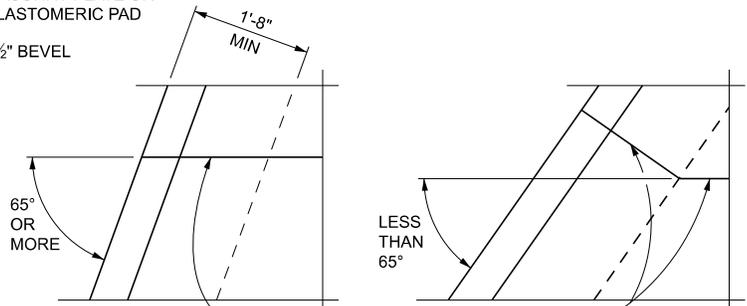


BACKWALL SECTION



EM04 BAR

NOTE: USE AN EK04 BAR WHERE THE BACKWALL DOES NOT INCLUDE A PAVEMENT SEAT.



CONSTRUCTION JOINT IN SLAB AND BACKWALL

BACKWALL JOINTS

PLAN NOTES:

CAST LOWER PORTION OF THE BACKWALL PRIOR TO PLACING DECK REINFORCEMENT. (USE WITH MANDATORY JOINT) (JOINT WATERPROOFING IS A PAY ITEM WHEN A CONSTRUCTION JOINT IS MANDATORY)

IF A CONSTRUCTION JOINT IS USED, CAST THE LOWER PORTION OF THE BACKWALL PRIOR TO PLACING DECK REINFORCEMENT. THERE WILL BE NO PAYMENT FOR THE REQUIRED JOINT WATERPROOFING. (USE WITH OPTIONAL JOINT).

**** ON THE VERTICAL FACE OF THE PAVEMENT SEAT, STOP THE JOINT WATERPROOFING 3" BELOW THE TOP OF DECK.

NOTE:

BARS WITH PREFIX "E" ARE TO BE EPOXY COATED.

THE BACKWALL THICKNESS "D" IS THE GREATER OF:

- 1) 1'-8" OR THE BEARING DIMENSION PLUS 1/2 THE BEARING WIDTH -- (FOR 90° CROSSINGS).
- 2) 1'-8" OR THE BEARING DIMENSION PLUS THE PRODUCT OF 1/2 FLANGE WIDTH AND COSINE ANGLE OF CROSSING --- (FOR SKEWED CROSSINGS)

HOLES IN WEB OF STRINGERS FOR BACKWALL REINFORCEMENT ON 90° JOBS SHOULD BE 1"Ø. INCREASE HOLE SIZE TO ACCOMMODATE REINFORCEMENT IN SKEWED BACKWALLS.

* USE FOR STEEL BEAM BRIDGES ONLY.

** THIS JOINT IS MANDATORY WHEN PLATE GIRDERS WITHOUT BEARING STIFFENERS ARE USED. OTHERWISE THE JOINT IS OPTIONAL. THE CONCRETE BELOW THE CONSTRUCTION JOINT IS PAID FOR AS "SUPERSTRUCTURE CONC, HIGH PERFORMANCE" AND THE CONCRETE ABOVE THE CONSTRUCTION JOINT IS PAID FOR AS "SUPERSTRUCTURE CONC, NIGHT CASTING, HIGH PERFORMANCE".

*** USE FOR SKEWED BRIDGES.

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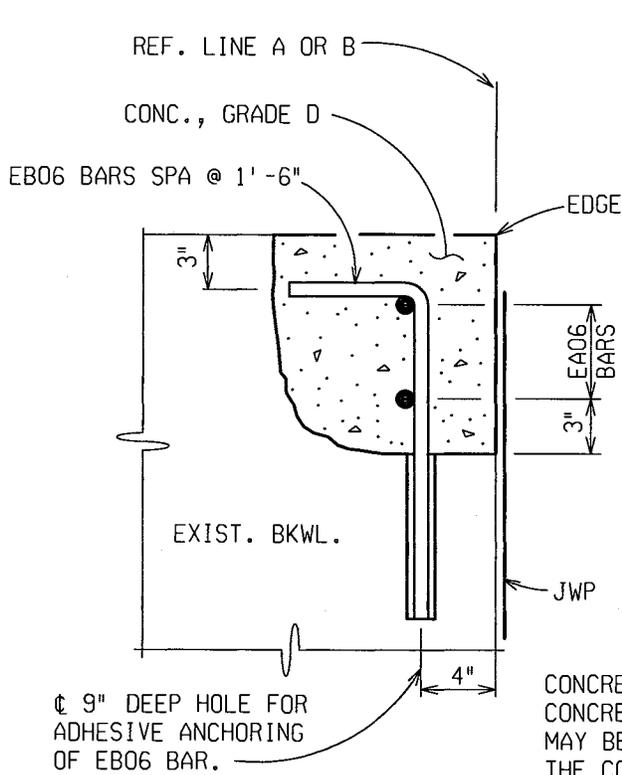
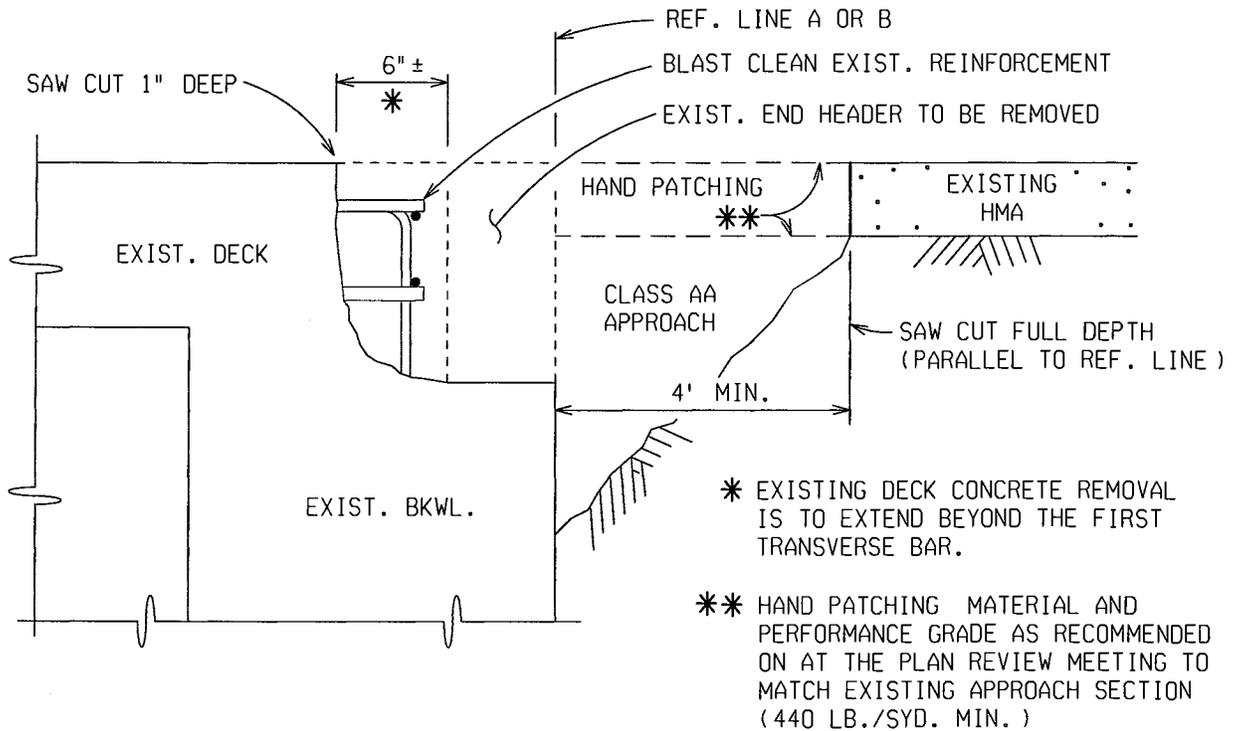
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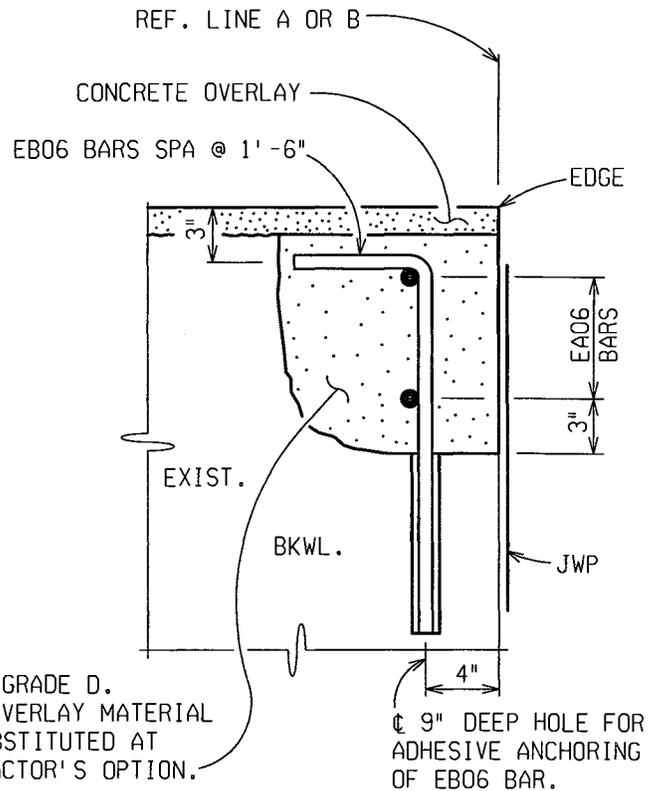
MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF HIGHWAY DEVELOPMENT

REPLACEMENT OF
 EXISTING END HEADER

ISSUED: 08/15/03
 SUPERSEDES: 11/27/01



WITHOUT OVERLAY

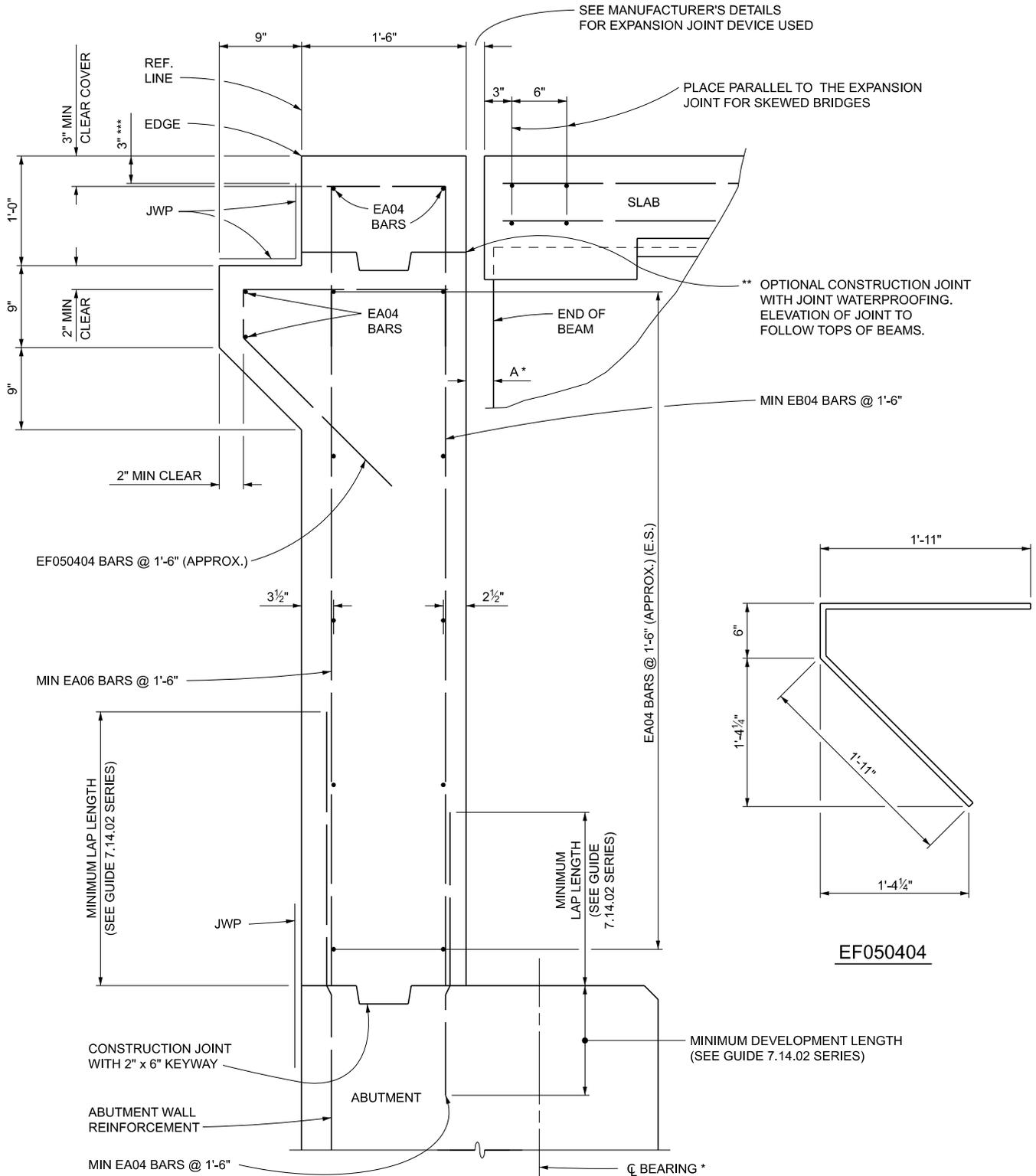


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MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 TYPICAL SECTION THRU
 INDEPENDENT BACKWALL

ISSUED: 08/26/24
 SUPERSEDES: 06/24/24



PLAN NOTE:
 *** ON THE VERTICAL FACE OF THE PAVEMENT SEAT, STOP THE JOINT WATERPROOFING 3" BELOW THE TOP OF BACKWALL.

** WHERE CONSTRUCTION JOINT IS USED, THERE WILL BE NO PAYMENT FOR THE REQUIRED JOINT WATERPROOFING. THE CONCRETE USED TO CONSTRUCT THE BACKWALL IS PAID FOR AS "SUBSTRUCTURE CONC, HIGH PERFORMANCE".

* TO ESTABLISH \bar{C} BEARING, USE "A" = $\frac{1}{2}$ TOTAL MOVEMENT PARALLEL TO \bar{C} BEAM PLUS 1". FOR SKEWED BRIDGES, "A" IS MEASURED AT CORNER OF FLANGE.

NOTE:
 BARS WITH PREFIX "E" ARE TO BE EPOXY COATED.

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MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 TYPICAL SECTION THRU
 INDEPENDENT BACKWALL WITH SLIDING SLAB

ISSUED: 12/26/23
 SUPERSEDES: 09/25/26

* EXTEND OGDC OR AGGREGATE BASE FROM BOTTOM OF SLEEPER SLAB FOR A DEPTH OF 36" MAX. NOT TO EXTEND BELOW THE TOP OF ABUTMENT WALL EXCEPT WHEN NECESSARY TO PROVIDE A MINIMUM OF 12" BELOW SLEEPER SLAB.

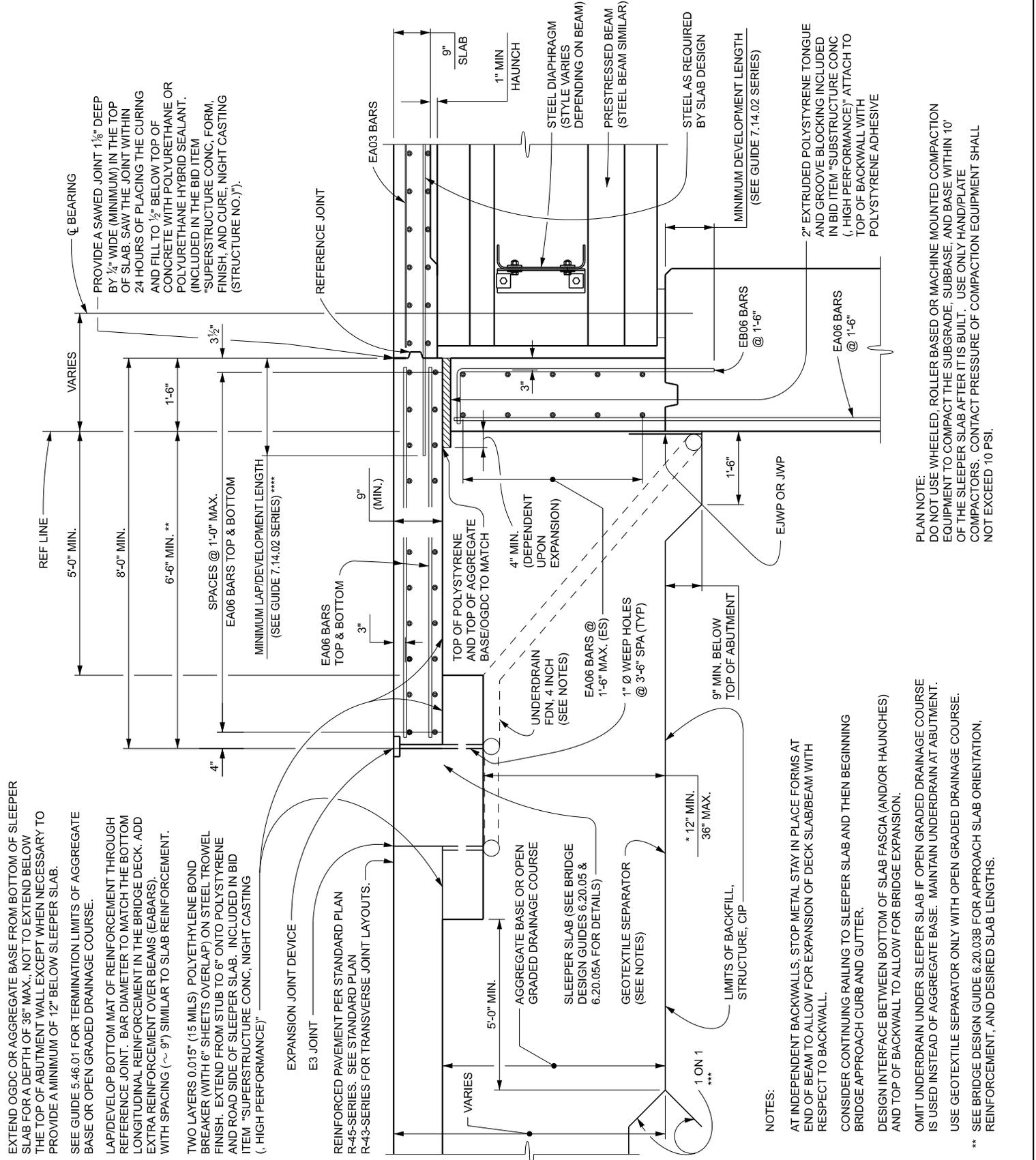
*** SEE GUIDE 5.46.01 FOR TERMINATION LIMITS OF AGGREGATE BASE OR OPEN GRADED DRAINAGE COURSE.

**** LAP/DEVELOP BOTTOM MAT OF REINFORCEMENT THROUGH REFERENCE JOINT. BAR DIAMETER TO MATCH THE BOTTOM LONGITUDINAL REINFORCEMENT IN THE BRIDGE DECK. ADD EXTRA REINFORCEMENT OVER BEAMS (EA06BARS) WITH SPACING (~9") SIMILAR TO SLAB REINFORCEMENT.

TWO LAYERS 0.015" (15 MILS) POLYETHYLENE BOND BREAKER (WITH 6" SHEETS OVERLAP) ON STEEL TROWEL FINISH. EXTEND FROM STUB TO 6" ONTO POLYSTYRENE AND ROAD SIDE OF SLEEPER SLAB. INCLUDED IN BID ITEM "SUPERSTRUCTURE CONC. NIGHT CASTING (- HIGH PERFORMANCE)".

EXPANSION JOINT DEVICE
 E3 JOINT

REINFORCED PAVEMENT PER STANDARD PLAN R-45-SERIES. SEE STANDARD PLAN R-43-SERIES FOR TRANSVERSE JOINT LAYOUTS.



NOTES:

AT INDEPENDENT BACKWALLS STOP METAL STAY IN PLACE FORMS AT END OF BEAM TO ALLOW FOR EXPANSION OF DECK SLAB/BEAM WITH RESPECT TO BACKWALL.

CONSIDER CONTINUING RAILING TO SLEEPER SLAB AND THEN BEGINNING BRIDGE APPROACH CURB AND GUTTER.

DESIGN INTERFACE BETWEEN BOTTOM OF SLAB FASCIA (AND/OR HAUNCHES) AND TOP OF BACKWALL TO ALLOW FOR BRIDGE EXPANSION.

OMIT UNDERDRAIN UNDER SLEEPER SLAB IF OPEN GRADED DRAINAGE COURSE IS USED INSTEAD OF AGGREGATE BASE. MAINTAIN UNDERDRAIN AT ABUTMENT.

USE GEOTEXTILE SEPARATOR ONLY WITH OPEN GRADED DRAINAGE COURSE.

** SEE BRIDGE DESIGN GUIDE 6.20.03B FOR APPROACH SLAB ORIENTATION, REINFORCEMENT, AND DESIRED SLAB LENGTHS.

PLAN NOTE:
 DO NOT USE WHEELED, ROLLER BASED OR MACHINE MOUNTED COMPACTION EQUIPMENT TO COMPACT THE SUBGRADE, SUBBASE, AND BASE WITHIN 10' OF THE SLEEPER SLAB AFTER IT IS BUILT. USE ONLY HAND/PLATE COMPACTION. CONTACT PRESSURE OF COMPACTION EQUIPMENT SHALL NOT EXCEED 10 PSI.

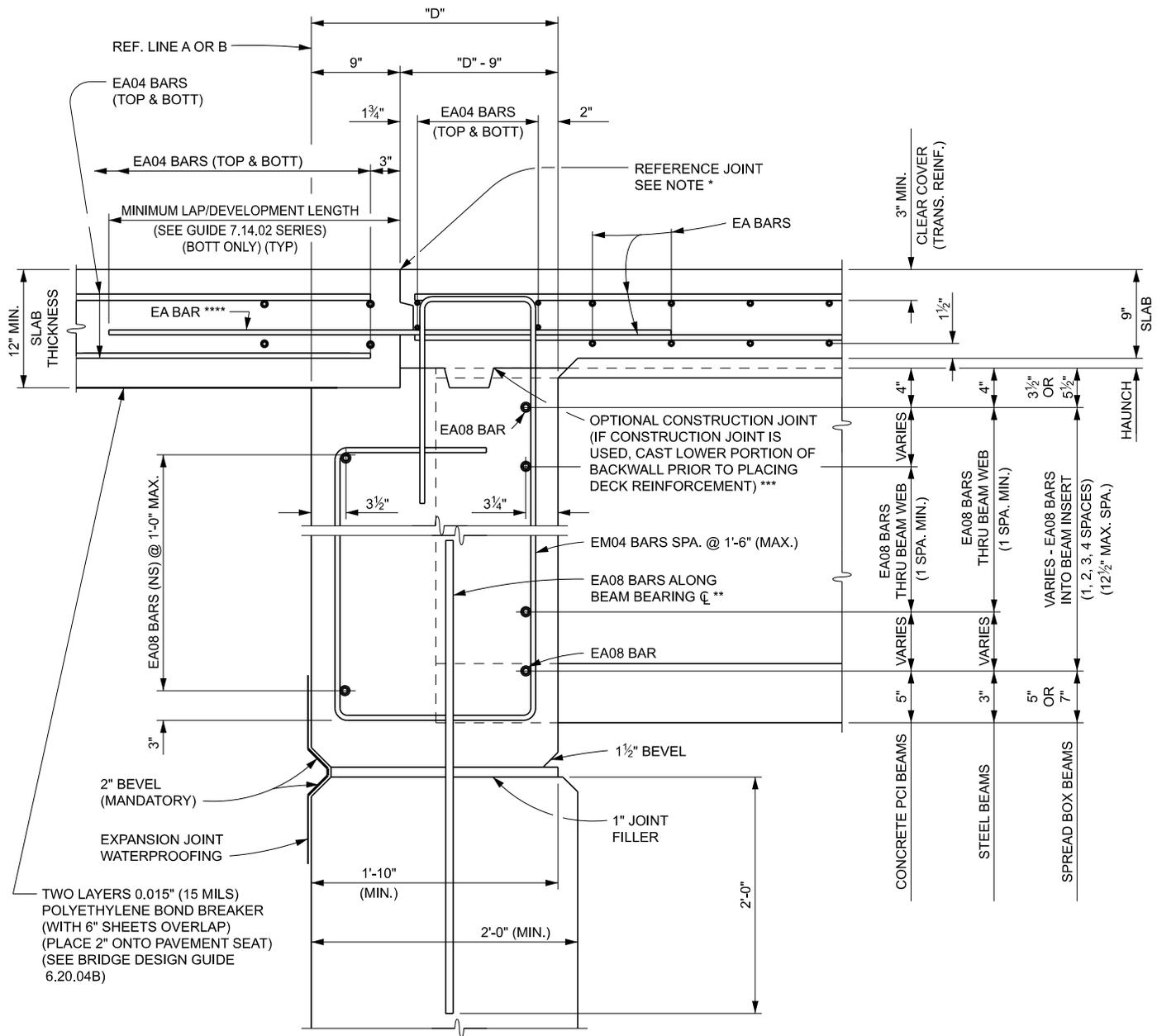
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6.20.03A

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MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT
 INTEGRAL AND SEMI-INTEGRAL
 ABUTMENT BACKWALL

ISSUED: 08/26/24
 SUPERSEDES: 12/26/23



PLAN NOTES:

- *** THIS JOINT IS MANDATORY WHEN PLATE GIRDERS WITHOUT BEARING STIFFENERS ARE USED. OTHERWISE THE JOINT IS OPTIONAL. THE CONCRETE BELOW THE CONSTRUCTION JOINT IS PAID FOR AS "SUPERSTRUCTURE CONC, HIGH PERFORMANCE" AND THE CONCRETE ABOVE THE CONSTRUCTION JOINT IS PAID FOR AS "SUPERSTRUCTURE CONC, NIGHT CASTING, HIGH PERFORMANCE".
- * PROVIDE A SAWED JOINT 1 1/8" DEEP BY 1/4" WIDE (MINIMUM) IN THE TOP OF SLAB. SAW THE JOINT WITHIN 24 HOURS OF PLACING THE CURING AND FILL TO 1/2" BELOW TOP OF CONCRETE WITH POLYURETHANE OR POLYURETHANE HYBRID SEALANT. (INCLUDED IN THE BID ITEM "SUPERSTRUCTURE CONC, FORM, FINISH, AND CURE, NIGHT CASTING (STRUCTURE NO.)").

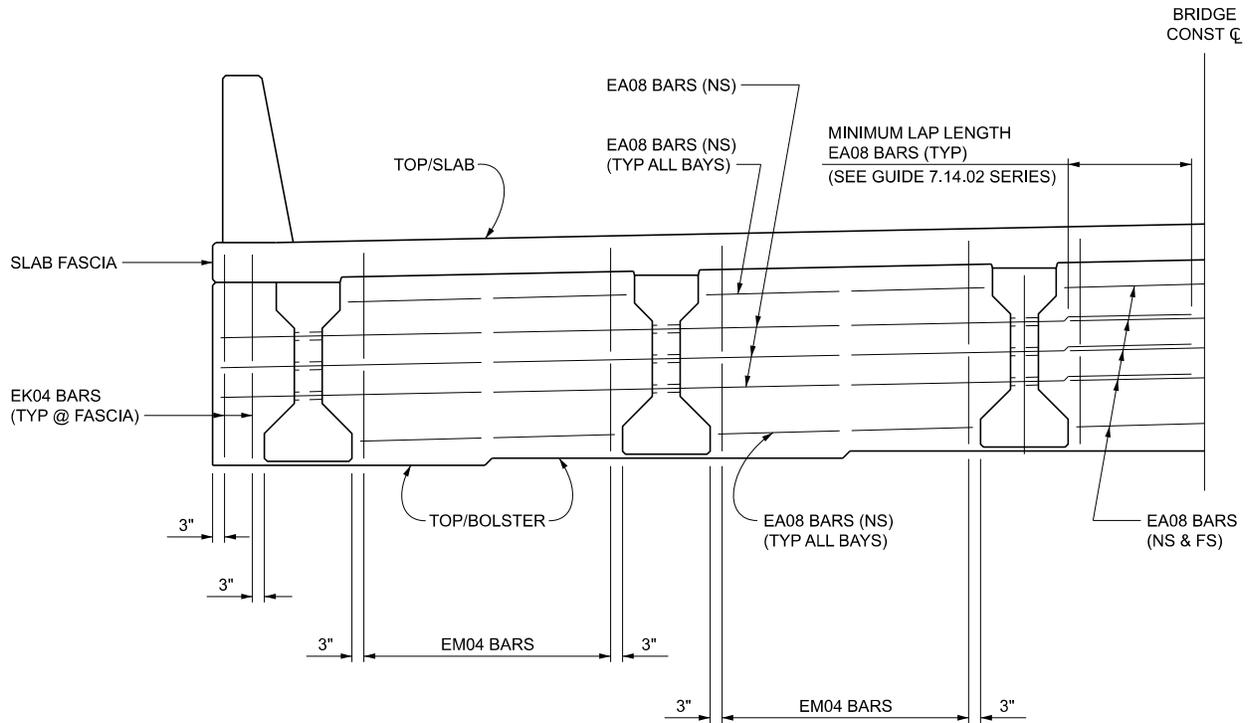
NOTES:

- USE INTEGRAL OR SEMI-INTERGRAL ABUTMENTS FOR STEEL BRIDGES LESS THAN 300' AND CONCRETE BRIDGES LESS THAN 400' IN LENGTH.
- *** LAP/DEVELOP BOTTOM MAT OF REINFORCEMENT THROUGH REFERENCE JOINT. BAR DIAMETER TO MATCH THE BOTTOM LONGITUDINAL REINFORCEMENT IN THE BRIDGE DECK. ADD EXTRA REINFORCEMENT OVER BEAMS (EABARS).
- ** USE FOR INTEGRAL ABUTMENT BRIDGES ONLY.
- SEMI-INTEGRAL ABUTMENTS SHOULD BE USED AT STREAM CROSSINGS.
- D = BACKWALL THICKNESS. SEE GUIDE 6.20.01 FOR DEFINITION.

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MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT
INTEGRAL AND SEMI-INTEGRAL ABUTMENT
PARTIAL BACKWALL DETAILS

ISSUED: 12/26/23
SUPERSEDES: 01/27/20



PARTIAL BACKWALL ELEVATION
SIMILAR FOR STEEL BEAM BRIDGES

NOTE:

GROUT BARS IN BEAMS PRIOR TO CASTING BACKWALL, ALL GROUT AND MATERIALS, LABOR AND EQUIPMENT REQUIRED TO PLACE THE GROUT ARE INCLUDED IN THE BID ITEM "SUPERSTRUCTURE CONC, NIGHT CASTING".

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6.20.04A