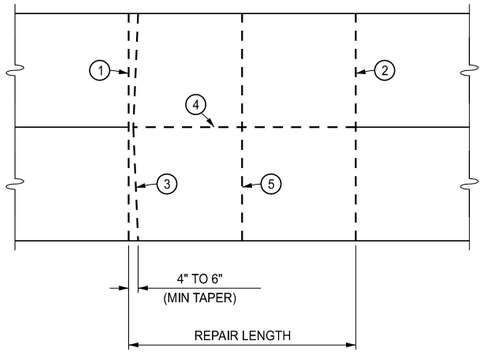


SAWING DIAGRAM FOR
FULL DEPTH CAST IN PLACE REPAIRS

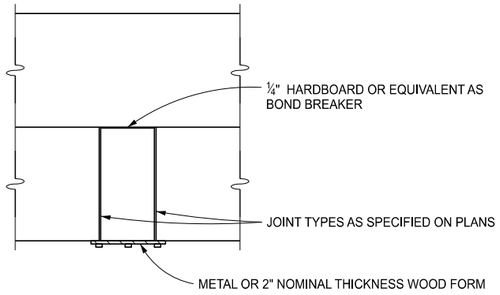
(1) & (2) THESE SAW CUTS ARE FULL DEPTH AND PERPENDICULAR TO THE EDGE OF THE ROADWAY, WITHIN A TOLERANCE OF 1". OVERCUTTING IS ALLOWED INTO ADJACENT SHOULDERS AND WITHIN THE LIMITS OF A SUBSEQUENT REPAIR TO THE ADJACENT LANE. OUTSIDE THESE LIMITS, OVERCUTTING IS NOT ALLOWED INTO ADJACENT NON-REINFORCED CONCRETE PAVEMENTS AND IS RESTRICTED TO 3" INTO ADJACENT REINFORCED CONCRETE PAVEMENTS.

(3) THIS FULL DEPTH SAW CUT IS MADE TO FACILITATE OPENING A TRENCH ACROSS THE SLAB TO RELIEVE COMPRESSION IN THE PAVEMENT PRIOR TO REMOVAL OF THE FAILED AREA. THIS SAW CUT MAY BE OMITTED PROVIDED NO SPALLING OF THE REMAINING CONCRETE OCCURS. IF SPALLING DOES OCCUR, THE CONTRACTOR WILL BE REQUIRED TO MAKE THIS SAW CUT ON SUBSEQUENT REPAIRS. WHEN THIS SAW CUT IS USED AND THE ADJACENT LANE IS NOT REPAIRED, NO OVERCUTTING INTO THAT LANE IS ALLOWED.

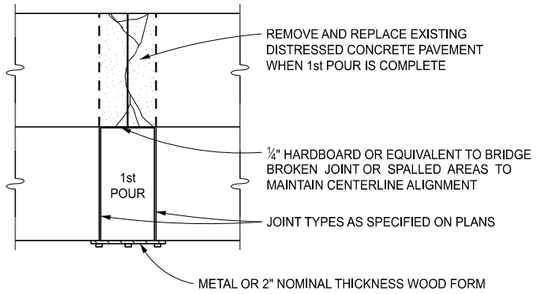
(4) THIS LONGITUDINAL FULL DEPTH SAW CUT IS MADE BETWEEN LANES OR BETWEEN ANY COMBINATION OF THE FOLLOWING: LANE, RAMP, CURB, CONCRETE SHOULDER, OR PARTIAL LANE WIDTH REPAIR.

(5) IF REQUIRED, INTERMEDIATE SAW CUTS MAY BE MADE TO REMOVE A SECTION OF PAVEMENT LANE WHICH IS OVER 5'-0" IN LENGTH, TO PERMIT LOADING INTO THE HAULING UNITS.

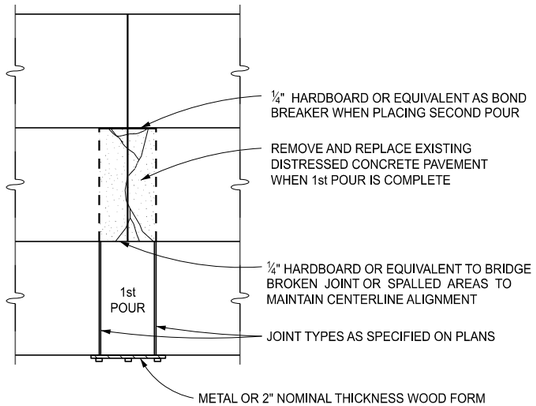
ADDITIONAL SAW CUTS, AT CONTRACTOR'S EXPENSE, MAY BE MADE INSIDE THE REPAIR LIMITS TO REDUCE 5'-0" BY 12'-0" OR LESS SLABS INTO SMALLER PIECES TO FACILITATE REMOVAL.



ONE LANE REPAIRS
(2 - LANE ROADWAY SHOWN)



ALL LANES REPAIRED
(2 - LANE ROADWAY SHOWN)



MORE THAN ONE LANE REPAIRED
BUT REPAIR LESS THAN FULL WIDTH
(3 - LANE ROADWAY SHOWN)

FORMING NOTES:

REMOVE STAKES USED TO HOLD HMA FILLER OR HARDBOARD IN PLACE DURING CONCRETE PLACEMENT BEFORE SCREEDING THE CONCRETE.

ADJACENT LANE REPAIRS MAY BE CAST INTEGRALLY, WHEN APPROVED BY THE ENGINEER.

FORMING REQUIREMENTS FOR
CAST-IN-PLACE REPAIRS 12'-0" OR LESS

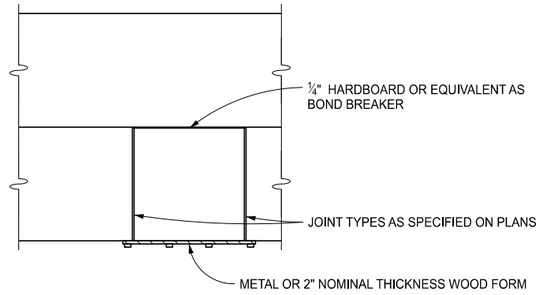
APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

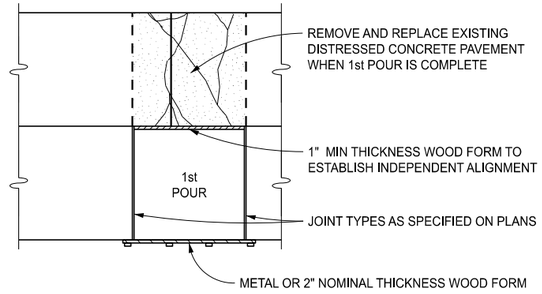
MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

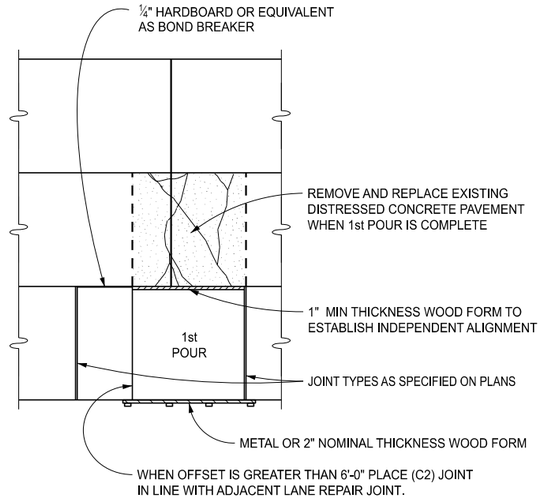
(SPECIAL DETAIL)	03/30/2026	R-44-G	SHEET
FHWA APPROVAL	PLAN DATE		1 OF 7



ONE LANE REPAIRS
(2 - LANE ROADWAY SHOWN)



ALL LANES REPAIRED
(2 - LANE ROADWAY SHOWN)



MORE THAN ONE LANE REPAIRED
BUT REPAIRS ARE OFFSET
(3 - LANE ROADWAY SHOWN)

FORMING NOTES:

WHERE REPAIRS LONGER THAN 12'-0" ARE REQUIRED, ESTABLISH A NEW GRADE ALONG THE OLD PAVEMENT INNER JOINT LINE, INDEPENDENT OF THE OLD PAVEMENT SURFACE, TO SCREED PERPENDICULAR TO THE CENTERLINE AND INDEPENDENT OF THE OLD PAVEMENT GRADE.

REMOVE STAKES USED TO HOLD HMA FILLER OR HARDBOARD IN PLACE DURING CONCRETE PLACEMENT BEFORE SCREEDING THE CONCRETE.

ADJACENT LANE REPAIRS MAY BE CAST INTEGRALLY, WHEN APPROVED BY THE ENGINEER.

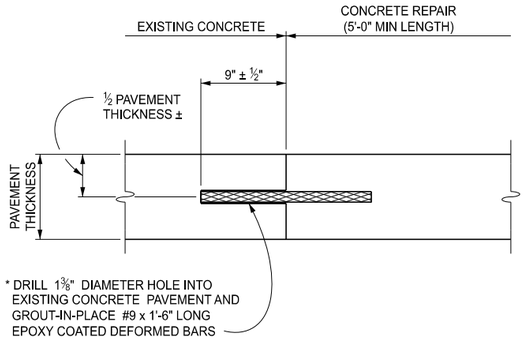
FORMING REQUIREMENTS FOR
CAST-IN-PLACE REPAIRS GREATER THAN 12'-0"

MDOT Michigan Department of Transportation
DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

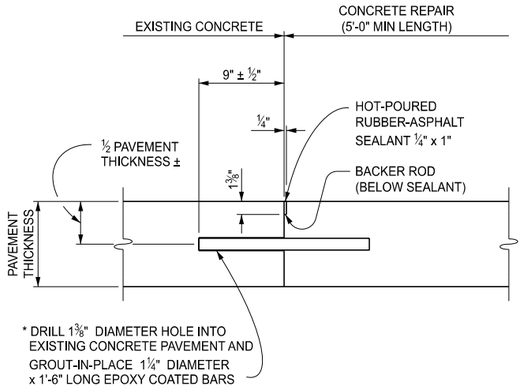
STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

(SPECIAL DETAIL)	03/30/2026	R-44-G	SHEET
FHWA APPROVAL	PLAN DATE		2 OF 7

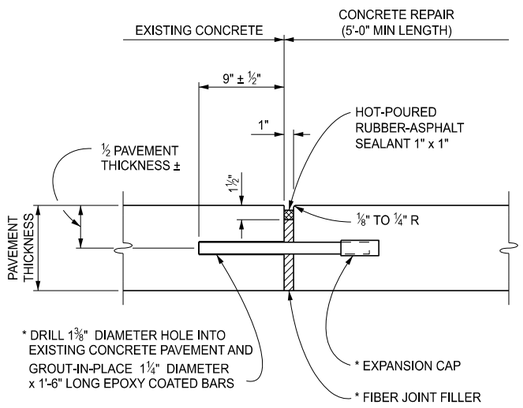
SECT



TIED JOINT, Trg



CONTRACTION JOINT, Crg

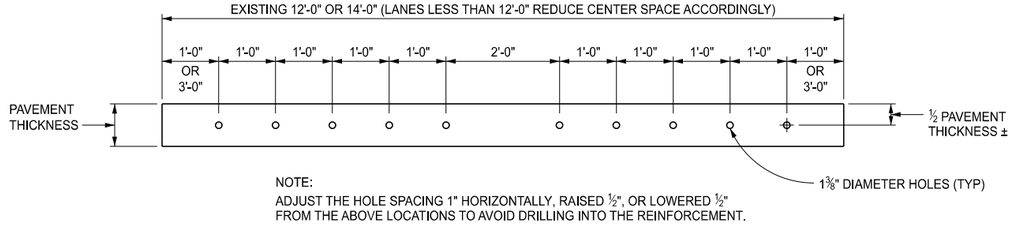


EXPANSION JOINT, Erg

* SEE SHEET 4 OF 7 FOR BAR SPACING
AND SHEET 7 OF 7 FOR NOTES.

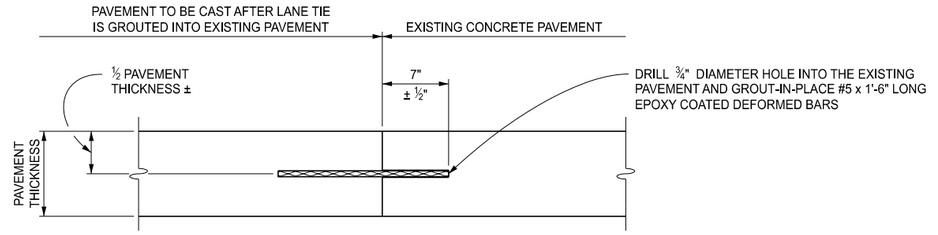
CAST-IN-PLACE REPAIR JOINTS USING GROUTED DOWEL OR DEFORMED BARS

MDOT Michigan Department of Transportation	STANDARD PLAN FOR: CONCRETE PAVEMENT REPAIR			
DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	(SPECIAL DETAIL) FHWA APPROVAL	03/30/2026 PLAN DATE	R-44-G	SHEET 3 OF 7

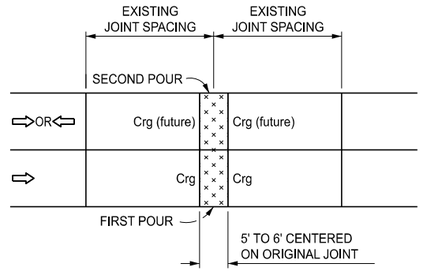


NOTE:
ADJUST THE HOLE SPACING 1" HORIZONTALLY, RAISED ½", OR LOWERED ½"
FROM THE ABOVE LOCATIONS TO AVOID DRILLING INTO THE REINFORCEMENT.

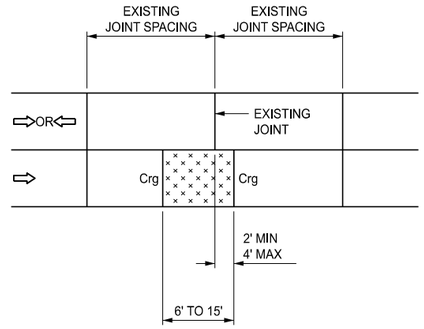
DOWEL OR DEFORMED BAR SPACING FOR CONCRETE REPAIRS



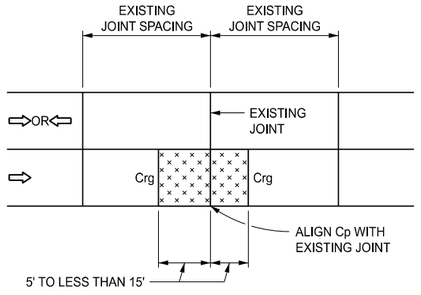
EPOXY ANCHORED LANE TIE



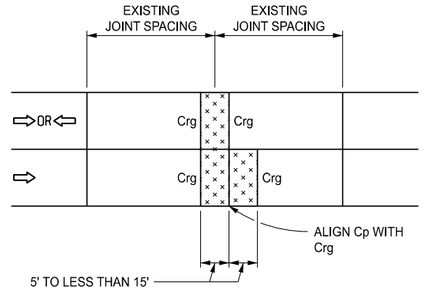
SINGLE LANE OR FULL WIDTH REPAIR



REPAIR LENGTH 6' - 15' WITH
ONE JOINT NEAR AN EXISTING JOINT
(SINGLE LANE REPAIR)



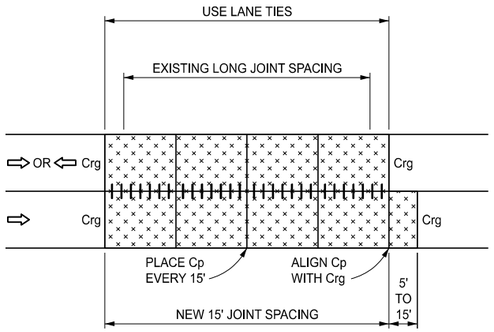
REPAIR LENGTHS OVER 15' WITH Cp JOINT
(SINGLE LANE REPAIR)



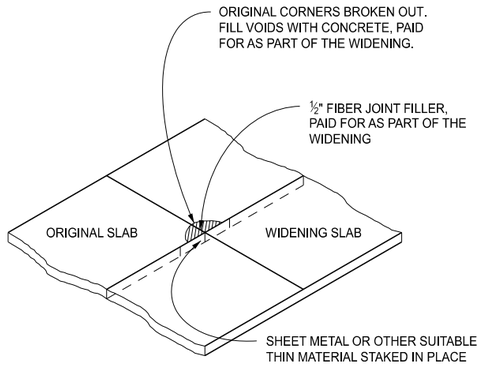
OFFSETTING LANE REPAIRS WITH Cp JOINT

MDOT Michigan Department of Transportation	STANDARD PLAN FOR: CONCRETE PAVEMENT REPAIR			
DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	(SPECIAL DETAIL) FHWA APPROVAL	03/30/2026 PLAN DATE	R-44-G	SHEET 4 OF 7

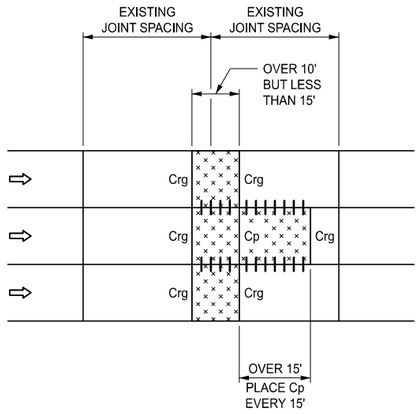
SECT



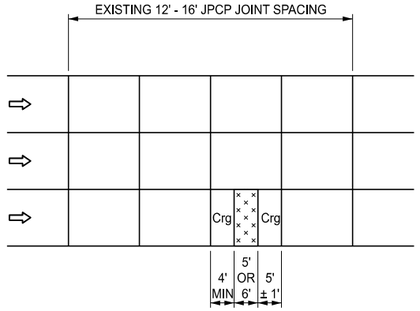
LONG REPAIR SHOWING
Cp JOINT ALIGNMENTS AND LANE TIES



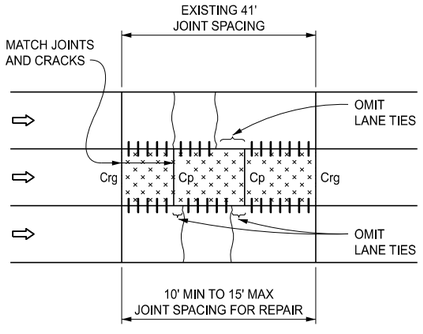
JOINT PATCH ADJACENT TO WIDENING SLAB



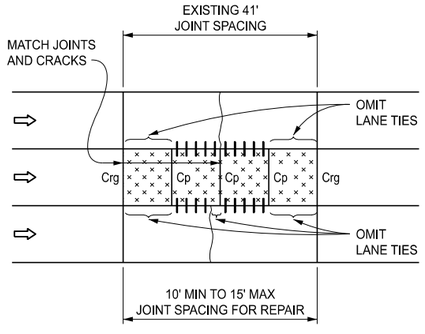
FULL WIDTH MULTI-LANE REPAIRS
WITH OFFSET IN ONE LANE



REPAIR OF 12' - 16' JPCP WITH
ONLY ONE MID-PANEL CRACK
(IF THE PANEL HAS MORE THAN ONE MID-PANEL CRACK
OR IF THE JOINT SPACING IS 12' REPLACE ENTIRE PANEL)
(SINGLE LANE OR FULL WIDTH REPAIR)

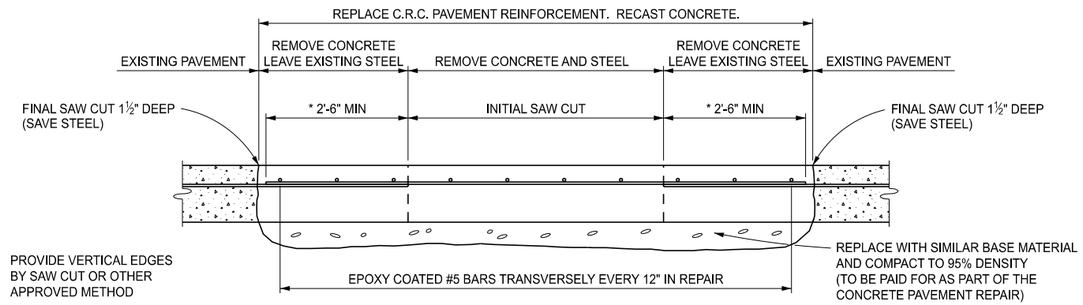


TWO CRACK PANEL REPAIR



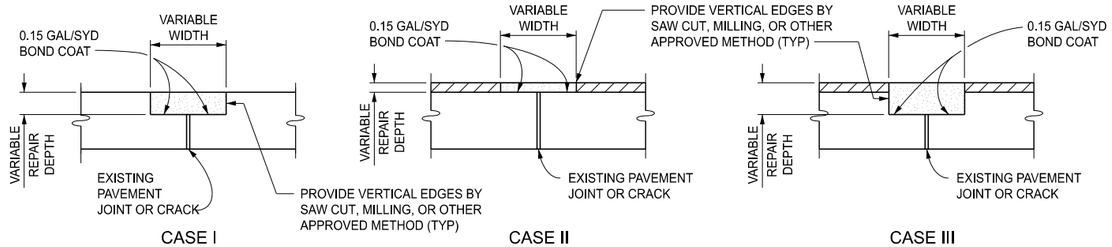
MID PANEL CRACK REPAIR

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR			
	(SPECIAL DETAIL) FHWA APPROVAL	03/30/2026 PLAN DATE	R-44-G	SHEET 5 OF 7



* NOTE: IF EXISTING REINFORCEMENT LAPS ARE ENCOUNTERED IN THIS AREA, MOVE FINAL SAW CUT BACK TO PROVIDE MINIMUM 2'-6" LAP OF PAVEMENT REINFORCEMENT.

REPAIRING CONTINUOUSLY REINFORCED CONCRETE



CASE I

HMA REPAIR OF
CONCRETE PAVEMENT

REMOVE LOOSE DETERIORATED CONCRETE.
(NOT TO EXCEED PAVEMENT THICKNESS)

CASE II

HMA REPAIR OF CONCRETE
PAVEMENT WITH HMA SURFACE

REMOVE HMA OVERLAY TO CONCRETE SURFACE.

CASE III

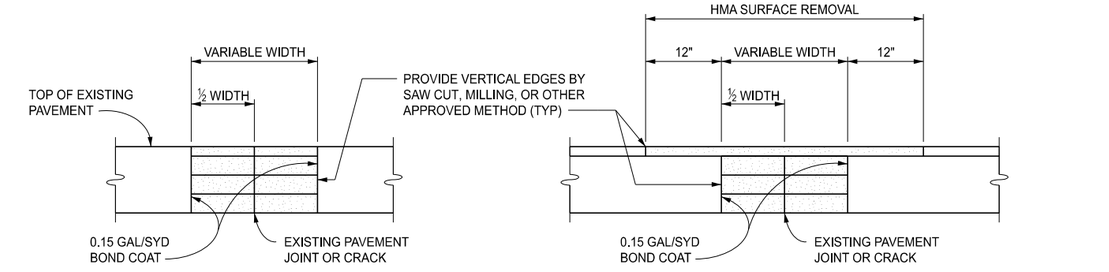
HMA REPAIR OF CONCRETE
PAVEMENT WITH HMA SURFACE

REMOVE HMA OVERLAY AND LOOSE
DETERIORATED CONCRETE.
(NOT TO EXCEED PAVEMENT THICKNESS)

FOR CASES I, II, & III, REPLACE THE REMOVED MATERIAL WITH A HMA TOP COURSE MIXTURE, OR OTHER APPROVED MIXTURE. COMPACT THE HMA WITH A MACHINE VIBRATOR OR APPROVED ROLLER WITH BASE LIFT THICKNESSES NOT TO EXCEED 3" AND WITH THE TOP LIFT THICKNESS NOT TO EXCEED 2". ENSURE THE FINAL SURFACE OF THE REPAIR IS FLUSH WITH THE EXISTING PAVEMENT SURFACE.

SURFACE REPAIR FOR JOINT OR CRACK (TRANSVERSE OR LONGITUDINAL)

DETAIL 7



CASE IV

FULL DEPTH HMA REPAIR
OF CONCRETE PAVEMENT

REMOVE THE DETERIORATED CONCRETE FULL DEPTH. COMPACT LOOSE EXISTING BASE. REPLACE AND COMPACT WITH HMA ANY LOST BASE.

CASE V

FULL DEPTH HMA REPAIR
OF CONCRETE PAVEMENT WITH HMA SURFACE

REMOVE EXISTING HMA DETERIORATED CONCRETE PAVEMENT FULL DEPTH. COMPACT LOOSE EXISTING BASE. REPLACE AND COMPACT WITH HMA ANY LOST BASE.

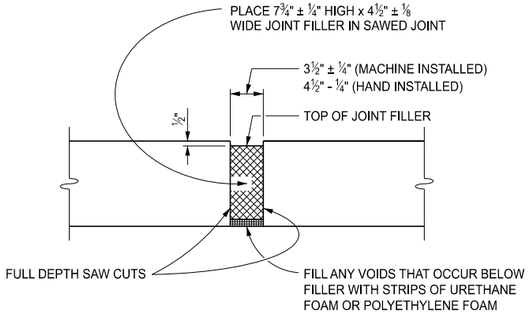
FOR CASES IV & V, REPLACE THE REMOVED MATERIAL WITH A HMA TOP COURSE MIXTURE, OR OTHER APPROVED MIXTURE. COMPACT THE HMA WITH A MACHINE VIBRATOR OR APPROVED ROLLER WITH BASE LIFT THICKNESSES NOT TO EXCEED 3" AND WITH THE TOP LIFT THICKNESS NOT TO EXCEED 2". ENSURE THE FINAL SURFACE OF THE REPAIR IS FLUSH WITH THE EXISTING PAVEMENT SURFACE.

FULL DEPTH REPAIR FOR JOINT OR CRACK (TRANSVERSE OR LONGITUDINAL)

DETAIL 8

MDOT Michigan Department of Transportation DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR			
	(SPECIAL DETAIL) FHWA APPROVAL	03/30/2026 PLAN DATE	R-44-G	SHEET 6 OF 7

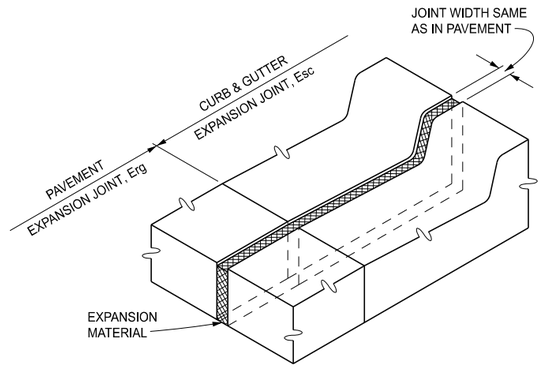
SECT



NOTES:
WHEN CONSTRUCTING A PRESSURE RELIEF JOINT THROUGH A CONCRETE SHOULDER, TRENCH BELOW THE CONCRETE AS NEEDED TO ALLOW ROOM FOR THE 7¼" FILLER.

PRESSURE RELIEF JOINT

THIS DETAIL ALSO APPLIES TO HMA SURFACED CONCRETE PAVEMENT REQUIRING PRESSURE RELIEF JOINTS



SAW CURB, GUTTER, AND CURB FACE AS DEEP AS THE EXISTING PAVEMENT THICKNESS. CHIP OUT THE REMAINING CONCRETE AND PLACE A SUFFICIENT THICKNESS OF EXPANSION MATERIAL IN SAWED JOINT TO FILL THE GAP, AS DIRECTED BY THE ENGINEER.

EXPANSION JOINT, Esc

NOTES:

ENSURE CONCRETE PAVEMENT REPAIRS (INCLUDING JOINT TYPES) OR PRESSURE RELIEF DETAILS ARE AS SPECIFIED ON THE PLANS OR IN THE LOG OF PROJECT.

IF THE EXISTING PAVEMENT HAS AN HMA SURFACE, EXTEND THE SAW CUTS THROUGH THE UNDERLYING PORTLAND CEMENT CONCRETE.

CLEAN SAW OVERCUTS IN ADJACENT LANE, SHOULDER, RAMP, AND GUTTERS THAT WILL REMAIN IN PLACE AND THEN SEAL WITH HOT-POURED RUBBER-ASPHALT.

WHEN THE CONCRETE PAVEMENT REPAIR IS CONSTRUCTED IN PREPARATION FOR AN OVERLAY, OMIT Crg JOINT RESERVOIRS AND SEALANTS AND KEEP EXPANSION JOINT (Erg) FIBER FILLER FLUSH TO THE PAVEMENT SURFACE.

ENSURE EXPANSION CAPS ARE ACCORDING TO STANDARD PLAN R-40-SERIES.

ENSURE TRANSVERSE CONTRACTION (Cp) AND EXPANSION (E2) JOINTS ARE ACCORDING TO STANDARD PLAN R-39-SERIES.

EPOXY COAT DOWEL AND DEFORMED BARS USED IN Trg, Crg, AND Erg JOINTS ACCORDING TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

GROUT DOWEL BARS AND DEFORMED BARS FOR TIED JOINTS INTO EXISTING PAVEMENT WITH A GROUT SELECTED FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SOURCE GUIDE" UNDER ADHESIVE SYSTEMS FOR GROUTING DOWEL BARS AND TIE BARS FOR FULL-DEPTH CONCRETE PAVEMENT REPAIRS.

ENSURE THE BACKER ROD MEETS THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

ENSURE THE SAME JOINT TYPE EXTENDS ACROSS ADJACENT LANE REPAIRS.

AFTER GROUTING IN-PLACE, APPLY RC-250 OR AN APPROVED BOND BREAKER TO THAT PORTION OF Crg AND Erg DOWEL BARS THAT EXTEND INTO THE CAST CONCRETE.

DISTRIBUTE 1" OF Erg EXPANSION JOINTS THROUGHOUT A 1000' SECTION OF REPAIRED CONCRETE PAVEMENTS.

WHERE THERE ARE NO REPAIR LOCATIONS WITHIN A 1000' LENGTH, NO EXPANSION SPACE WILL BE PROVIDED.

EXTEND EXPANSION JOINT FILLER THE FULL DEPTH OF THE REPAIR AND ENSURE IT IS FLUSH WITH THE EXISTING PAVEMENT SURFACE. PRIOR TO SEALING, REMOVE THE JOINT FIBER FILLER AT THE PAVEMENT SURFACE BY CUTTING 1" WIDE AND 1½" DEEP TO PERMIT THE PLACEMENT OF THE HOT-POURED RUBBER ASPHALT SEALANT. ENSURE HOLES IN EXPANSION JOINT FILLER HAVE A 1½" MAXIMUM DIAMETER AND ARE ALIGNED TO FIT DRILLED HOLES IN CONCRETE.

CONSTRUCT Erg JOINTS ONLY WHEN THEY EXTEND ACROSS ALL LANES, RAMPS, OR SHOULDERS.

WHEN Erg JOINTS ARE PLACED ADJACENT TO CONCRETE CURB AND GUTTER THAT IS NOT REQUIRED TO BE REMOVED, CONSTRUCT AN Esc JOINT IN THE CURB AND GUTTER.

BLAST CLEAN (ABRASIVE) JOINT RESERVOIRS FOR THE HOT-POURED RUBBER-ASPHALT SEALANT, FOLLOWED BY A FINAL CLEANING OF OIL-FREE COMPRESSED AIR PRIOR TO SEALING.

SPACE LANE TIES (TO ADJACENT PAVEMENT LANE, WHEN REQUIRED) ACCORDING TO STANDARD PLAN R-41-SERIES, EXCEPT THAT THE FIRST LANE TIE ADJACENT TO A TRANSVERSE JOINT IS INSTALLED AT A DISTANCE OF 1'-8" FROM THE JOINT. WHEN BOTH SIDES OF A LONGITUDINAL JOINT ARE POURED INTEGRALLY, ENSURE LANE TIES ARE STRAIGHT DEFORMED EPOXY COATED BARS AND CAST-IN-PLACE AS SPECIFIED ON STANDARD PLAN R-41-SERIES. WHEN ADJACENT LANES ARE CAST SEPARATELY, GROUT-IN-PLACE LANE TIES AS SPECIFIED ON THIS PLAN. SELECT GROUT FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SOURCE GUIDE", UNDER LANE TIES.

STENCIL THE MONTH AND YEAR OF CASTING AND STATION NUMBER (IF REMOVED) ON EACH CONCRETE REPAIR.

USE JOINTED PLAIN CONCRETE PAVEMENT FOR ALL REPAIRS.

MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

(SPECIAL DETAIL)	03/30/2026	R-44-G	SHEET
FHWA APPROVAL	PLAN DATE		7 OF 7

SECT