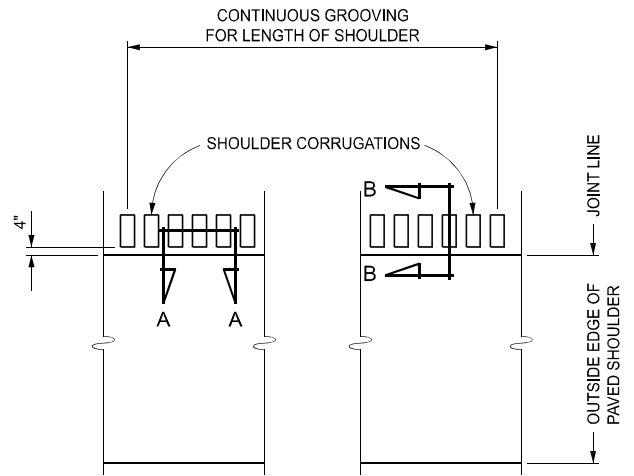
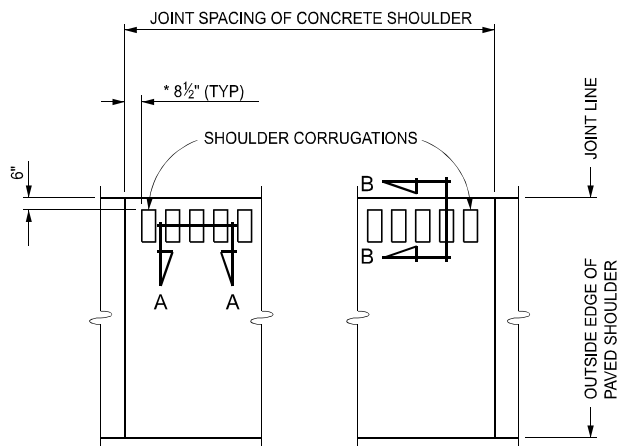


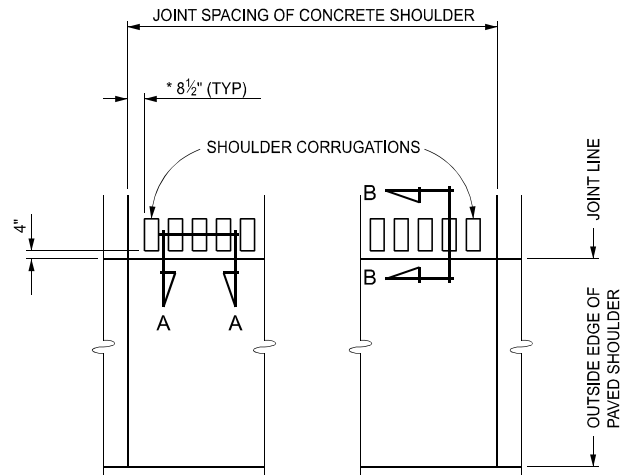
HMA SHOULDER PLAN
ADJACENT TO 12' LANE



HMA SHOULDER PLAN
ADJACENT TO 14' LANE



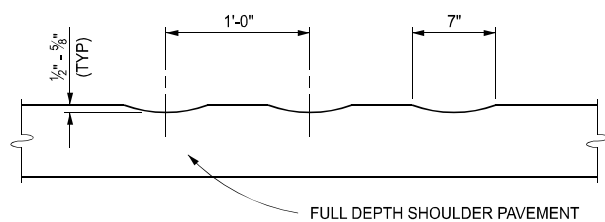
CONCRETE SHOULDER PLAN
ADJACENT TO 12' LANE



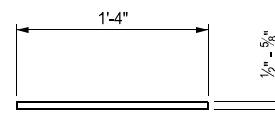
CONCRETE SHOULDER PLAN
ADJACENT TO 14' LANE

* ENSURE THE DISTANCE FROM THE CORRUGATION TO THE TRANSVERSE JOINT IS AT LEAST 6" BUT LESS THAN 12".

* ENSURE THE DISTANCE FROM THE CORRUGATION TO THE TRANSVERSE JOINT IS AT LEAST 6" BUT LESS THAN 12".



SECTION A - A



SECTION B - B

FREEWAY SHOULDER CORRUGATIONS
(FOR FREEWAY SHOULDERS PAVED 4 FEET OR GREATER)

APPROVED BY: 
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: 
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

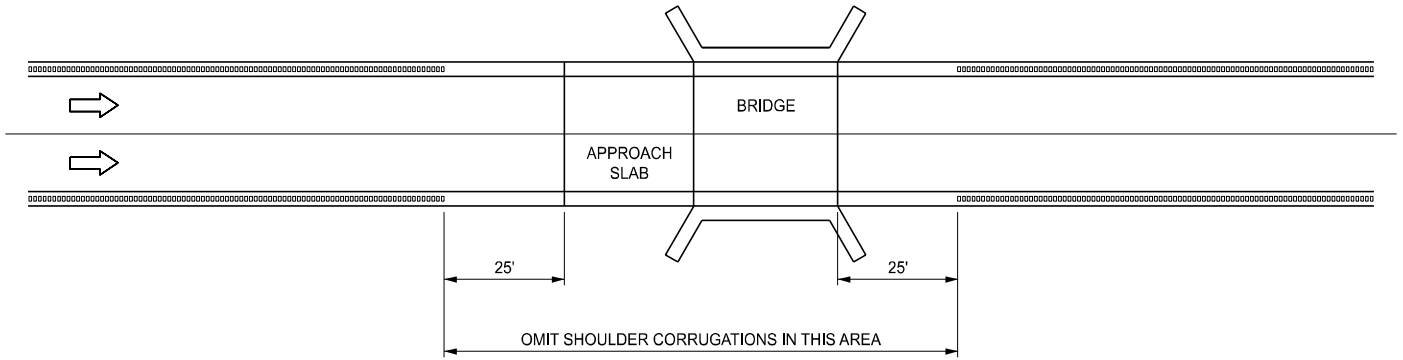
STANDARD PLAN FOR
SHOULDER AND CENTER LINE CORRUGATIONS

12/18/2024
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1 OF 10



SHOULDER CORRUGATIONS AT BRIDGES
FREEWAY SHOULDER CORRUGATIONS
 (FOR FREEWAY SHOULDERS PAVED 4 FEET OR GREATER)

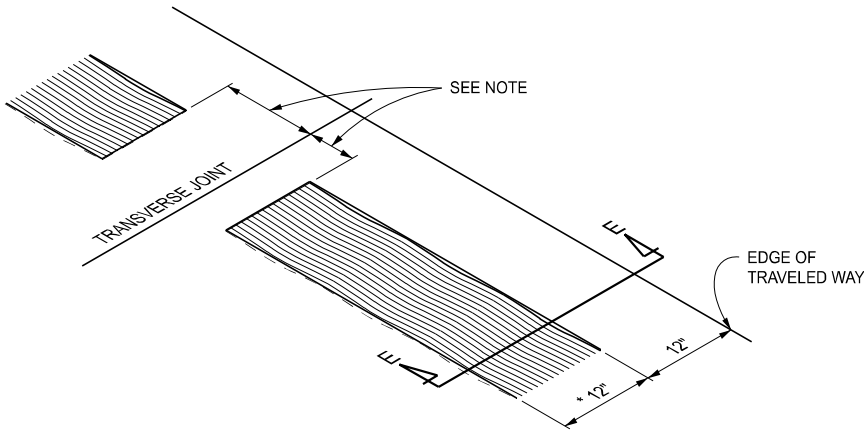

 Michigan Department of Transportation
 DEPARTMENT DIRECTOR
 BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS			
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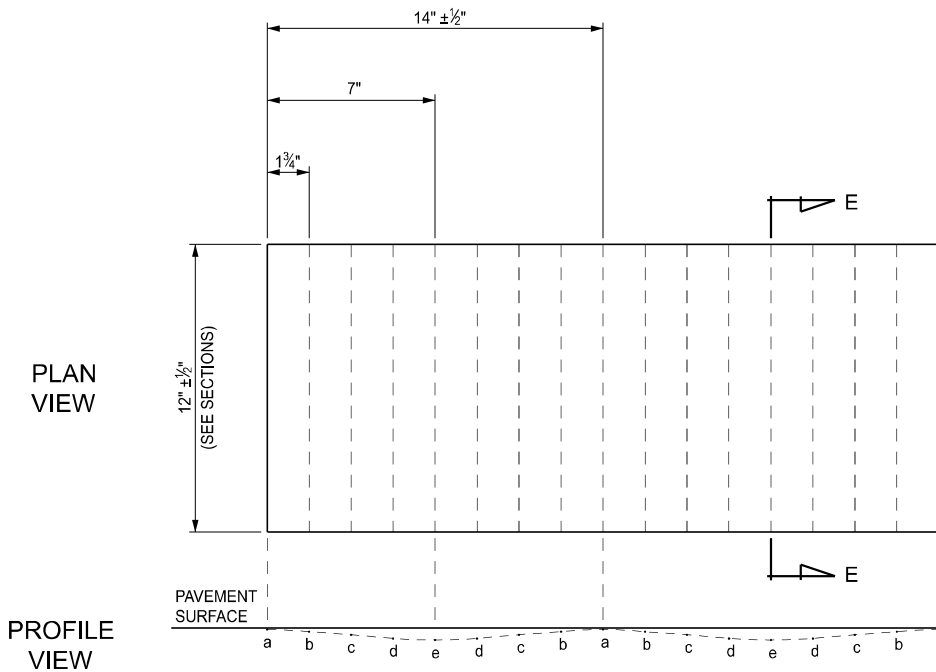
* DO NOT EXCEED A LATERAL DEVIATION OF 1" IN 100'.

NOTE:

ENSURE THE DISTANCE FROM THE SHOULDER CORRUGATION TO THE TRANSVERSE JOINT IS AT LEAST 6" BUT LESS THAN 12" ON CONCRETE PAVEMENTS.

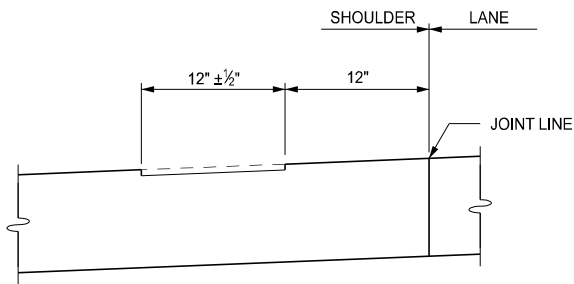


TYPICAL NON-FREEWAY SHOULDER CORRUGATION INSTALLATION



LOCATION	DEPTH AT EDGE	
	MILS	INCHES *
a	62.5	1/6
b	156	5/32
c	281	9/32
d	438	7/16
e	500	1/2

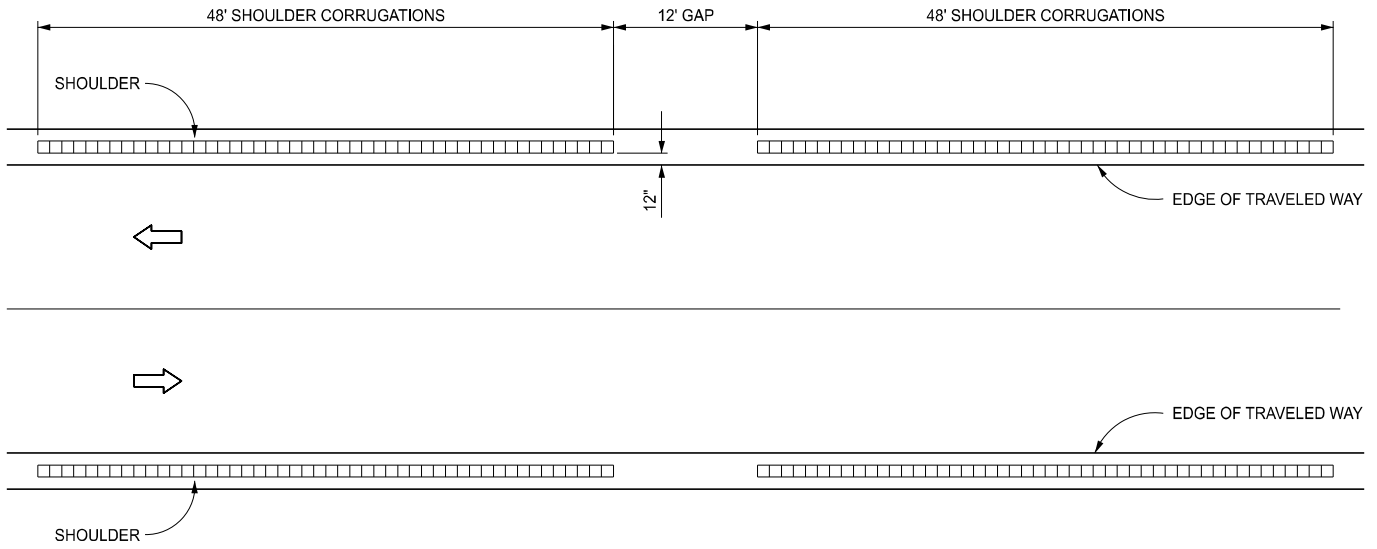
* +1/8"



SECTION E-E
CONCRETE & HMA SHOULDER


SINUSOIDAL CORRUGATIONS

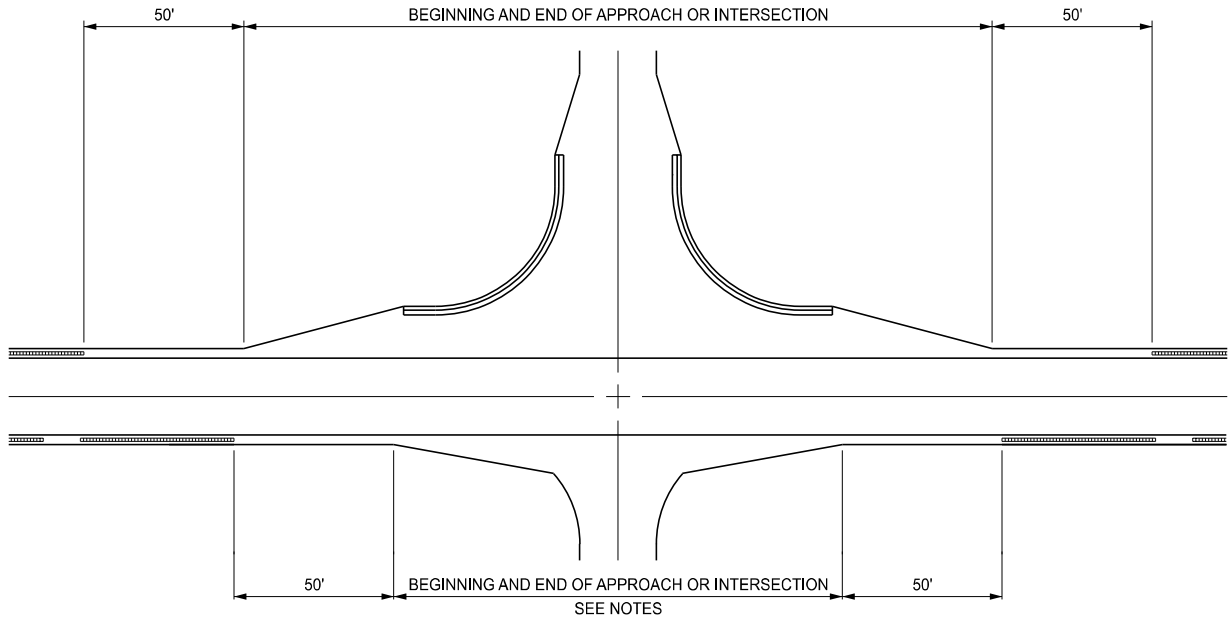
<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS		R-112-J	SHEET 3 OF 10
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SHOULDER CORRUGATIONS ON TWO-WAY ROADWAYS

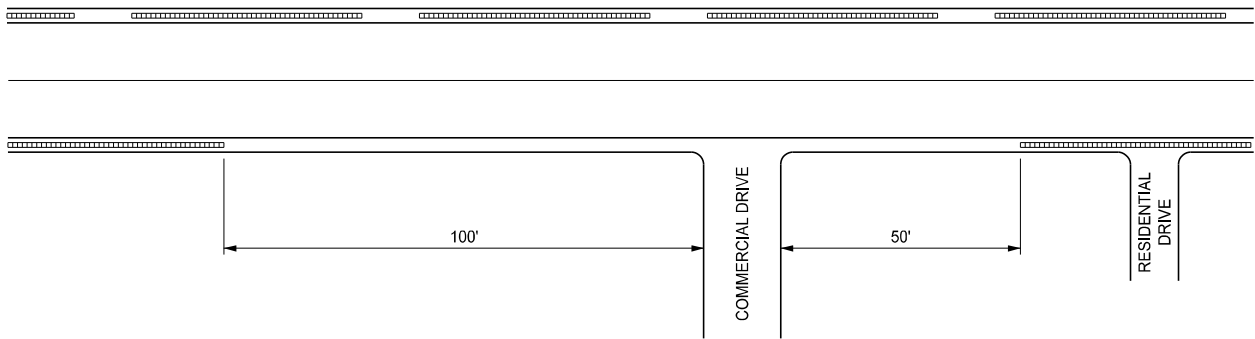
NON-FREEWAY SHOULDER CORRUGATIONS
 (FOR NON-FREEWAY SHOULDERS PAVED 6 FEET OR GREATER)

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS			SHEET 4 OF 10
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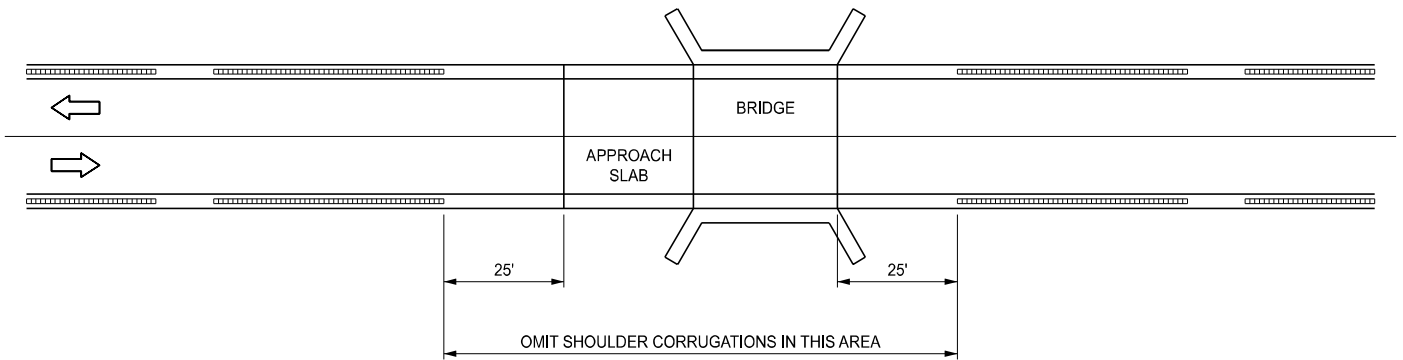


NOTE:

WHEN DIRECTED BY THE ENGINEER, OMIT SHOULDER CORRUGATIONS IN AREAS WITH A HIGH CONCENTRATION OF DRIVEWAYS.



SHOULDER CORRUGATIONS AT INTERSECTIONS

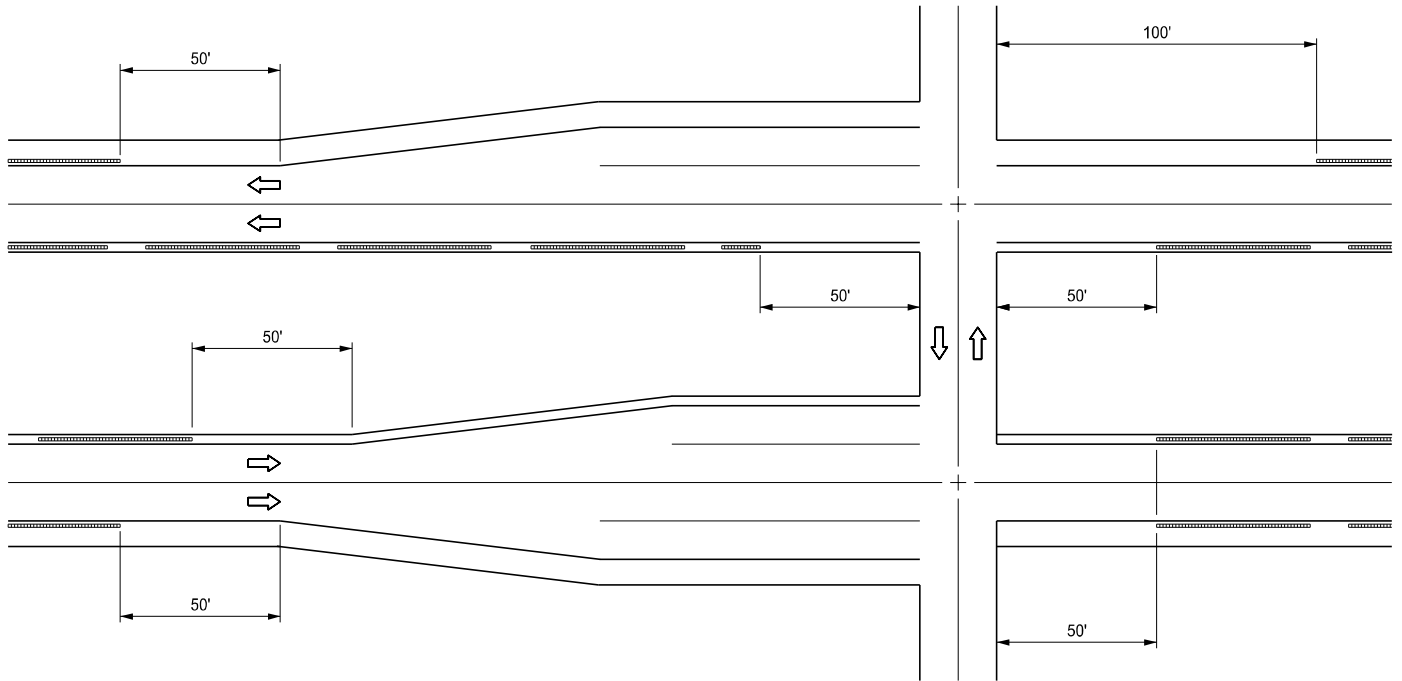


SHOULDER CORRUGATIONS AT BRIDGES

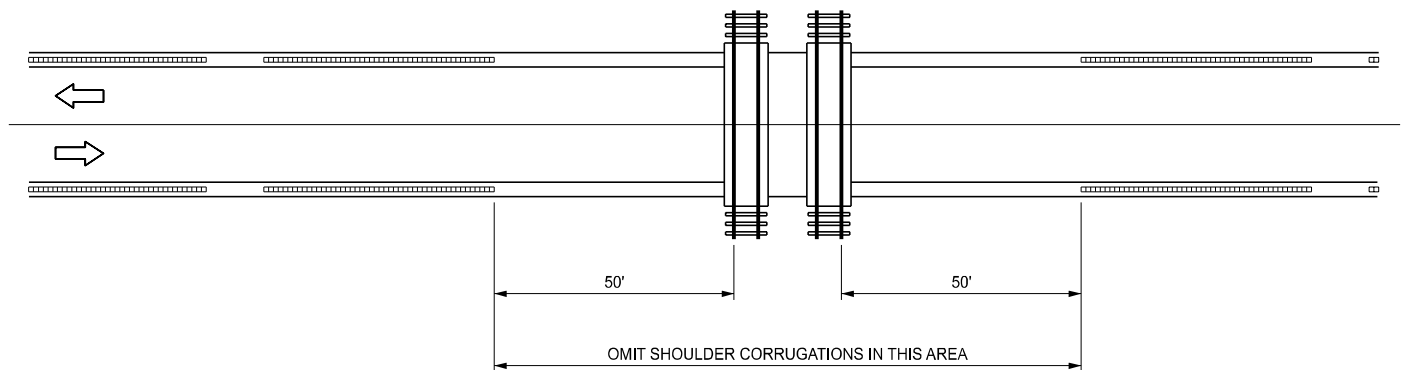
NON-FREEWAY SHOULDER CORRUGATIONS

(FOR NON-FREEWAY SHOULDERS PAVED 6 FEET OR GREATER)

<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS		R-112-J	SHEET 5 OF 10
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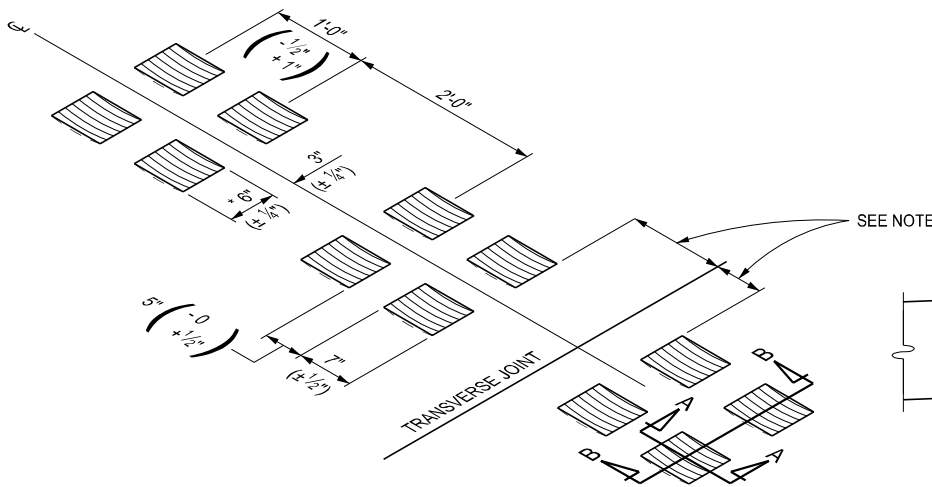
SHOULDER CORRUGATIONS AT INTERSECTIONS



SHOULDER CORRUGATIONS AT RAILROADS

NON-FREEWAY SHOULDER CORRUGATIONS
 (FOR NON-FREEWAY SHOULDERS PAVED 6 FEET OR GREATER)

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS		R-112-J	SHEET 6 OF 10
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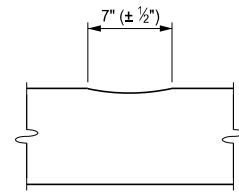
TYPICAL NON-FREEWAY CENTER LINE CORRUGATION INSTALLATION FOR CONCRETE PAVEMENT

* DO NOT EXCEED A LATERAL DEVIATION OF 1" IN 100'.

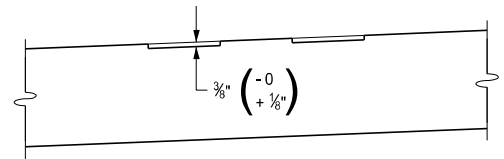
NOTES:

ENSURE THE DISTANCE FROM THE CENTER LINE CORRUGATION TO THE TRANSVERSE JOINT IS AT LEAST 6" BUT LESS THAN 12" ON CONCRETE PAVEMENTS.

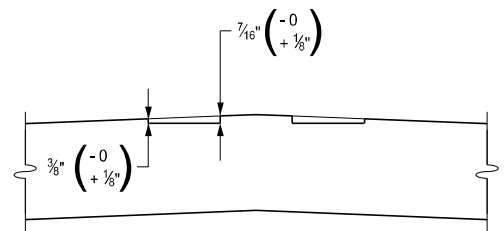
CORRUGATIONS MAY BE CONSTRUCTED IN TWO PASSES AND THEREFORE MAY NOT BE SYMMETRICAL ACROSS THE CENTER LINE OF CONCRETE PAVEMENTS.



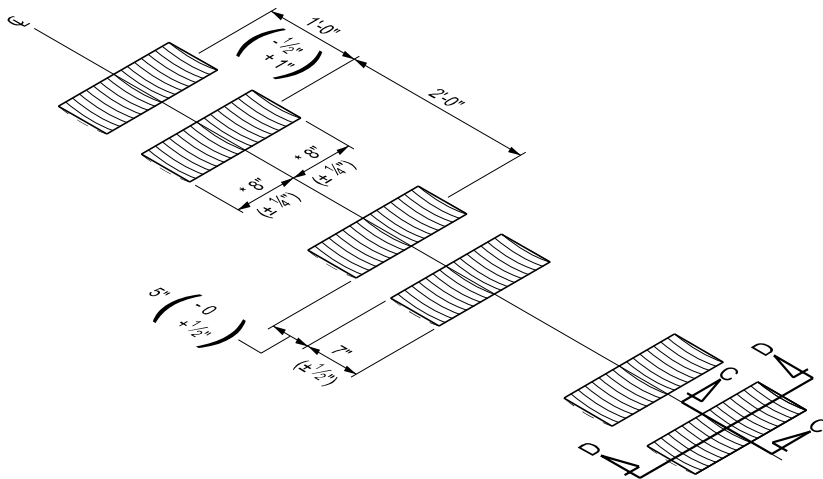
SECTION A-A



**SECTION B-B
SUPERELEVATED ROADWAY**

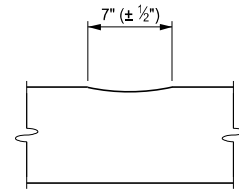


**SECTION B-B
CROWNED ROADWAY**

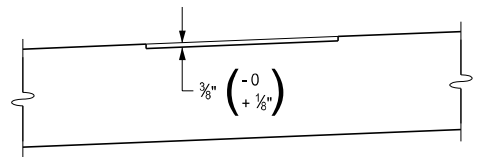


TYPICAL NON-FREEWAY CENTER LINE CORRUGATION INSTALLATION FOR HMA PAVEMENT

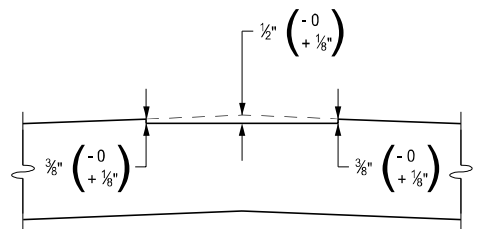
* DO NOT EXCEED A LATERAL DEVIATION OF 1" IN 100'.



SECTION C-C



**SECTION D-D
SUPERELEVATED ROADWAY**



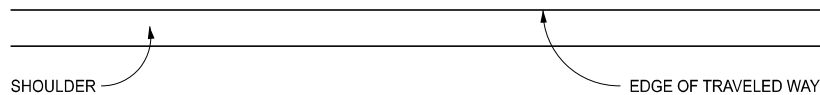
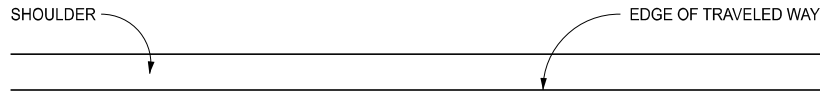
**SECTION D-D
CROWNED ROADWAY**

NON-FREEWAY CENTER LINE CORRUGATIONS

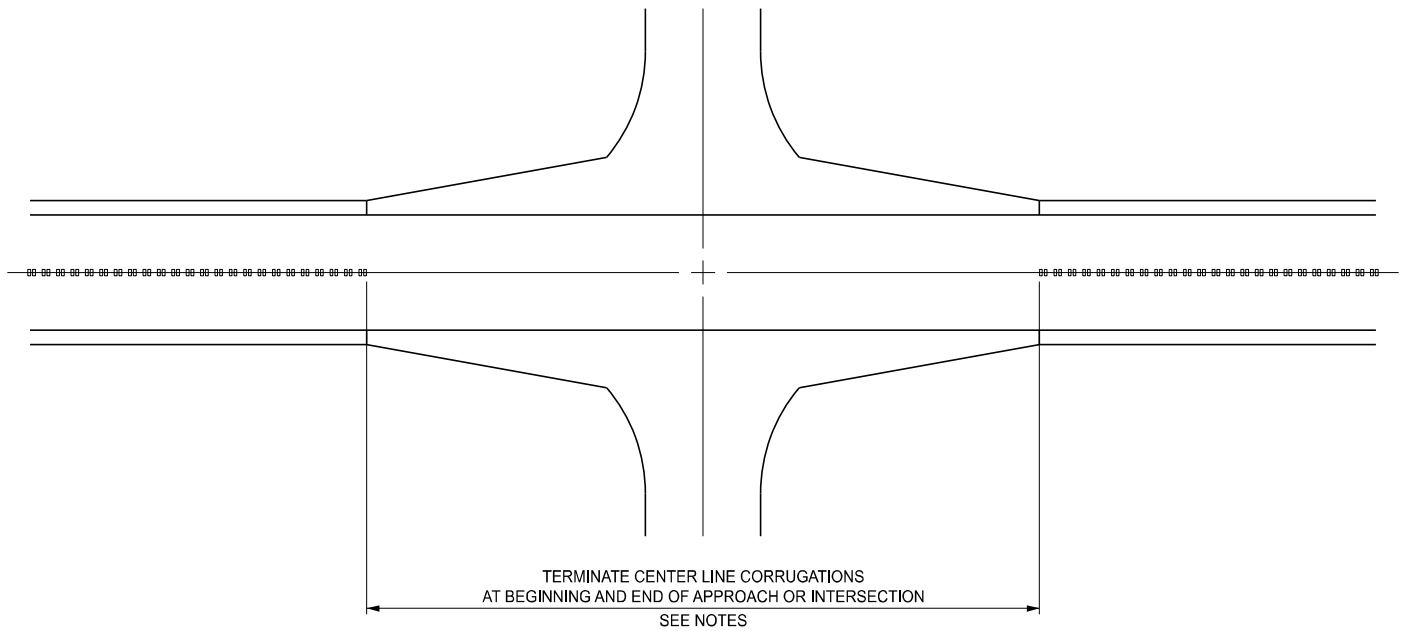
MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS			
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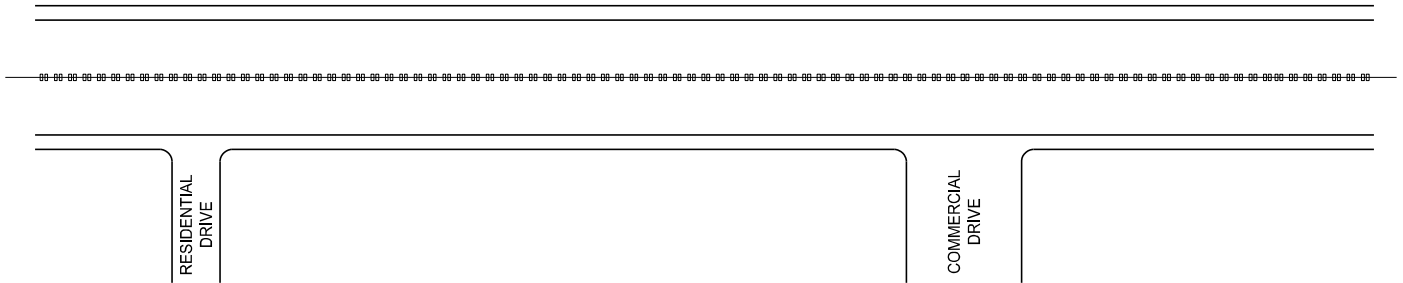
CENTER LINE CORRUGATIONS ON TWO-WAY ROADWAYS



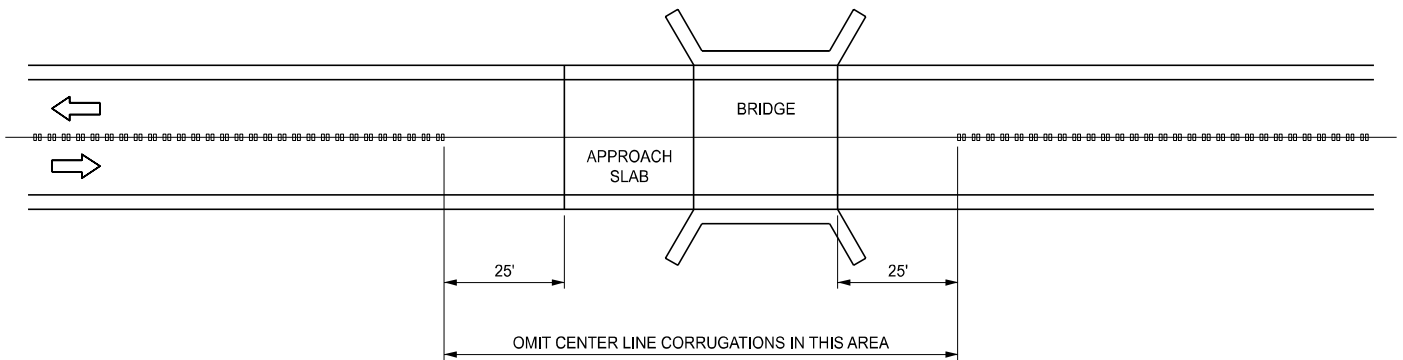
CENTER LINE CORRUGATIONS AT INTERSECTIONS

NON-FREEWAY CENTER LINE CORRUGATIONS

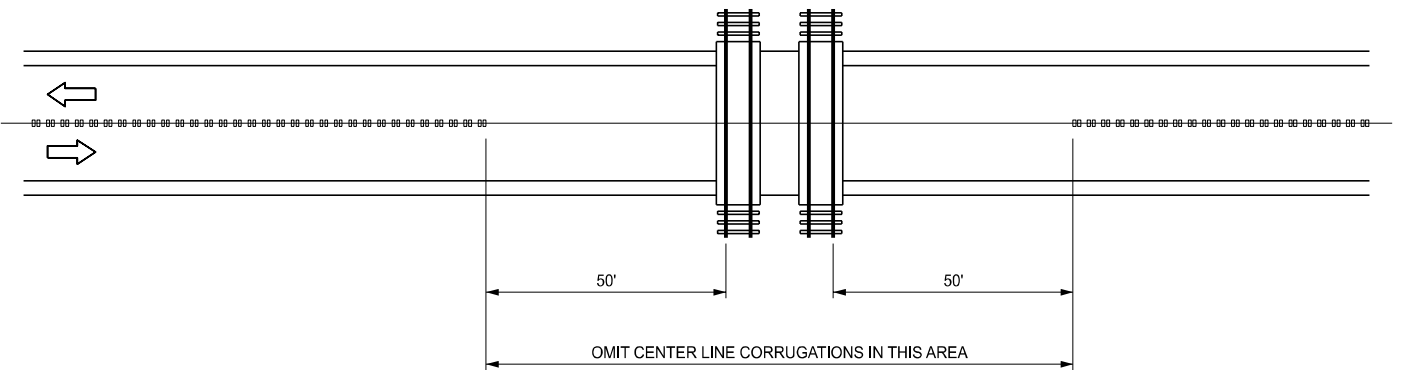
<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS		R-112-J	SHEET 8 OF 10
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CENTER LINE CORRUGATIONS AT DRIVEWAYS




CENTER LINE CORRUGATIONS AT BRIDGES



CENTER LINE CORRUGATIONS AT RAILROADS

NON-FREEWAY CENTER LINE CORRUGATIONS

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR SHOULDER AND CENTER LINE CORRUGATIONS		R-112-J	SHEET 9 OF 10
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NOTES: (NON-FREEWAY)

THIS STANDARD SPECIFIES HOW SHOULDER CORRUGATION CROSS-SECTIONS AND LOCATIONS ARE TO BE DETAILED. USE CORRUGATIONS ON NON-FREEWAY SHOULDERS (CONCRETE AND HMA) WHICH ARE PAVED AT LEAST 6'-0" WIDE WHEN THE POSTED SPEED IS 55 MPH. USE THE CORRUGATIONS (SPECIFIED ON THIS STANDARD) IN OTHER LOCATIONS WHERE THEY HAVE BEEN PREVIOUSLY APPROVED.

DO NOT PLACE CORRUGATIONS OVER TRANSVERSE SHOULDER JOINTS.

DO NOT MILL SHOULDER OR CENTER LINE CORRUGATIONS THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

NOTES: (FREEWAY)

THIS STANDARD SPECIFIES HOW SHOULDER CORRUGATION CROSS-SECTIONS AND LOCATIONS ARE TO BE DETAILED. USE CORRUGATIONS ON FREEWAY SHOULDERS (CONCRETE AND HMA) PAVED AT LEAST 4'-0" WIDE OR WHERE THE SHOULDER LIES BETWEEN THE PAVEMENT AND VALLEY GUTTER OR CURB AND GUTTER. DO NOT USE CORRUGATIONS ON THE SHOULDERS OF FREEWAY EXIT/ENTRANCE RAMP OR ON SHOULDERS THAT ARE SEPARATED FROM THE PAVEMENT BY VALLEY GUTTER OR CURB AND GUTTER. USE CORRUGATIONS ON FREEWAY TO FREEWAY RAMP WITH THE EXCEPTION OF LOOP RAMP.

DO NOT PLACE CORRUGATIONS OVER TRANSVERSE SHOULDER JOINTS.

LOCATE CORRUGATIONS IN THE AREA OF FREEWAY RAMP AS FOLLOWS: INCREASE THE TYPICAL OFFSET TO 24" ON THE SHOULDER SIDE OF THE JOINT, BEGINNING 300' IN ADVANCE OF THE EXIT RAMP TAPER. CONTINUE THIS OFFSET UNTIL THE 2' POINT OF THE GORE. END CORRUGATIONS ALONG THE RAMP AT THIS POINT AND SIMULTANEOUSLY RESUME ON THE MAINLINE SHOULDER AND GORE WITH THE NORMAL OFFSET. USE THE SAME CONFIGURATION FOR ENTRANCE RAMP, BUT IN THE REVERSE ORDER. FOR FREEWAY TO FREEWAY RAMP, IN ADDITION TO RESUMING THE MAINLINE SHOULDER CORRUGATION, RETURN TO THE NORMAL MAINLINE OFFSET ALONG THE LENGTH OF THE RAMP SHOULDER.

WITHIN AN URBAN FREEWAY OR OTHER LIMITED FREEWAY AREA, OFFSET THE SHOULDER CORRUGATIONS UP TO 12" FROM THE EDGE OF THE TRAVEL LANE, OR AS SHOWN IN THE PLANS, OR AS DIRECTED BY THE ENGINEER. IF NEEDED, LOCATE THE CORRUGATION ON THE OPPOSITE SIDE OF THE JOINT FOR 14' LANES TO MAINTAIN THE MINIMUM OFFSET TO THE JOINT.



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
SHOULDER AND CENTER LINE CORRUGATIONS

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