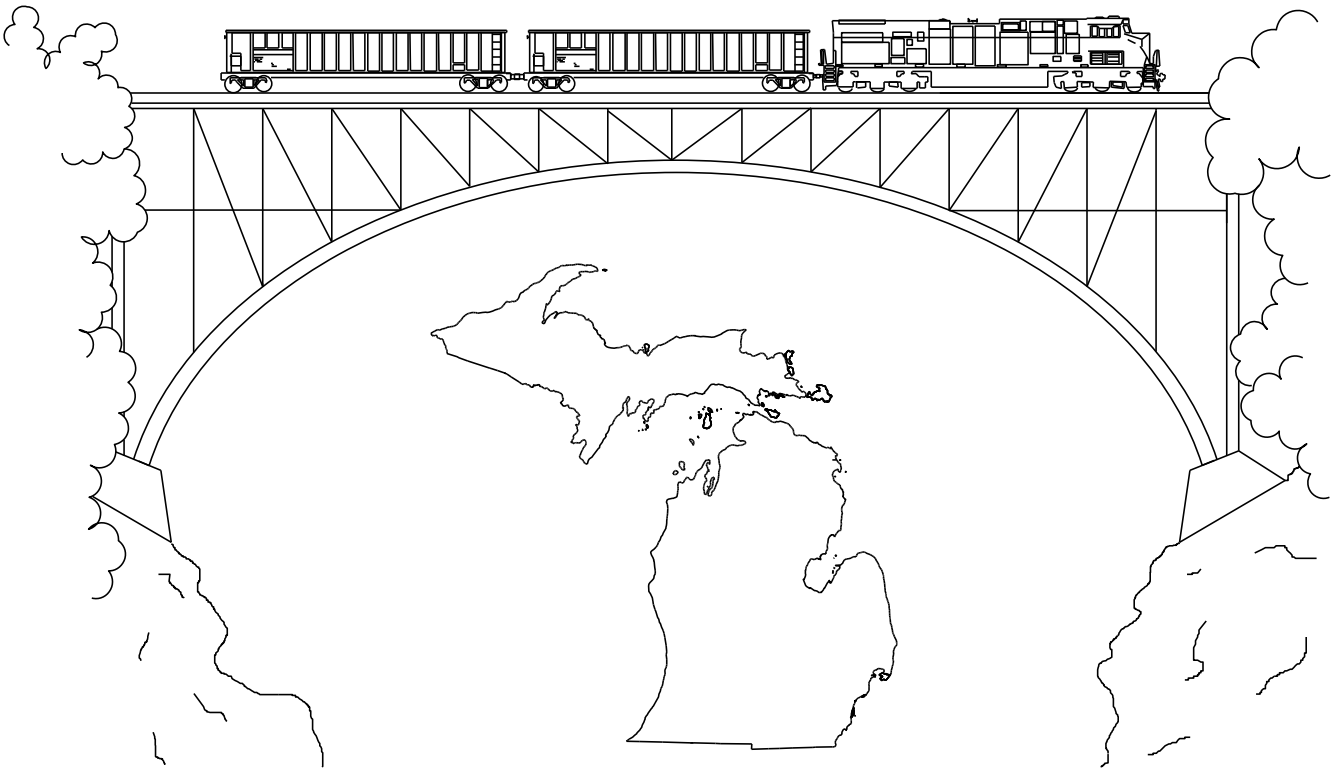
MDOT
Michigan Department of Transportation

RAILROAD TYPICAL PLANS
2025



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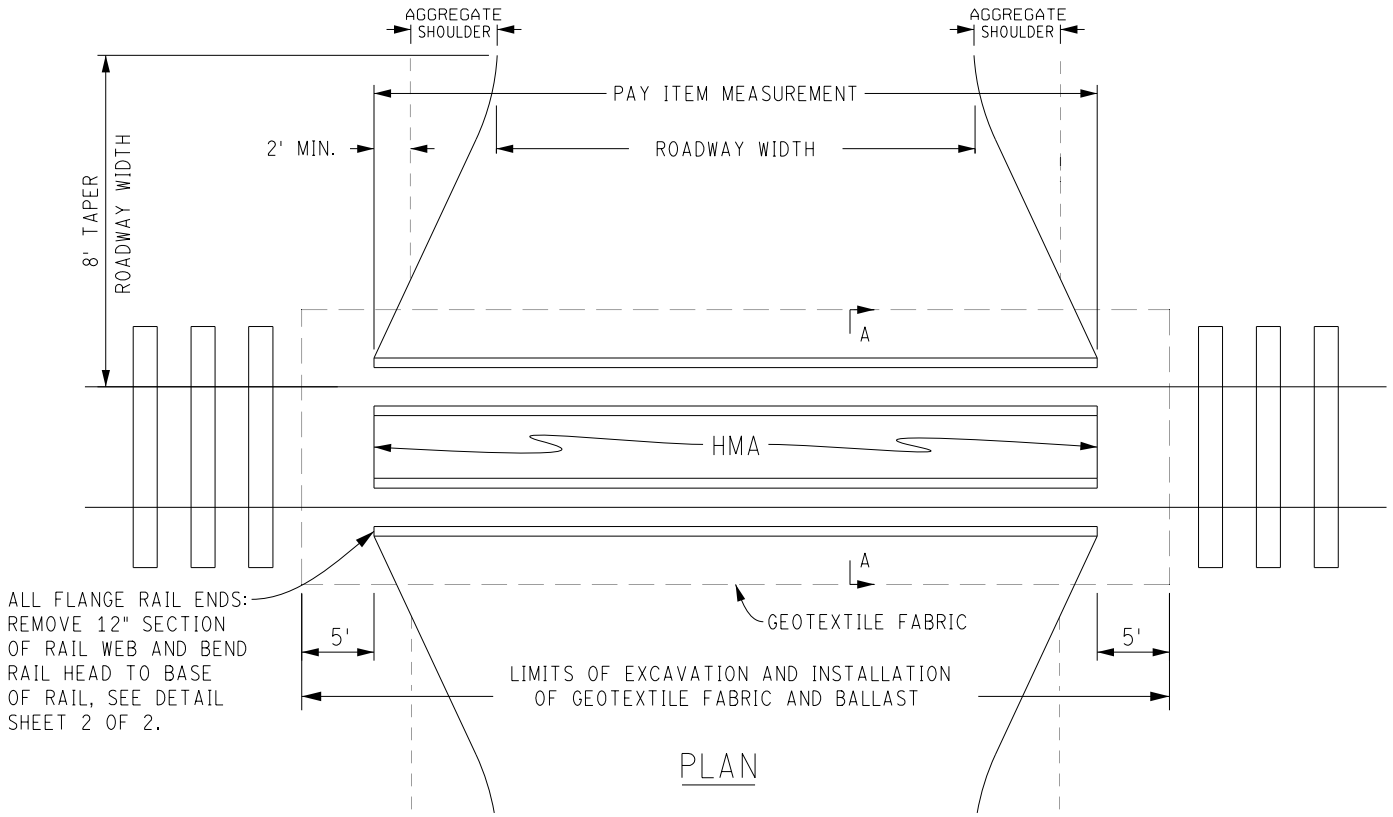
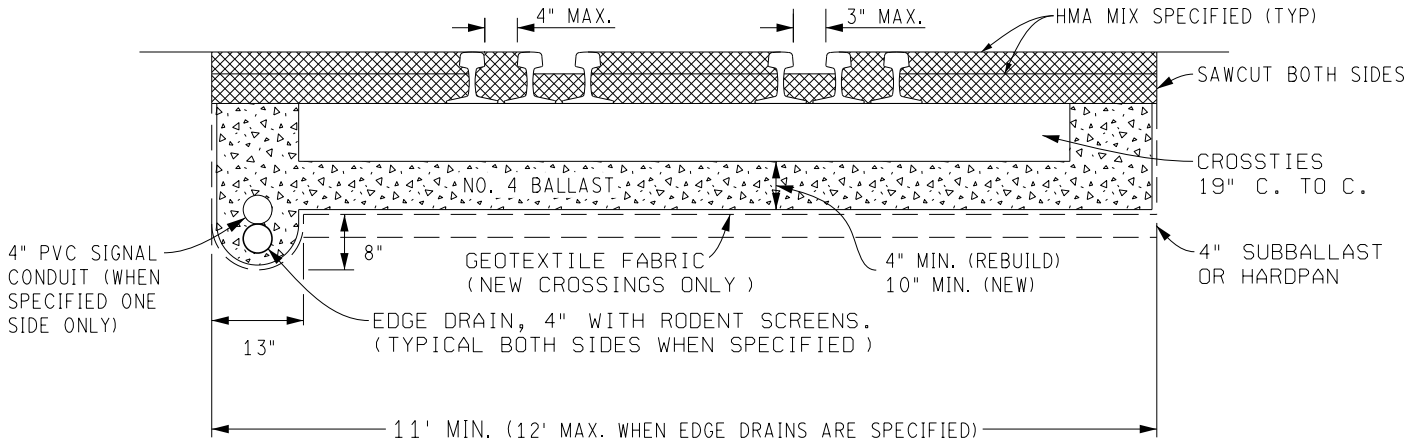
If you require assistance accessing this information or require it in an alternative format, contact the Michigan Department of Transportation's (MDOT) Americans with Disabilities Act (ADA) coordinator at Michigan.gov/MDOT-ADA.



PLAN



SECTION A-A

NOTES:

1) SHAPE AND COMPACT SHOULDERS AND APPROACHES AS REQUIRED USING 22A MATERIAL. LOW SHOULDERS MUST BE ADDRESSED ACCORDINGLY. DO NOT EXTEND AGGREGATE SHOULDER MATERIAL INTO RAILROAD BALLAST.

2) FOR SIDEWALKS/NON-MOTORIZED PATHS THE OUTER FLANGE RAIL CAN BE DROPPED, BUT INNER FLANGE RAIL TO BE INSTALLED FOR ENTIRE LENGTH OF CROSSING.

3) MAX ELEV. DIFF. BETWEEN FLANGE RAIL AND RUNNING RAIL IS 1/4 INCH.

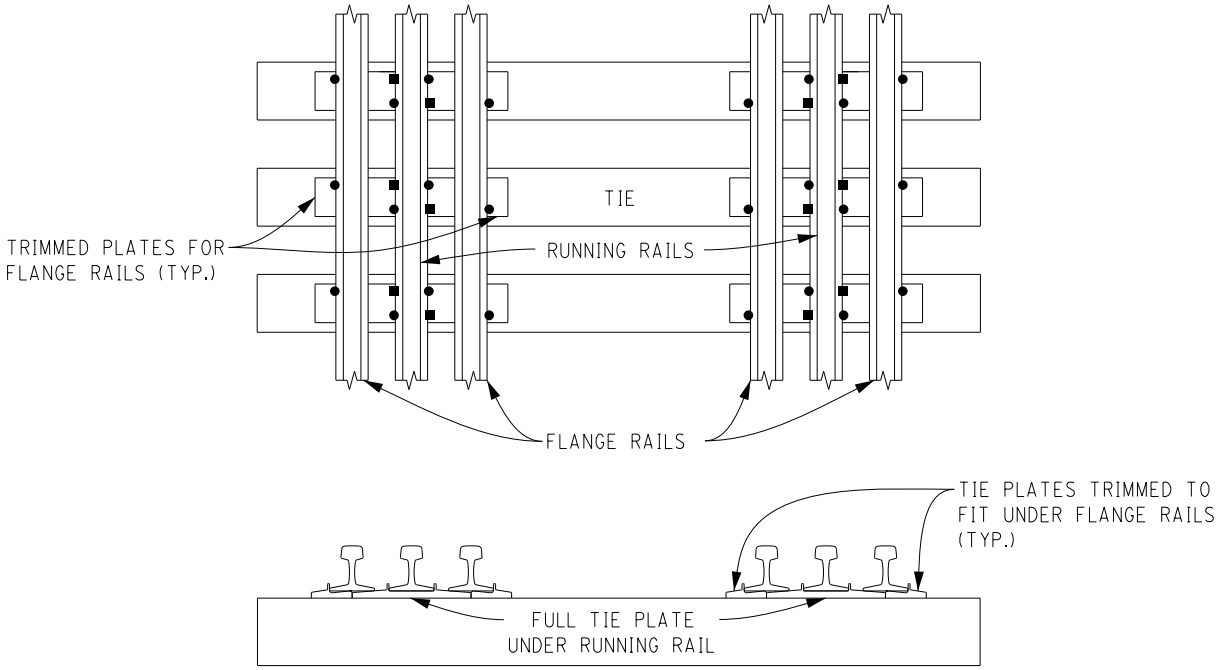
4) MAX RAIL HEAD GAP DISTANCE AT SIDEWALKS = 3 INCHES

5) WHEEL FLANGE VOIDS INSIDE HEADS OF RUNNING RAILS SHALL BE 1.5 TO 2 INCHES WIDE AND 1.5 TO 2 INCHES DEEP.

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR RAIL FLANGEWAY - HMA GRADE CROSSING	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER-MANAGER	
		REVISION DATE 02/24/2025	RR-10 SHEET 1 OF 2

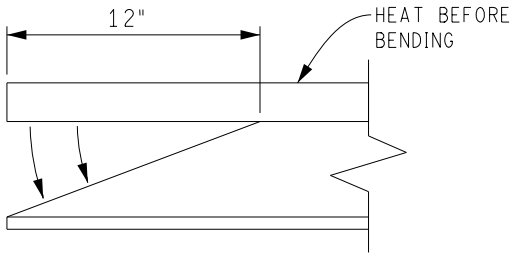
FLANGE RAIL SPIKING PATTERN

(PUBLIC AND PRIVATE CROSSINGS)



(SPIKES NOT SHOWN IN CROSS SECTION)

FLANGE RAIL END TREATMENT



REMOVE 12" SECTION OF RAIL WEB AND BEND
RAIL HEAD TO BASE OF RAIL (SEE DETAIL ABOVE).

NOTES:

1) ■ = TRACK SPIKE HOLDING RUNNING RAIL
   ● = SCREW LAG

2) BORE HOLES FOR DRIVE SPIKES SHALL BE 9/16" DIAMETER.

3) ALL RAILS TO BE SAME SIZE.

4) SCREW LAG RUNNING RAIL EVERY TIE, USING 2 SPIKES PER RAIL.

5) PLACE TIE PLATES UNDER FLANGE RAILS ON ONE END OF EACH TIE. TRIM TIES PLATES FOR FLANGE RAILS TO FIT, RETAINING SHOULDER SECTION OF PLATE.

6) CUT PLATE CAN BE NO. 1 RELAY

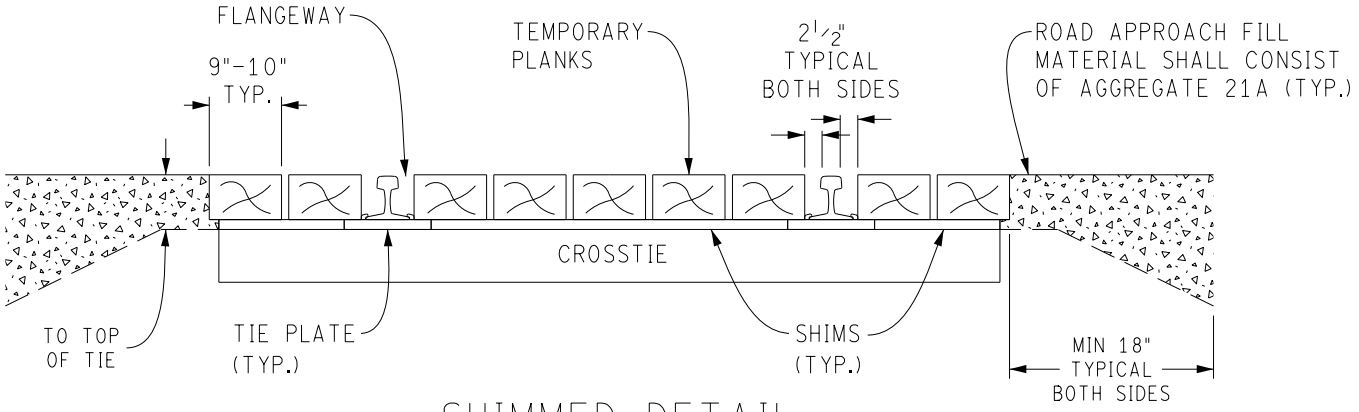
7) TIE PLATES FIT UNDER RAIL MUST BE MATCHING

8) SCREW LAGS SHALL BE 11/16" DIAMETER

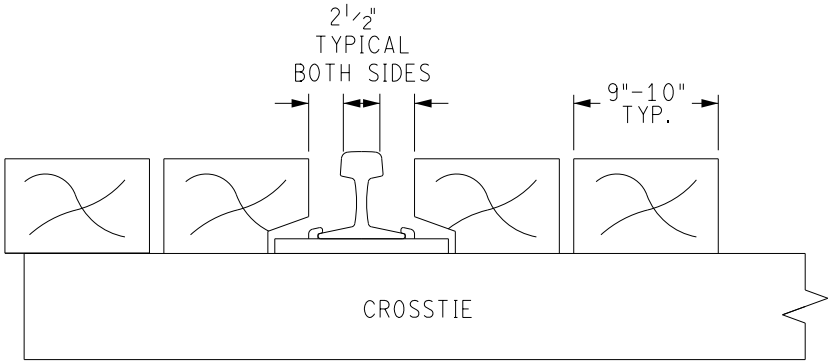
9) SCREW LAGS SHALL BE INSERTED INTO A PRE-DRILLED HOLE THAT IS 1/8" SMALLER THAN SCREW LAG

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR RAIL FLANGEWAY - HMA GRADE CROSSING	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER-MANAGER	
		REVISION DATE 02/24/2025	RR-10 SHEET 2 OF 2

INSTALL 4 WASHER HEAD TIMBER DRIVE SPIKES MIN. PER 10' PLANK OR 3 WASHER HEAD TIMBER DRIVE SPIKES MIN. PER 8' PLANK. STAGGER WASHER HEAD TIMBER DRIVE SPIKES LONGITUDINALLY ALONG PLANKS. INSTALL OUTSIDE WASHER HEAD TIMBER DRIVE SPIKES 6" FROM ENDS OF PLANKS. DRILL 1/2" DIA. HOLE FOR 5/8" DIA. WASHER HEAD TIMBER DRIVE SPIKES. COUNTER BORE 2 1/2" DIA. AND 1 7/8" DEEP.



SHIMMED DETAIL



NON-SHIMMED DETAIL

NOTES: TOP OF PLANK ELEVATION SHALL EQUAL TOP OF RAIL ELEVATION, PLUS OR MINUS 1/4".

TEMPORARY PLANK GRADE CROSSING MAY BE CONSTRUCTED WITH EITHER SHIMMED OR NON-SHIMMED DETAIL.

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

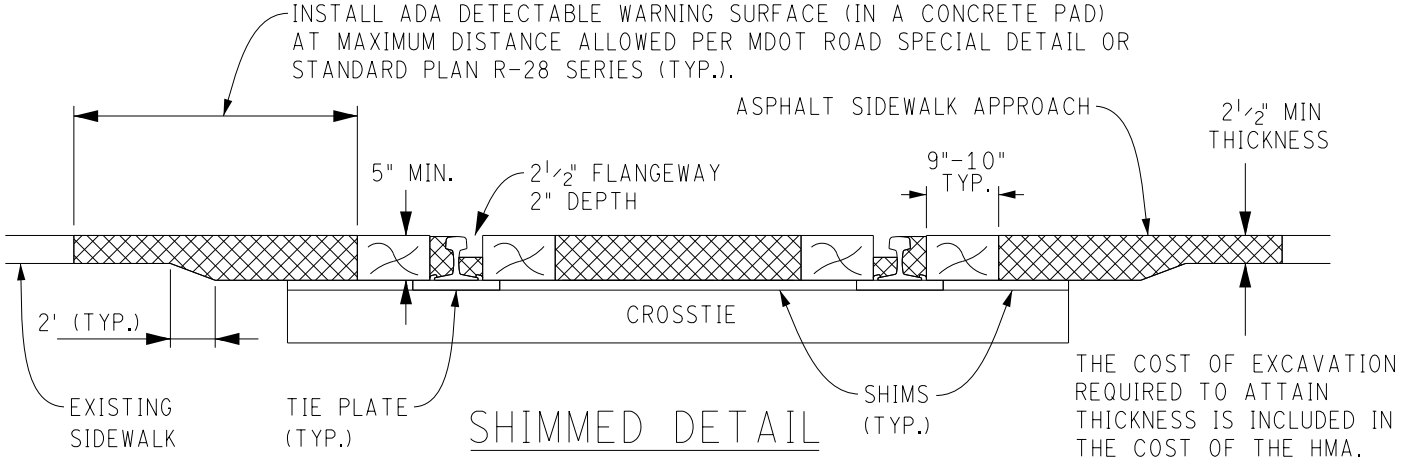
TEMPORARY PLANK GRADE CROSSING

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE 01/30/2025

RR-12 SHEET 1 OF 1

INSTALL 6 WASHER HEAD TIMBER DRIVE SPIKES MIN. PER 10' PLANK OR 5 SPIKES MIN. PER 8' PLANK. STAGGER SPIKES LONGITUDINALLY ALONG PLANKS NOT LESS THAN 3" FROM EDGES. INSTALL OUTSIDE SPIKES NOT LESS THAN 6" FROM ENDS OF PLANKS. DRILL 1/2" DIA. HOLE FOR 5/8" DIA. SPIKES. COUNTER BORE 2 1/2" DIA. AND 1 7/8" DEEP.

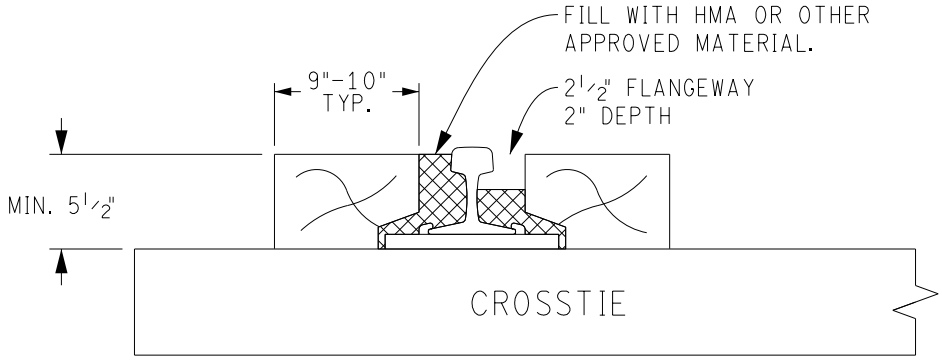


SHIMMED DETAIL

NOTES: WIDTH OF PROPOSED HMA SIDEWALK TO MATCH WIDTH OF EXISTING SIDEWALK. LENGTH OF PROPOSED HMA SIDEWALK WILL BE AS PRESCRIBED IN THE PROJECT PLANS OR AS DIRECTED BY THE ENGINEER.

PROFILE OF SIDEWALK OR NON-MOTORIZED FACILITY SHALL MEET ADA GUIDELINES OR PROFILE OF ROADWAY, WHICHEVER IS LEAST RESTRICTIVE.

FILL GAUGE OF RAIL WITH HMA, BETWEEN EDGE OF ROADWAY AND EDGE OF SIDEWALK.

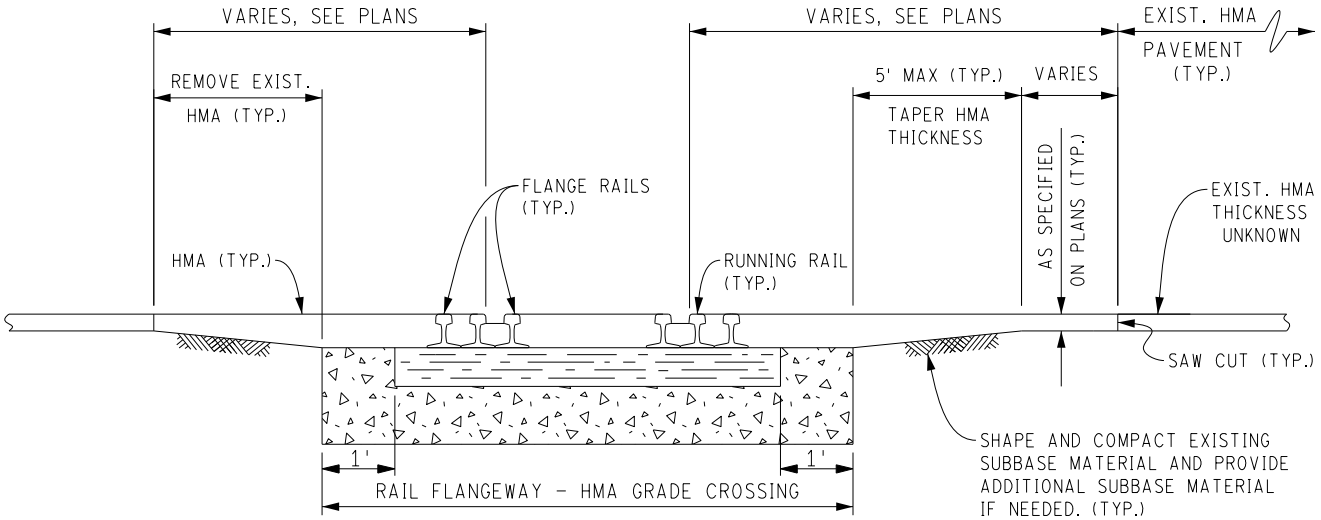


NON-SHIMMED DETAIL

NOTES: TOP OF PLANK ELEVATION SHALL EQUAL TOP OF RAIL ELEVATION, PLUS OR MINUS 1/4".

TIMBER PLANK SIDEWALK CROSSING MAY BE CONSTRUCTED WITH EITHER SHIMMED OR NON-SHIMMED DETAIL.

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR TIMBER PLANK SIDEWALK CROSSING	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER MANAGER	
		REVISION DATE 02/24/2025	RR-13 SHEET 1 OF 1

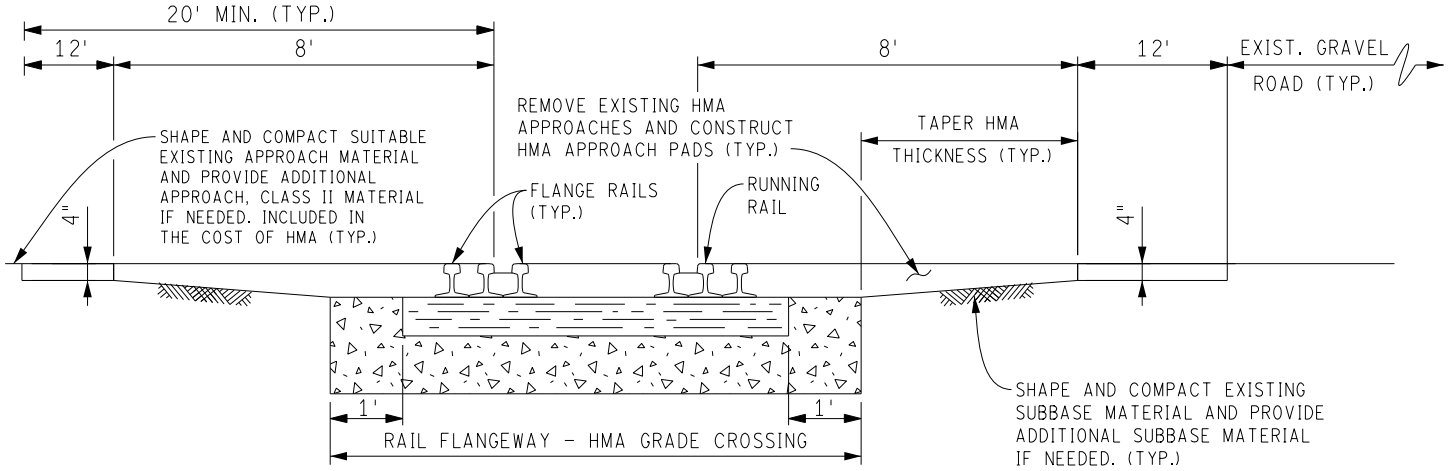


NOTES: THE COST OF SAW CUTTING, REMOVING AND DISPOSING OF EXISTING HMA PAVEMENT OUTSIDE OF THE RENEW OR REBUILD GRADE CROSSING LIMITS, AND THE PREPARATION OF THE SUBBASE FOR THE HMA APPROACHES ARE INCLUDED IN THE COST OF HMA.

FOR MDOT ROUTES, REFERENCE MDOT STANDARD PLAN R-121.

TYPE I

TYPE I IS USED WHEN THE EXISTING ROAD IS HMA PAVEMENT.



NOTES: THE COST OF REMOVING AND DISPOSING OF EXISTING HMA OR GRAVEL APPROACHES OUTSIDE OF THE RENEW OR REBUILD GRADE CROSSING LIMITS, THE PREPARATION OF SUBBASE FOR THE HMA APPROACHES, AND GRADING OF EXISTING GRAVEL APPROACHES IS INCLUDED IN THE COST OF HMA.

ENDS OF HMA PAVING SHALL BE PERPENDICULAR TO ROADWAY LANES.

TYPE II

TYPE II IS USED WHEN THE EXISTING ROAD IS GRAVEL.

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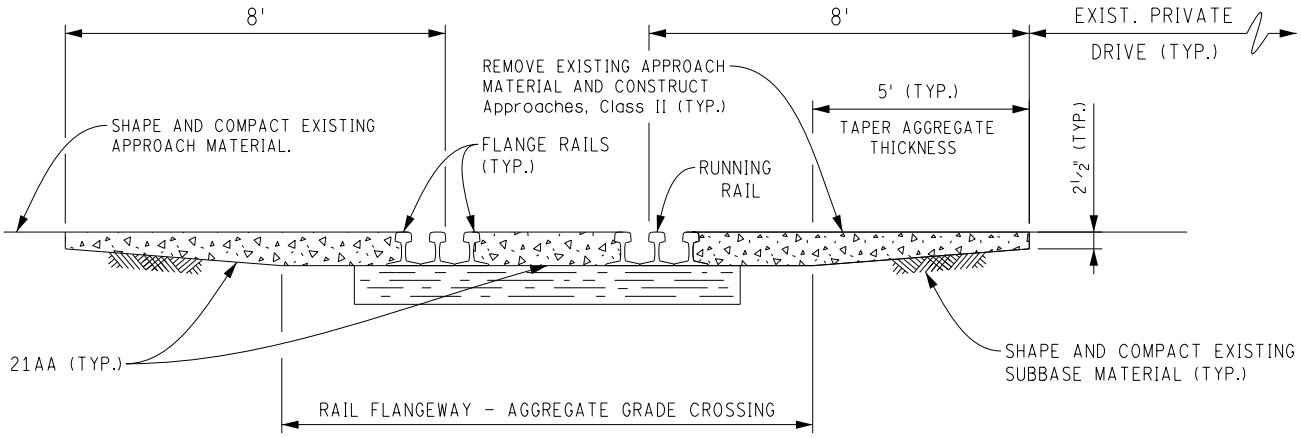
MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

LOCAL AGENCY GRADE CROSSING APPROACHES

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE
01/30/2025

RR-20 SHEET 1 OF 2



TYPE III

TYPE III IS USED AT
PRIVATE CROSSING.

NOTES: THE COST OF REMOVING AND DISPOSING OF EXISTING APPROACH MATERIAL OUTSIDE OF THE RENEW GRADE CROSSING LIMITS, THE PREPARATION OF SUBBASE FOR THE CLASS II APPROACHES, AND THE GRADING OF EXISTING APPROACH MATERIAL IS INCLUDED IN THE COST FOR APPROACH CLASS II. PAYMENT OF FILL MATERIAL FOR "APPROACH CLASS II" SHALL BE AGGREGATE BASE 21A OR AS APPROVED BY ENGINEER

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

LOCAL AGENCY GRADE CROSSING APPROACHES

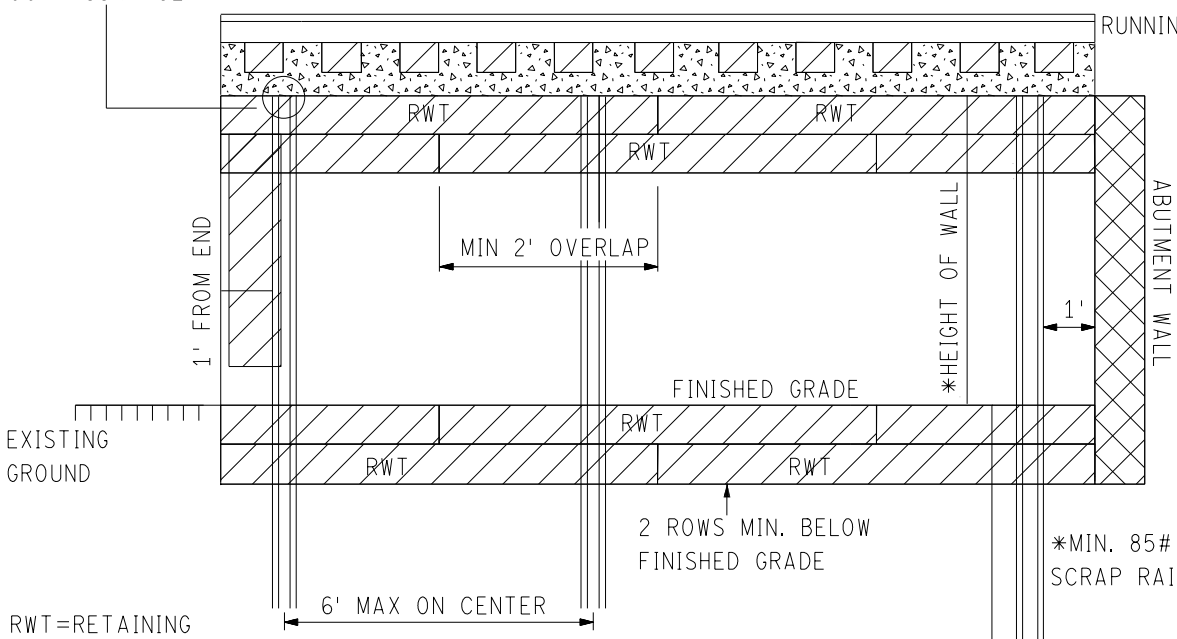
APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER-MANAGER

REVISION DATE
01/30/2025

RR-20 SHEET 2 OF 2

PROFILE VIEW

TOP OF RAIL SHALL BE FLUSH WITH TOP OF RETAINING WALL. TOP EDGE SHALL HAVE SMOOTH SURFACE.

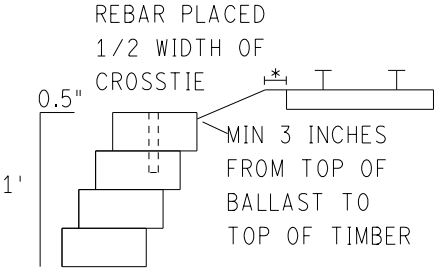


*HEIGHT OF WALL TO BE ELEVATION SUFFICIENT TO MAINTAIN STANDARD RAILROAD CROSS SECTION, PLUS 3"

MIN. DEPTH OF POST EMBEDMENT 1.5 TIMES HEIGHT OF WALL

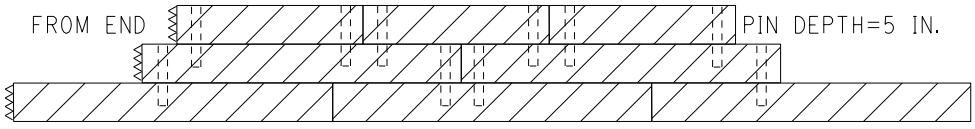
NOTES:
1. ALL DRIFT PINS ARE TO BE COVERED BY EPOXY
2. EACH LAYERED TIMBER SHALL HAVE 2 PINS PLACED INTO LOWER TIMBER
3. MINIMUM TIE THICKNESS IS 6"
4. WALL TO BE CONSIDERED ON 1:12 BATTER

CROSS SECTION



*SHOULDER WIDTH PER MDOT STANDARD

DRIFT PIN DETAIL



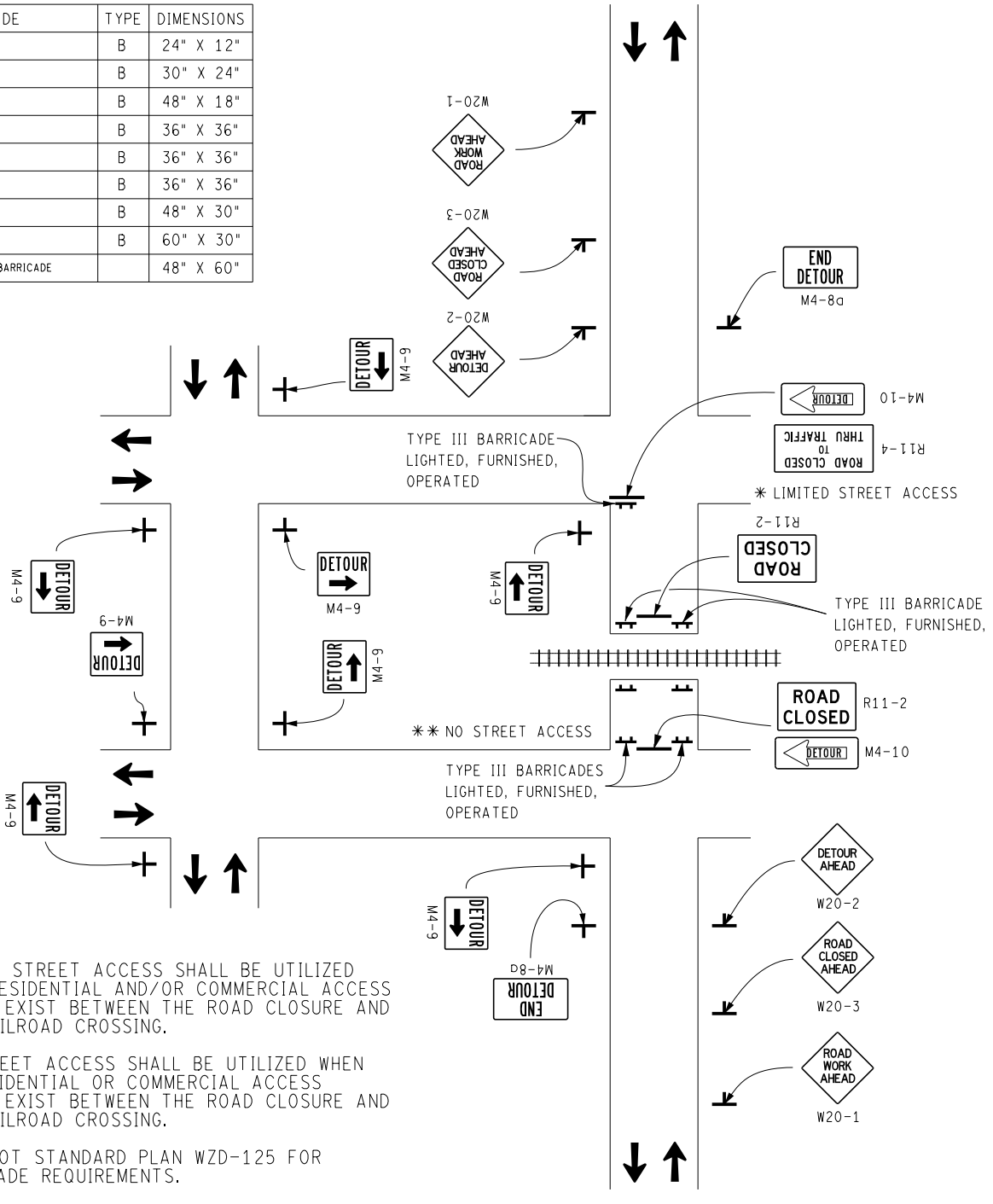
*MIN TIE LENGTH IS 4'

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR BALLAST RETAINING WALLS	APPROVED BY: JIM D'LAMATER, RAILROAD INFRASTRUCTURE ENGINEER-MANAGER	REVISION DATE 02/04/2019
			RR-25 SHEET 1 OF 1

TYPICAL SIGNING REQUIREMENTS
(MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES)

TEMPORARY SIGNING SPECIFICATIONS

CODE	TYPE	DIMENSIONS
M4-8a	B	24" X 12"
M4-9	B	30" X 24"
M4-10	B	48" X 18"
W20-1	B	36" X 36"
W20-2	B	36" X 36"
W20-3	B	36" X 36"
R11-2	B	48" X 30"
R11-4	B	60" X 30"
TYPE III BARRICADE		48" X 60"



NOTES:

* LIMITED STREET ACCESS SHALL BE UTILIZED WHEN RESIDENTIAL AND/OR COMMERCIAL ACCESS DRIVES EXIST BETWEEN THE ROAD CLOSURE AND THE RAILROAD CROSSING.

** NO STREET ACCESS SHALL BE UTILIZED WHEN NO RESIDENTIAL OR COMMERCIAL ACCESS DRIVES EXIST BETWEEN THE ROAD CLOSURE AND THE RAILROAD CROSSING.

SEE MDOT STANDARD PLAN WZD-125 FOR BARRICADE REQUIREMENTS.

PLACEMENT OF TRAFFIC CONTROL DEVICES AS SHOWN ON PLANS OR AS DIRECTED BY ENGINEER.

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

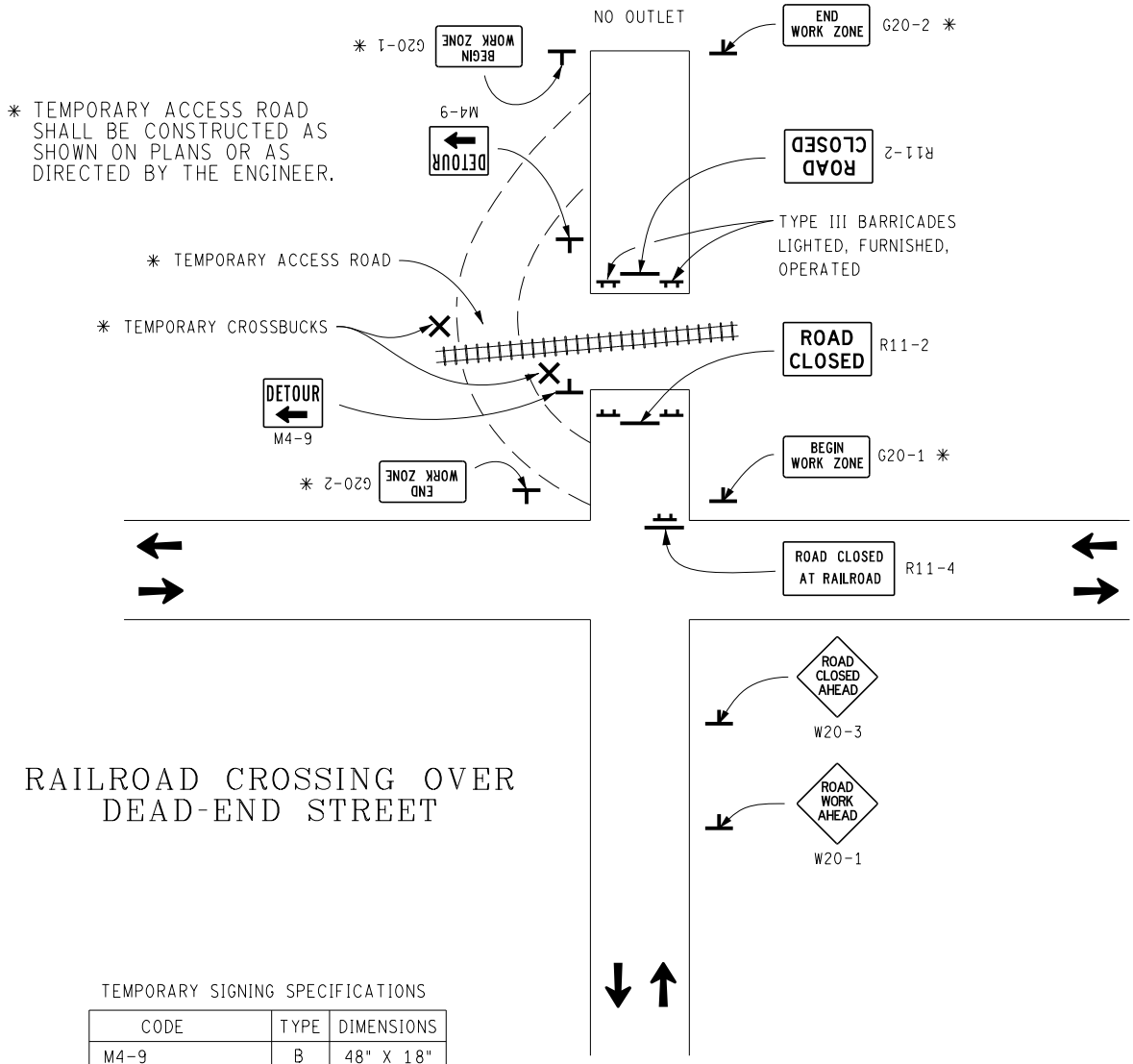
ROAD CLOSURE
LIMITED AND NO STREET ACCESS

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE
04/05/2016

RR-30 SHEET 1 OF 2

TYPICAL SIGNING REQUIREMENTS
(MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES)



RAILROAD CROSSING OVER DEAD-END STREET

TEMPORARY SIGNING SPECIFICATIONS

CODE	TYPE	DIMENSIONS
M4-9	B	48" X 18"
W20-1	B	36" X 36"
W20-3	B	36" X 36"
R11-2	B	48" X 30"
R11-4 (MOD)	B	60" X 40"
G20-1 (MOD)	B	36" X 18"
G20-2 (MOD)	B	36" X 18"
TYPE III BARRICADE		48" X 60"

NOTES:

✳ IF REQUIRED

SEE MDOT STANDARD PLAN WZD-125 FOR BARRICADE REQUIREMENTS.

PLACEMENT OF TRAFFIC CONTROL DEVICES AS SHOWN ON PLANS OR AS DIRECTED BY ENGINEER.

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

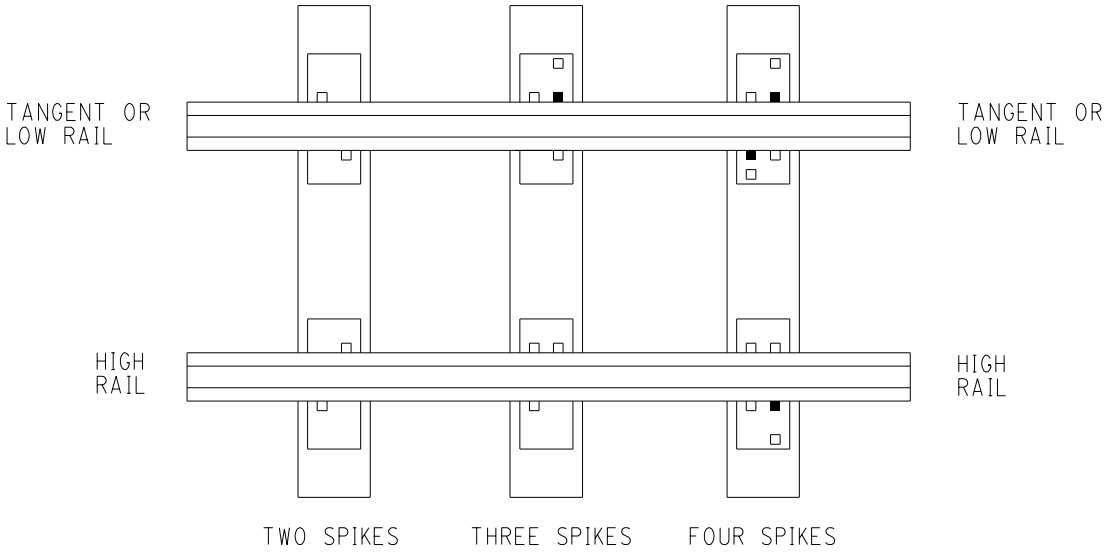
ROAD CLOSURE
DEAD-END STREET

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE 04/05/2016

RR-30 SHEET 2 OF 2

SPIKING PATTERNS



- ▫ DRIVEN HOLES
- ■ USE WHEN ANCHOR SPIKE HOLES ARE NOT AVAILABLE

NOTE: SPIKING PATTERN TO BE CONSISTENT THROUGHOUT PROJECT LIMITS. SPIKING PATTERN TO OPTIMIZE AMOUNT OF SPIKES IN NON-SPIKED PORTION OF TIE.

MINIMUM NUMBER OF SPIKES PER TIE PLATE

ALIGNMENT		SPEED IN MPH FOR TERRITORY								
		10	15	20	25	30	35	40	45	50 AND UP
TANGENT		2	2	2	2	2	2	2	2	4
CURVES										
GREATER THAN OR EQUAL TO	BUT LESS THAN	10	15	20	25	30	35	40	45	50 AND UP
0°	2°	2	2	2	2	2	2	2	4	4
2°	5°	2	2	2	3	3	3	4	4	4
5°	8°	2	3	3	3	4	4	4	4	4
8°	10°	2	3	3	4	4	4	4		
10° AND OVER		2	3	4	4	4	4			

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

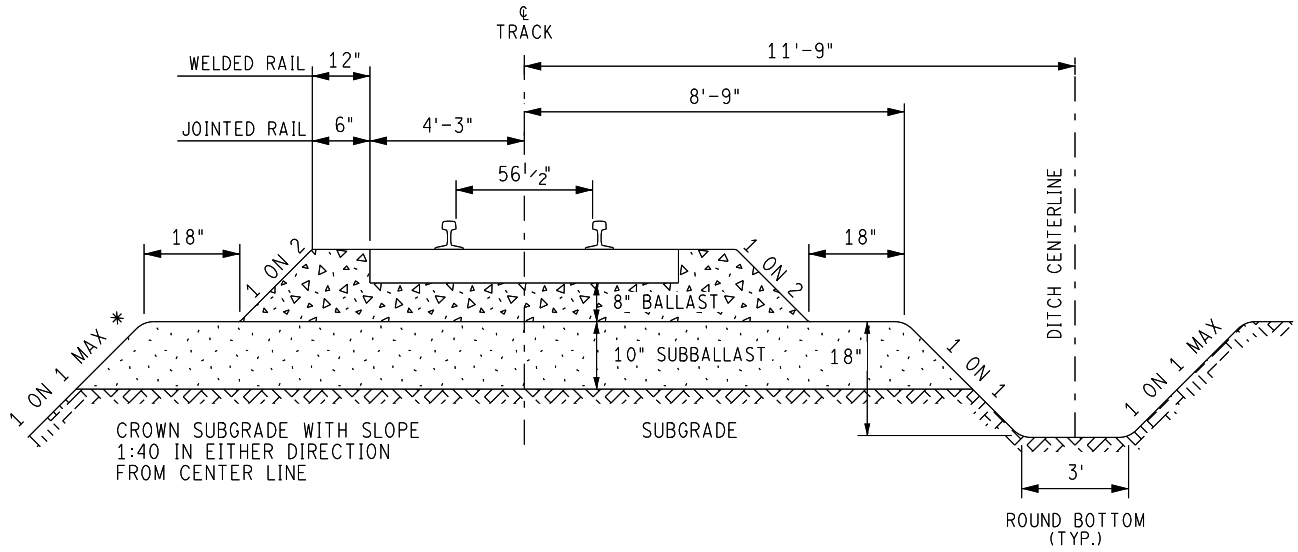
RAIL SPIKING PATTERNS

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE 06/06/2021

RR-40 SHEET 1 OF 1

TYPICAL TRACK STRUCTURE SECTION

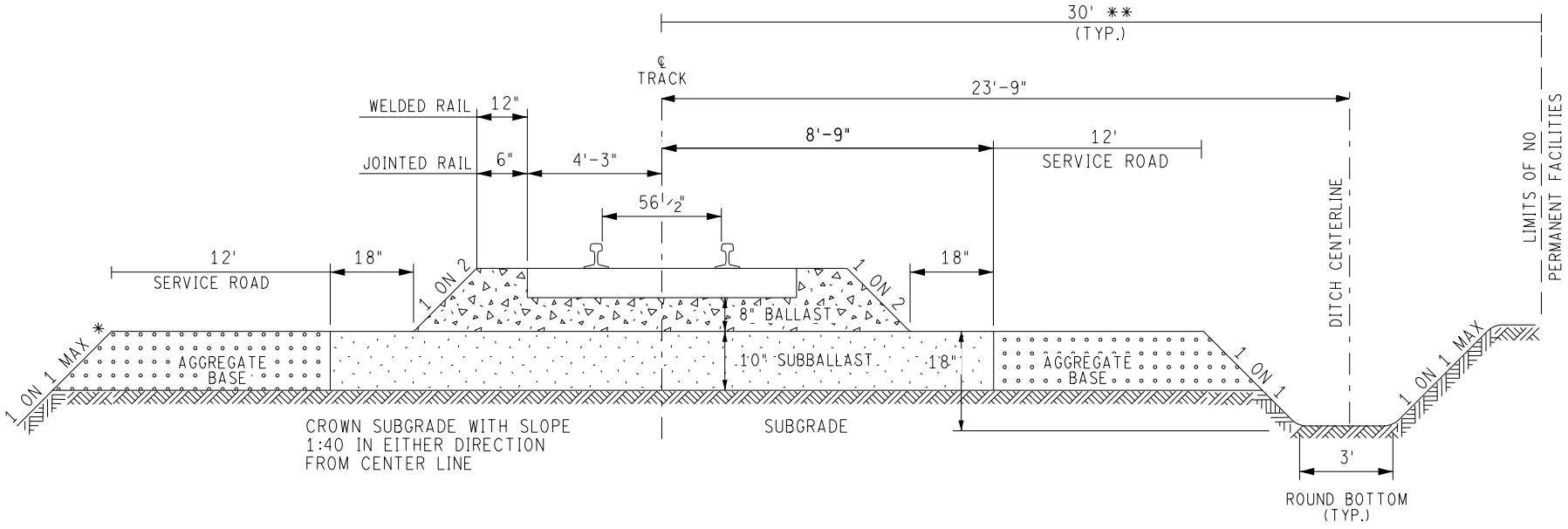


TANGENT TRACK

* FOR CONSTRUCTION AND REHABILITATION, FRONTSLOPES SHALL BE CONSISTANT WITH EXISTING SLOPES.

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR TYPICAL TRACK STRUCTURE SECTION	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER MANAGER	
		REVISION DATE 02/20/2019	RR-41 SHEET 1 OF 2

TYPICAL TRACK STRUCTURE SECTION



TANGENT TRACK

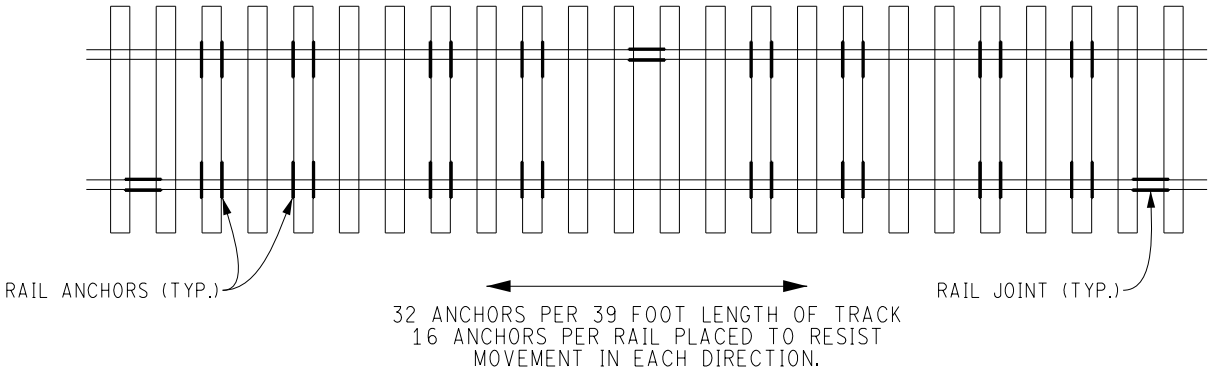
* FOR CONSTRUCTION AND REHABILITATION, FRONTSLOPES SHALL BE CONSISTANT WITH EXISTING SLOPES.

**NO PERMANENT FACILITIES SHALL BE INSTALLED WITHIN THE RAILROAD RIGHT-OF-WAY WITHIN THIS AREA.

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR TYPICAL TRACK STRUCTURE SECTION WITH SERVICE ROAD	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER-MANAGER	
		REVISION DATE 02/20/2019	RR-41 SHEET 2 OF 2

ANCHOR LOCATIONS IN TRACK

RAIL TRAFFIC ABOUT THE SAME IN BOTH DIRECTIONS



NOTES:

TRACK GRADES

- ANCHOR PATTERN MAY BE ADJUSTED FOR GRADES
- NUMBER OF ANCHORS MAY INCREASE FOR GRADES

BRIDGES

- RAIL ON BRIDGES WILL NOT BE ANCHORED IF DIRECT FIXATION OR OPEN DECK. BALLASTED DECKS GET ANCHORED AS PER PATTERN SHOWN ABOVE.
- APPROACHES TO BRIDGES WILL BE BOX ANCHORED EVERY OTHER TIE FOR 200' IN BOTH DIRECTIONS FROM THE BRIDGE.

ROAD CROSSINGS

- RAIL IN CROSSINGS WILL NOT BE ANCHORED
- APPROACHES TO CROSSINGS WILL BE BOX ANCHORED EVERY TIE FOR 50' IN BOTH DIRECTIONS FROM THE CROSSING.

PRIVATE CROSSINGS

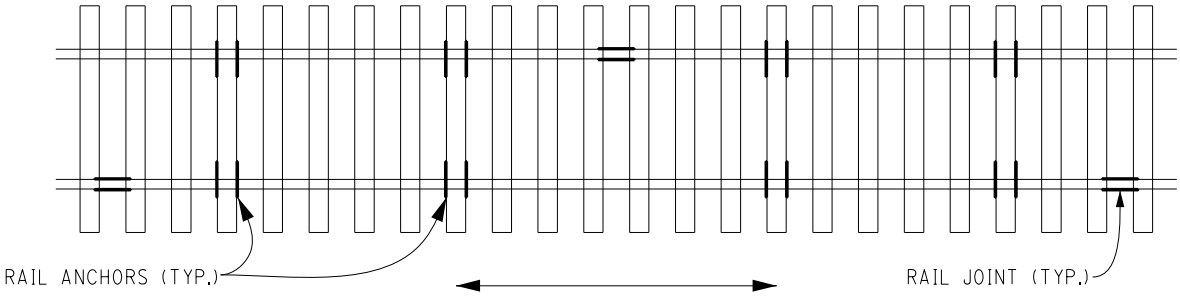
- ANCHOR APPROACHES AND CROSSINGS AS PER TRACK PATTERN SHOWN ABOVE.

TURNOUTS

- APPROACHES TO TURNOUTS WILL BE BOX ANCHORED EVERY OTHER TIE FOR 200' IN BOTH DIRECTIONS FROM THE TURNOUT.
- RAIL WITHIN THE TURNOUT WILL BE BOX ANCHORED EVERY OTHER TIE ON RAIL THAT CAN RECEIVE ANCHORS EXCLUDING THE SWITCH.
- THE ANCHORING WILL CONTINUE THROUGH THE LAST LONG TIE OF THE TURNOUT
- 160 ANCHORS WITHIN #8 TURNOUT
- 184 ANCHORS WITHIN #10 TURNOUT

ANCHOR LOCATIONS IN TRACK

RAIL TRAFFIC ABOUT THE SAME IN BOTH DIRECTIONS



32 ANCHORS PER 39 FOOT LENGTH OF TRACK
16 ANCHORS PER RAIL PLACED TO RESIST
MOVEMENT IN EACH DIRECTION.

NOTES:

TRACK GRADES

- ANCHOR PATTERN MAY BE ADJUSTED FOR GRADES
- NUMBER OF ANCHORS MAY INCREASE FOR GRADES

BRIDGES

- RAIL ON BRIDGES WILL NOT BE ANCHORED IF DIRECT FIXATION OR OPEN DECK. BALLASTED DECKS GET ANCHORED AS PER PATTERN SHOWN ABOVE.
- APPROACHES TO BRIDGES WILL BE BOX ANCHORED EVERY OTHER TIE FOR 200' IN BOTH DIRECTIONS FROM THE BRIDGE.

ROAD CROSSINGS

- RAIL IN CROSSINGS WILL NOT BE ANCHORED
- APPROACHES TO CROSSINGS WILL BE BOX ANCHORED EVERY TIE FOR 50' IN BOTH DIRECTIONS FROM THE CROSSING.

PRIVATE CROSSINGS

- ANCHOR APPROACHES AND CROSSINGS AS PER TRACK PATTERN SHOWN ABOVE.

TURNOUTS

- APPROACHES TO TURNOUTS WILL BE BOX ANCHORED EVERY OTHER TIE FOR 200' IN BOTH DIRECTIONS FROM THE TURNOUT.
- RAIL WITHIN THE TURNOUT WILL BE BOX ANCHORED EVERY OTHER TIE ON RAIL THAT CAN RECEIVE ANCHORS, EXCLUDING THE SWITCH.
- THE ANCHORING WILL CONTINUE THROUGH THE LAST LONG TIE OF THE TURNOUT
- 160 ANCHORS WITHIN #8 TURNOUT
- 184 ANCHORS WITHIN #10 TURNOUT

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

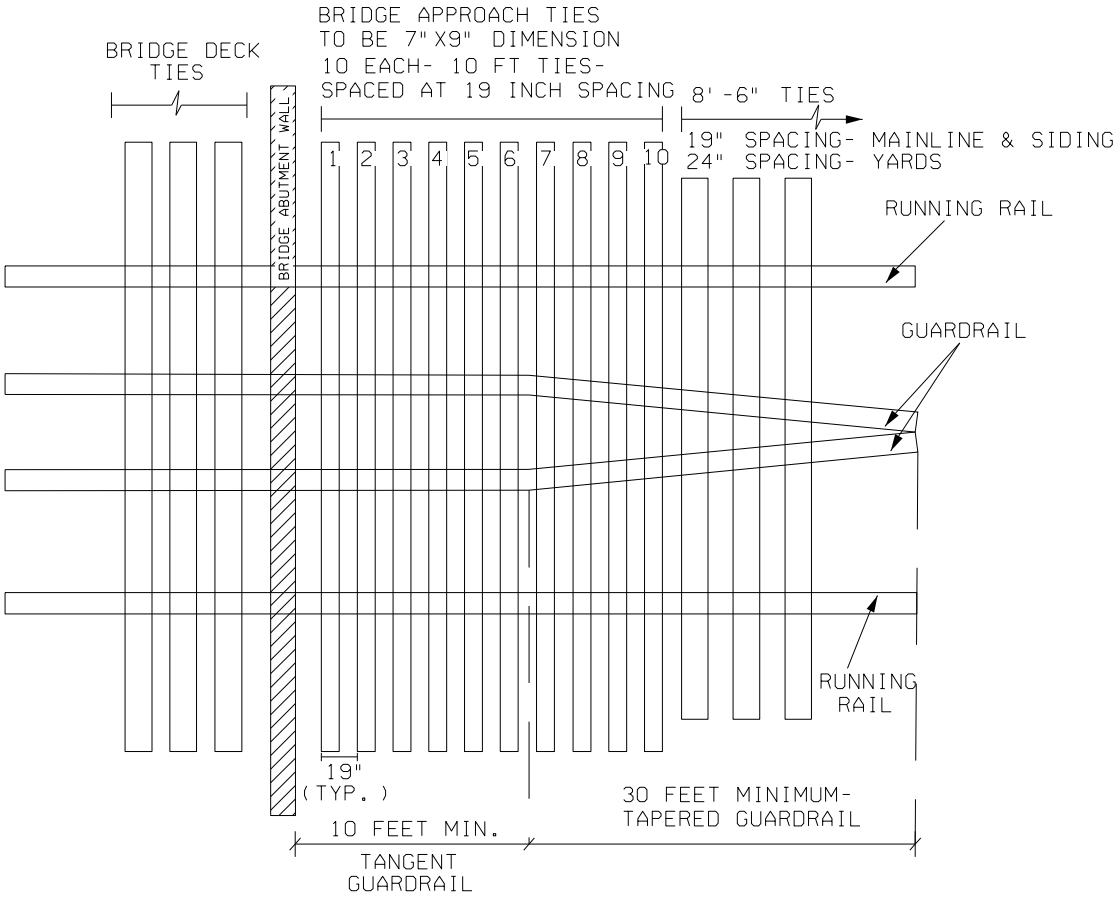
RAIL ANCHORING
FOR 10 M.P.H. DESIGN SPEED

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE
10/17/2024

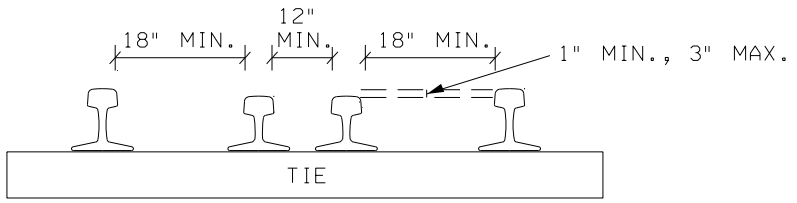
RR-42 SHEET 2 OF 2

RAILROAD BRIDGE APPROACH TIES AND GUARDRAILS



NOTES:
-10 FT BRIDGE APPROACH TIES NEEDED ONLY WHERE TRACK SPEEDS ARE GREATER THAN 10 MPH
-NO RUNNING RAIL JOINTS WITHIN 30 FT OF BRIDGE ABUTMENT WALL

PLAN VIEW



NOTES:
-GUARDRAILS TO BE INSTALLED ON ALL BRIDGES OVER ROADWAYS AND ABOVE WATERWAYS GREATER THAN 15 FT IN HEIGHT ABOVE WATER, OR DIRECTED BY ENGINEER
-GUARDRAIL DOES NOT REQUIRE TIE PLATES
-ALL GUARDRAIL ENDS SHALL BE BENT DOWN, TO AVOID CATCHING EQUIPMENT
-PLACE SPIKE ON EACH GUARDRAIL PER TIE, ALTERNATING SIDES EVERY TIE
-JOINT BARS SHALL HAVE A MINIMUM OF 4 BOLTS

PROFILE VIEW

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

BRIDGE APPROACH TIES AND GUARDRAIL

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER-MANAGER

REVISION DATE
1/30/2025

RR-43 SHEET 1 OF 1

MISCELLANEOUS TRACK STANDARDS

NEW RAILROAD TRACKS

ALL NEW TRACKS ON MDOT RAILROAD ROW SHALL CONSIST OF MINIMUM NEW 115# RAIL.

ALL TIES SHALL BE GRADE 5, 7"x 9" TIES.

RAILROAD TURNOUTS

ALL NEW TURNOUTS SHALL BE NO. 10 OR LARGER.

ALL NEW TUNROUTS SHALL HAVE MAINLINE RAILS WELDED, EXCEPT AT EACH END OF THE FROG AND AT HEEL BLOCKS. EACH END OF MAINLINE RAILS OF TURNOUT SHALL BE WELDED TO EXISTING TRACK RAILS.

FROGS

NO SELF-GUARDED FROGS SHALL BE PLACED ON THE MAINLINE OR ANY SIDING TRACK GREATER THAN 10 MPH.

FOR CLASS III AND HIGHER MAINLINE TRACK, ALL INDUSTRY TURNOUTS SHALL BE OF JUMP FROG STYLE.

SWITCH STAND BANNERS

BANNERS SHALL BE GREEN AND RED IN COLOR, WITH THE GREEN BANNER DISPLAYED FOR MAINLINE MOVEMENT AND RED COLOR DISPLAYED FOR TURNOUT MOVEMENT.

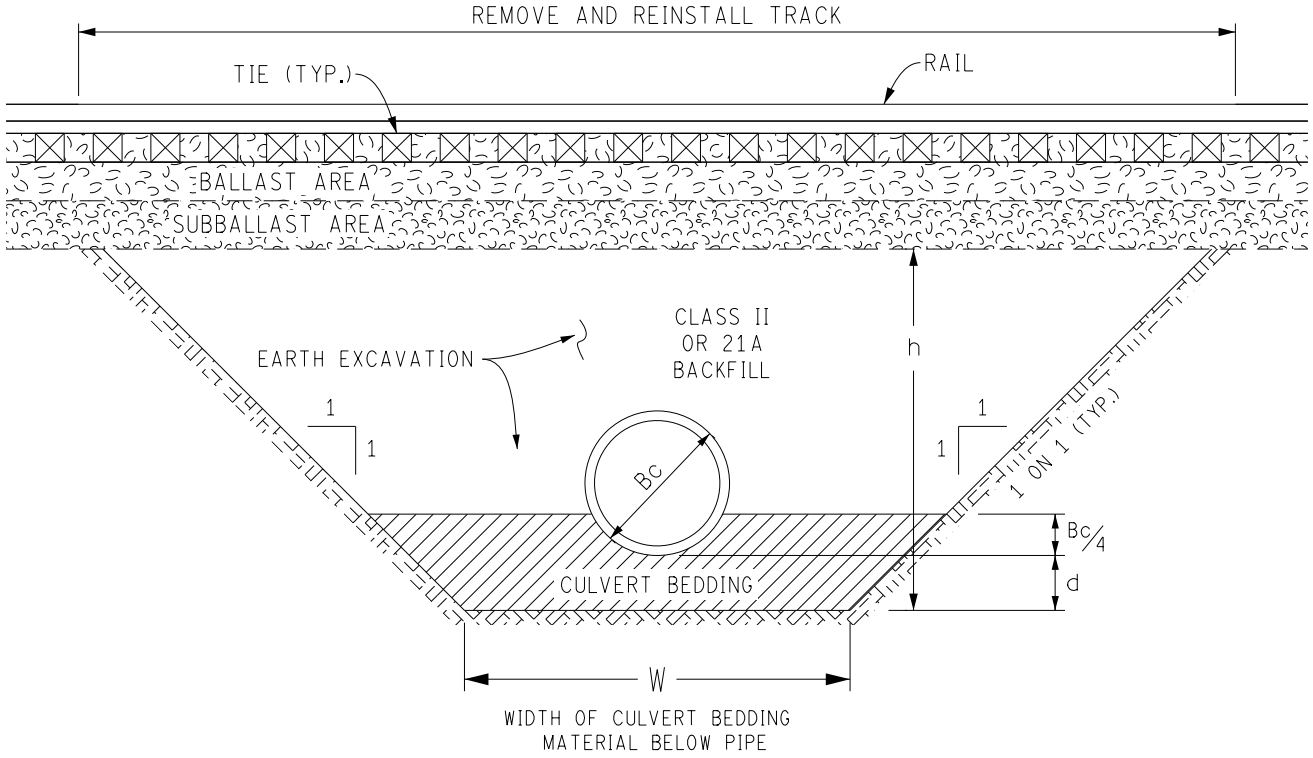
DERAILS

HAYES DERAILS SHALL BE INSTALLED NO CLOSER THAN THE 15 FEET FROM THE CENTERLINE OF MAINLINE OR SIDING TRACK, TO CENTERLINE OF TRACK DERAIL IS LOCATED ON.

SPLIT SWITCH DERAILS SHALL BE INSTALLED NO CLOSER THAN 15 FEET FROM THE CENTERLINE OF MAINLINE OR SIDING TRACK TO THE CENTERLINE OF TRACK ON THE TURNOUT SIDE OF THE END OF DERAIL.

ALL DERAILS SHALL BE INSTALLED SO AS TO DIRECT THE DERAIED RAIL CAR AWAY FROM THE ADJOINING MAINLINE OR SIDING TRACK.

TRENCH DETAIL



D	d
27" & SMALLER	6"
30" TO 60"	9"
60" & LARGER	12"

Bc =OUTSIDE DIAMETER
W =Bc +8" OR 1 1/2 X Bc
(WHICHEVER IS GREATER)
d =DEPTH OF BEDDING
MATERIAL BELOW PIPE
D =INSIDE DIAMETER
h =DEPTH OF EXCAVATION
BELOW BALLAST

NOTES: PLACE AND COMPACT CULVERT BEDDING TO THE LEVEL OF d PLUS 1/4 THE OUTSIDE DIAMETER OF THE PIPE CULVERT (d+Bc/4) AND THEN EXCAVATE AND SHAPE A TRENCH TO FIT THE PIPE. AFTER PLACING CULVERT, CONTINUE FILLING WITH CLASS II BACKFILL OR 21A AGGREGATE.

CULVERT BEDDING SHALL BE CLASS II BACKFILL OR 21A AGGREGATE EXCEPT WHEN CLASS II CULVERT BEDDING IS NOTED ON THE PLANS.

CLASS II CULVERT BEDDING AND CLASS II BACKFILL OR 21A AGGREGATE SHALL BE PLACED AND COMPACTED IN 9" MAXIMUM LAYERS, UNLESS OTHERWISE NOTED. COMPACTION SHALL REACH A MINIMUM DENSITY OF 95% OF THE MAXIMUM UNIT WEIGHT OF THE MATERIAL BEING COMPACTED.

ALL CULVERTS SHALL BE SEAMLESS CONSTRUCTION (NO JOINTS) UNDER THE LOADING INFLUENCE LINE AND E-80 LOADING COMPLIANT. ALL CORRUGATED METAL PIPE UNDER TRACKS SHALL BE A MINIMUM OF 10 GAUGE MATERIAL.

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

CULVERT INSTALLATION
UNDER RAILROAD TRACK

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE
1/30/2025

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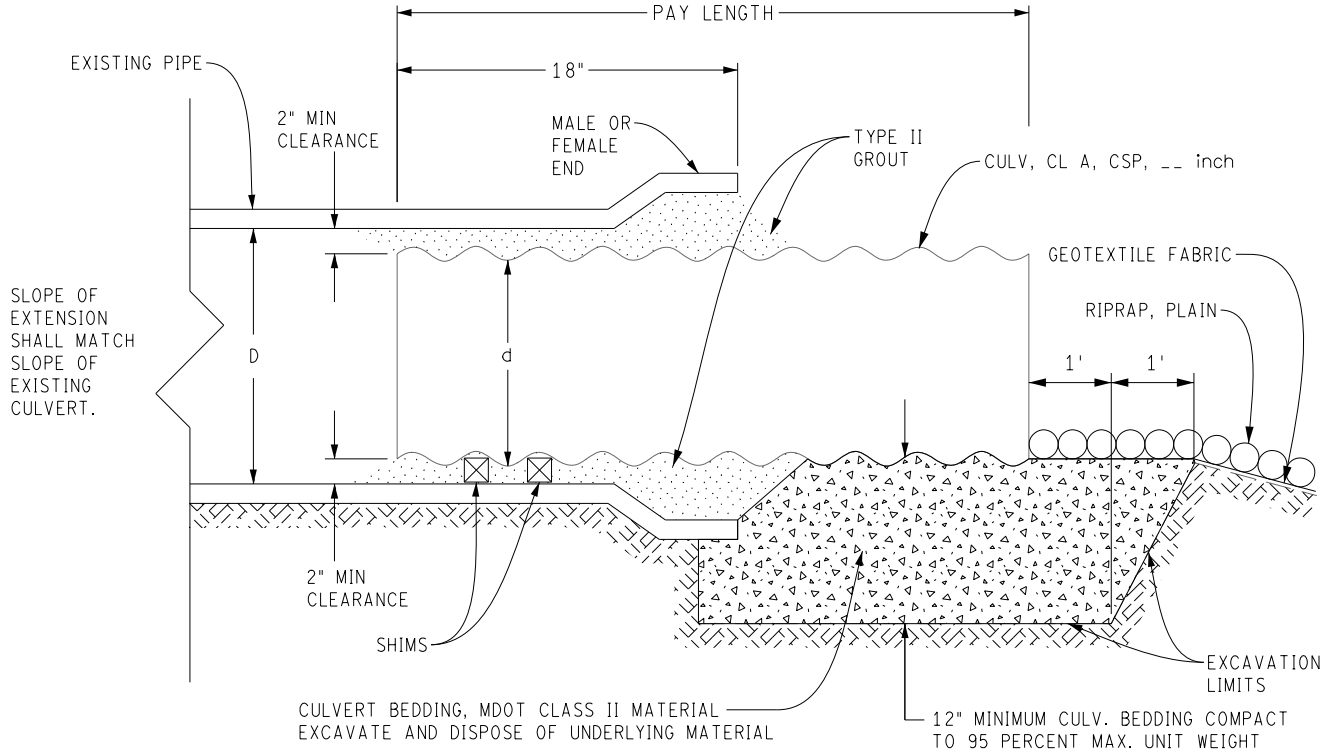
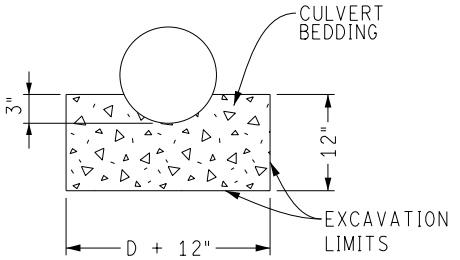
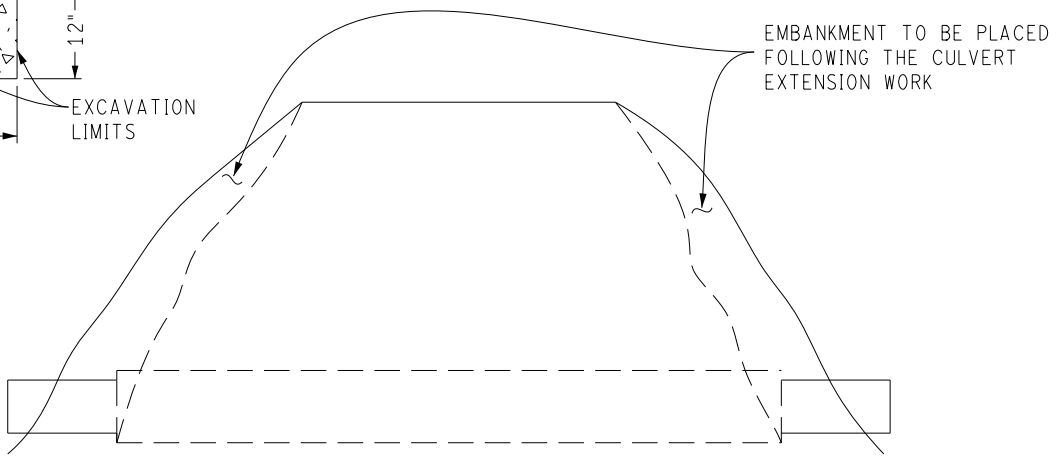


D= NOMINAL DIAMETER OF EXISTING PIPE
d= NOMINAL DIAMETER OF EXTENSION PIPE





MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

CULVERT (CSP) EXTENSION

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE 02/24/2025

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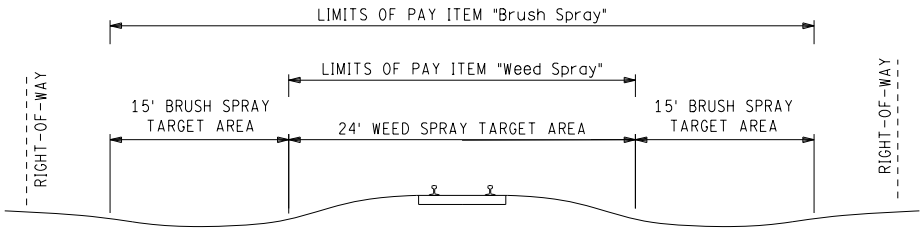


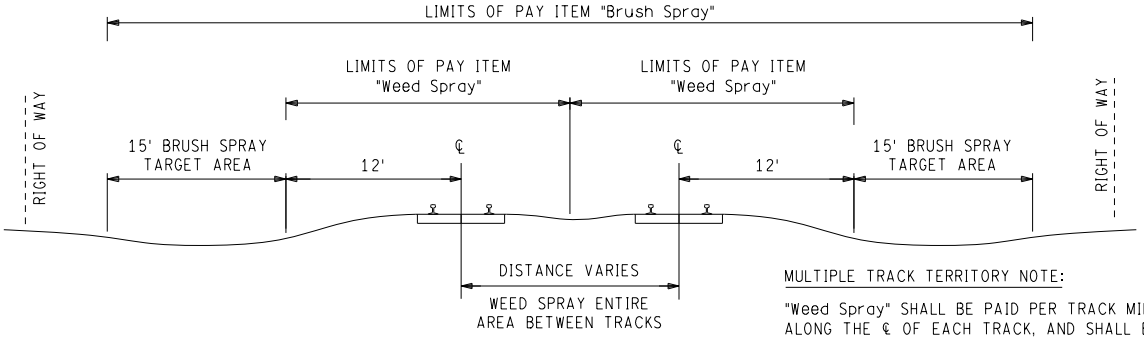
TYPICAL

MAINLINE WEED AND BRUSH SPRAY
SINGLE TRACK

SINGLE TRACK TERRITORY NOTE:

"Weed Spray" SHALL BE PAID ONCE PER TRACK MILE. PAYMENT INCLUDES WEED SPRAY ACTIVITIES ON BOTH SIDES OF TRACK.

"Brush Spray" SHALL BE PAID BY THE ROADBED MILE. PAYMENT INCLUDES BRUSH SPRAY ACTIVITIES ON ALL SIDES OF TRACK.



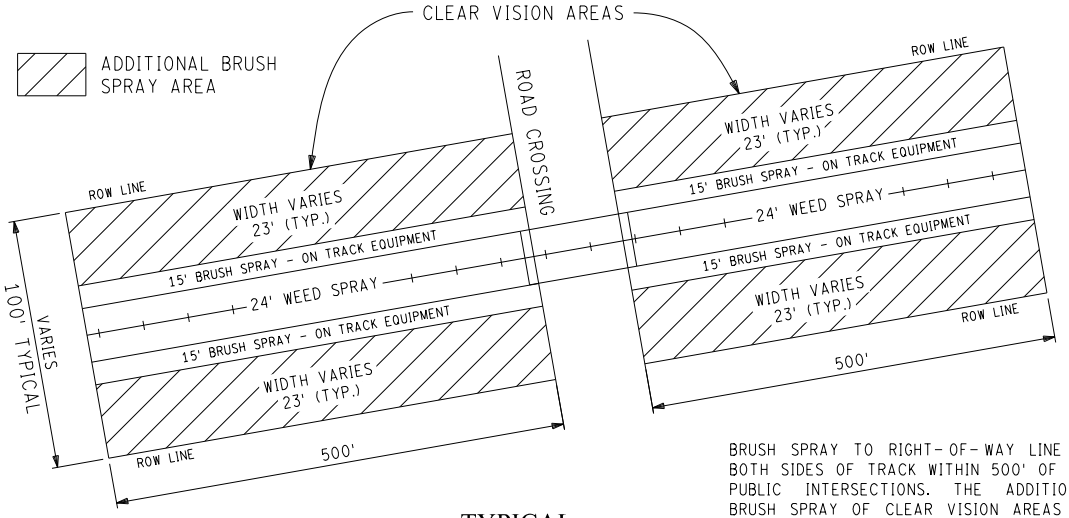
TYPICAL

YARD/SIDING WEED AND BRUSH SPRAY
MULTIPLE TRACK

MULTIPLE TRACK TERRITORY NOTE:

"Weed Spray" SHALL BE PAID PER TRACK MILE ALONG THE ℄ OF EACH TRACK, AND SHALL BE PAID SEPARATELY FOR EACH TRACK IN AREAS WITH MULTIPLE PARALLEL TRACKS. PAYMENT INCLUDES WEED SPRAY ACTIVITIES ON BOTH SIDES OF EACH TRACK.

"Brush Spray" SHALL BE PAID BY THE ROADBED MILE. PAYMENT INCLUDES BRUSH SPRAY ACTIVITIES ON ALL SIDES OF ALL TRACKS.



TYPICAL

CLEAR VISION BRUSH SPRAYING
AT INTERSECTIONS

BRUSH SPRAY TO RIGHT-OF-WAY LINE ON BOTH SIDES OF TRACK WITHIN 500' OF ALL PUBLIC INTERSECTIONS. THE ADDITIONAL BRUSH SPRAY OF CLEAR VISION AREAS AT INTERSECTIONS SHALL NOT BE PAID FOR SEPARATELY. ADDITIONAL BRUSH SPRAY OF CLEAR VISION AREAS SHALL BE INCLUDED IN THE PAY ITEM "Brush Spray".

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

CHEMICAL VEGETATION CONTROL

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE 04/05/2016

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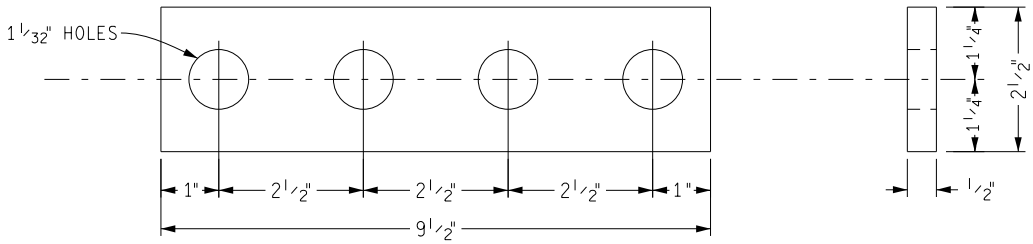
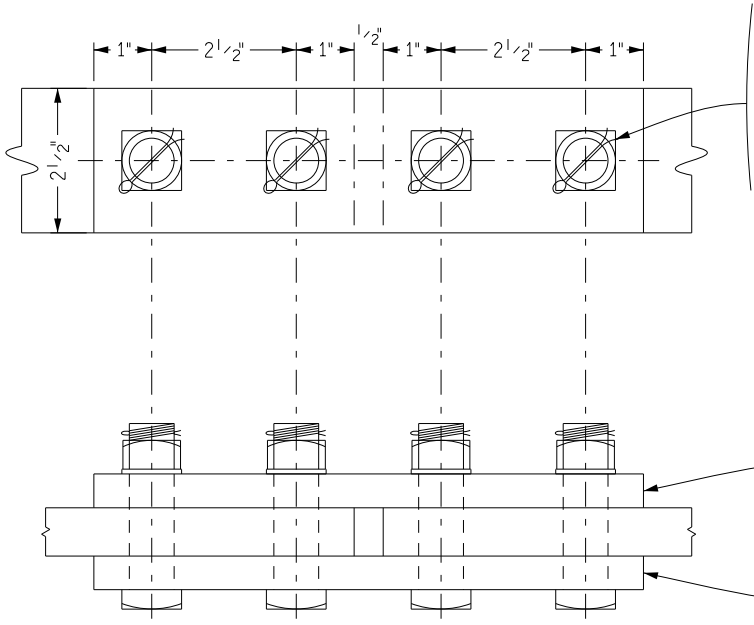
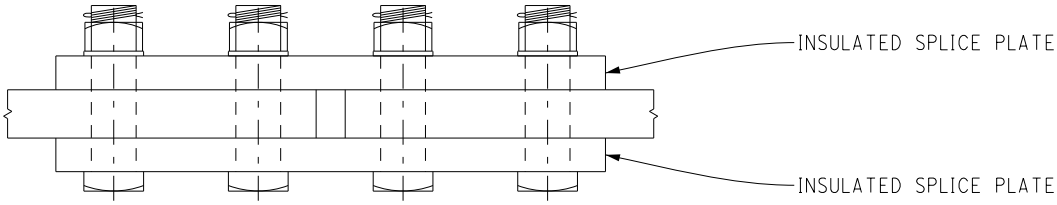


INSULATED SPLICE PLATE, 3M SCOTCHPLY MATERIAL
OR APPROVED EQUAL



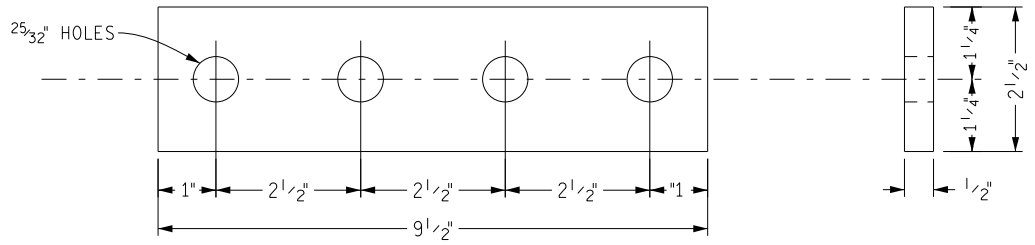
1" DIA. BOLTS 3 1/2" LONG FOR 3/4" SWITCH ROD
1" DIA. BOLTS 3 1/2" LONG FOR 1" SWITCH ROD
1" DIA. BOLTS 3 3/4" LONG FOR 1 1/4" SWITCH ROD
WITH A.S.A. REG. SQ. HEADS,
A.S.A. HEAVY SQ. NUTS,
SPRING WASHERS AND COTTER PINS.



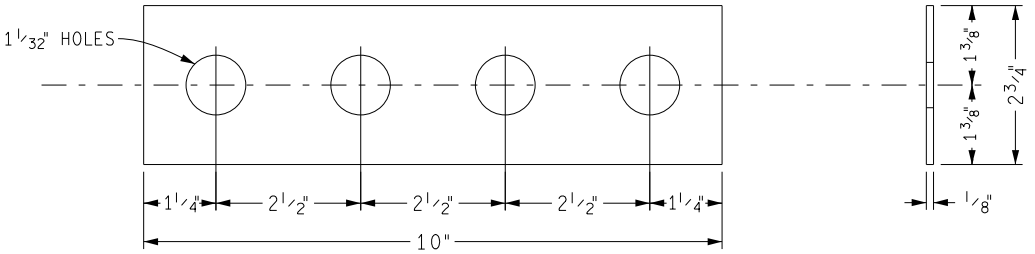
NOTE: DIMENSIONS WILL REQUIRE MODIFICATION IF EXISTING SWITCH ROD IS NOT AN AREMA STANDARD DESIGN.

TYPE 1
SWITCH ROD INSULATION

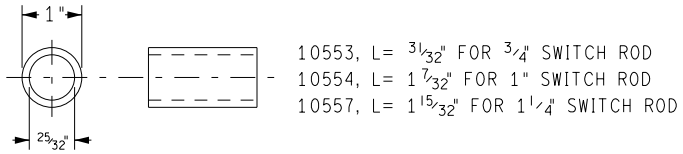
MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR SWITCH ROD INSULATION	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER MANAGER	
		REVISION DATE 04/19/2016	RR-90 SHEET 1 OF 2



10551 SPLICE PLATE, STEEL

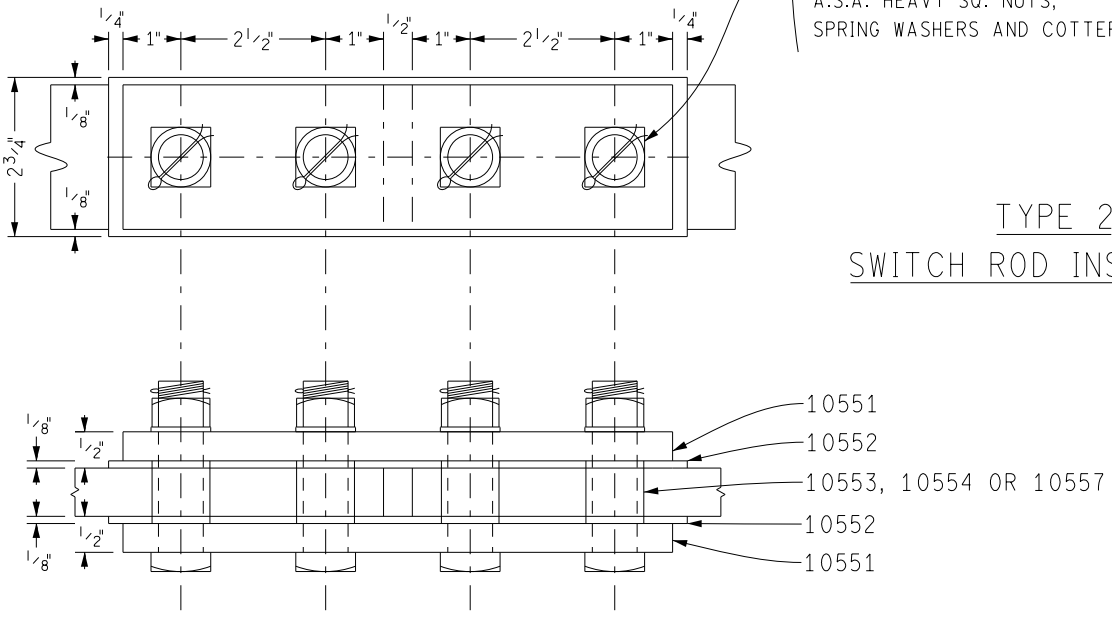


10552 SPLICE PLATE, FIBRE



10553, L= 31/32" FOR 3/4" SWITCH ROD
10554, L= 1 7/32" FOR 1" SWITCH ROD
10557, L= 1 15/32" FOR 1 1/4" SWITCH ROD

3/4" DIA. BOLTS 3 1/4" LONG FOR 3/4" SWITCH ROD
3/4" DIA. BOLTS 3 1/2" LONG FOR 1" SWITCH ROD
3/4" DIA. BOLTS 3 3/4" LONG FOR 1 1/4" SWITCH ROD
WITH A.S.A. REG. SQ. HEADS,
A.S.A. HEAVY SQ. NUTS,
SPRING WASHERS AND COTTER PINS.



TYPE 2
SWITCH ROD INSULATION

10555 INSULATION COMPL. FOR 3/4" SWITCH ROD
10556 INSULATION COMPL. FOR 1" SWITCH ROD
10558 INSULATION COMPL. FOR 1 1/4" SWITCH ROD

NOTE: DIMENSIONS WILL REQUIRE MODIFICATION IF EXISTING SWITCH ROD IS NOT AN AREMA STANDARD DESIGN.

MDOT
OFFICE OF RAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
RAILROAD TYPICAL PLAN FOR

SWITCH ROD INSULATION

APPROVED BY: JIM D'LAMATER
RAILROAD INFRASTRUCTURE ENGINEER MANAGER

REVISION DATE
04/19/2016

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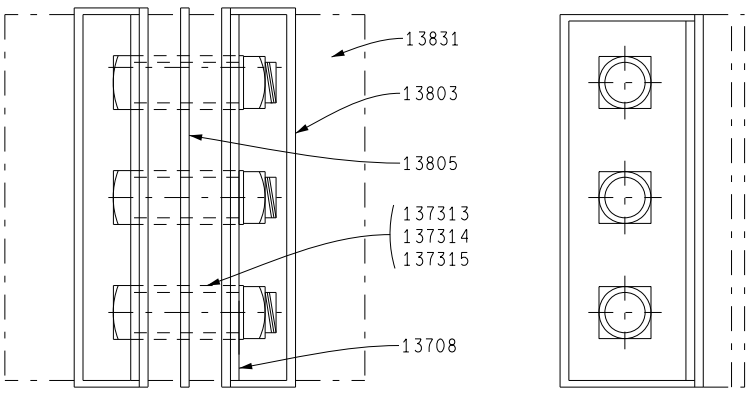
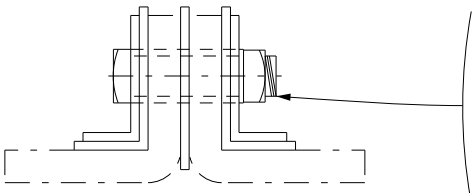
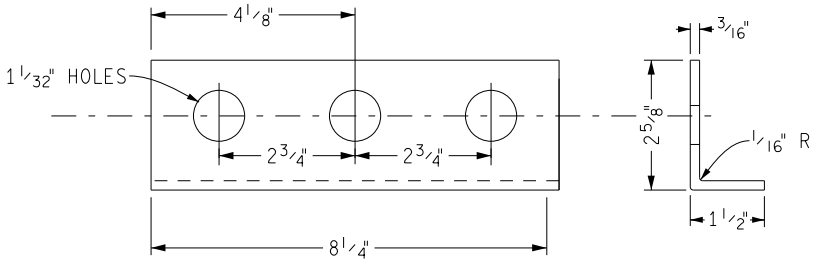
3M SCOTCHPLY MATERIAL OR APPROVED EQUAL

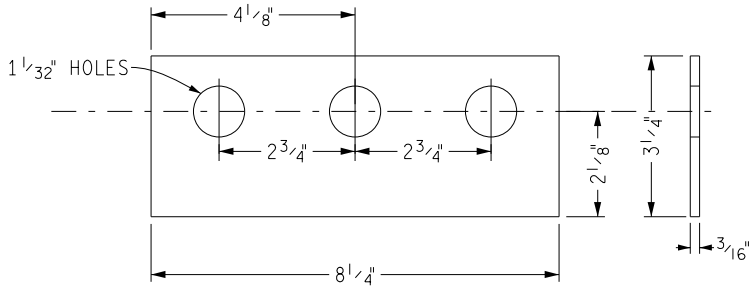




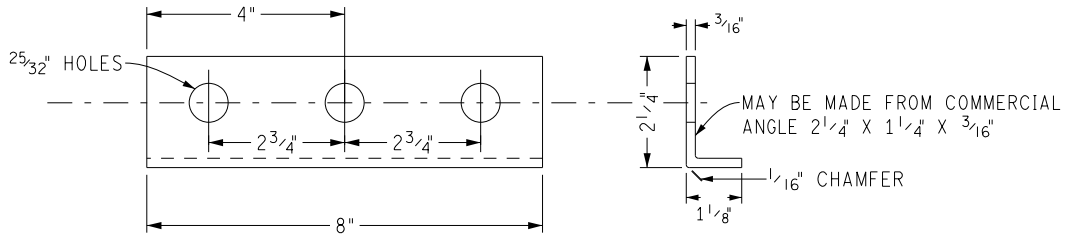
$^{3}/_{4}$" -10 X $3^{3}/_{4}$" BOLT FOR $^{3}/_{4}$" PLATE
$^{3}/_{4}$" -10 X $4^{1}/_{4}$" BOLT FOR 1" PLATE
$^{3}/_{4}$" -10 X $4^{1}/_{4}$" BOLT FOR $1^{1}/_{4}$" PLATE
WITH HEAVY SQ. NUT AND SPRING LOCK WASHER
13809 INSULATION COMPL. FOR $^{3}/_{4}$" PLATE
138020 INSULATION COMP. FOR 1" PLATE
138011 INSULATION COMPL. FOR $1^{1}/_{4}$" PLATE



13803 INSULATION ANGLE PIECE FIBRE



13805 INSULATION END POST FIBRE



13807 STRAP WASHER, STEEL

MDOT OFFICE OF RAIL	MICHIGAN DEPARTMENT OF TRANSPORTATION RAILROAD TYPICAL PLAN FOR GAGE PLATE INSULATION	APPROVED BY: JIM D'LAMATER RAILROAD INFRASTRUCTURE ENGINEER MANAGER	
		REVISION DATE 04/19/2016	RR-91 SHEET 1 OF 1