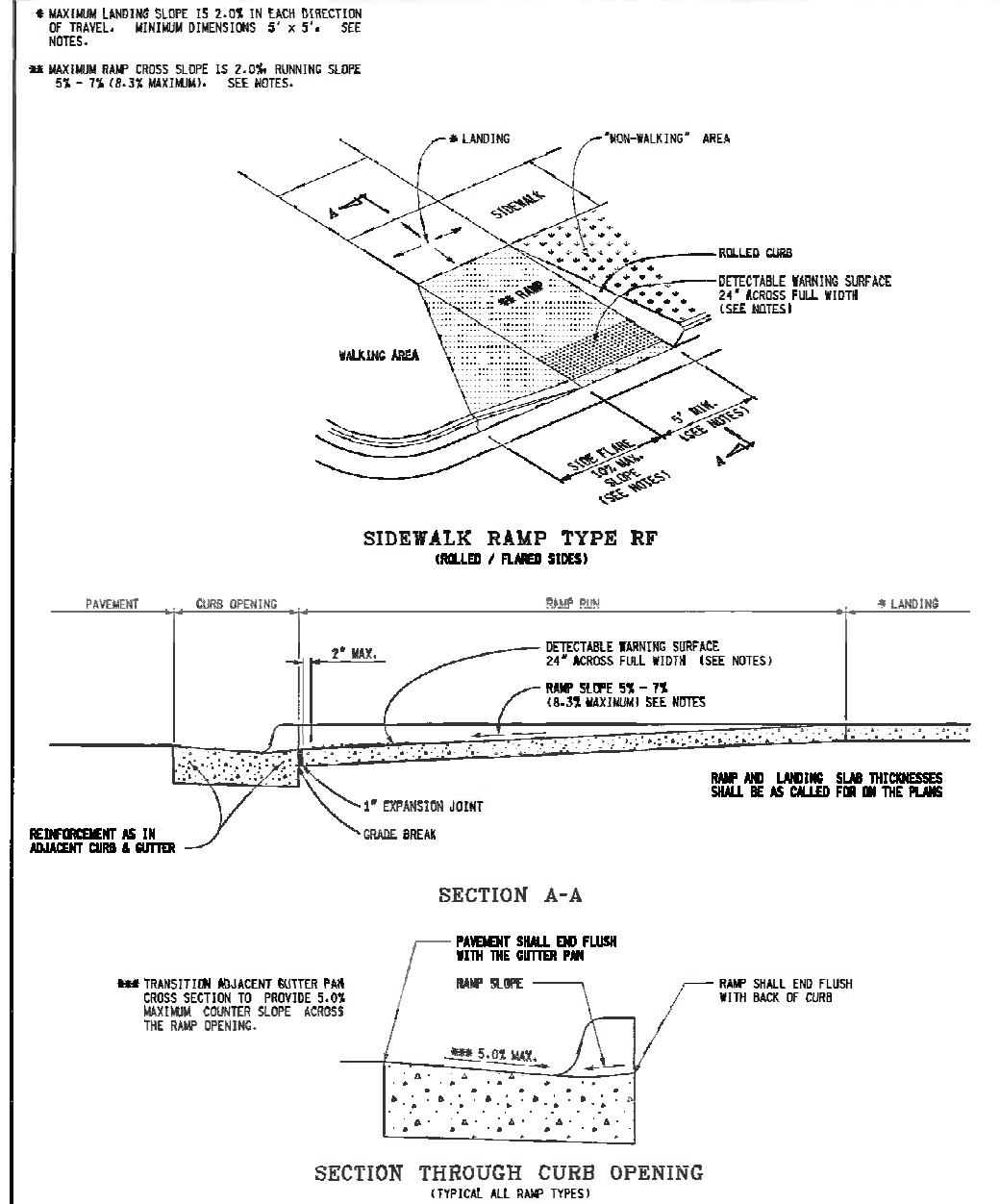


	DEPARTMENT DIRECTOR Kirk T. Shoups		MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
	<b>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS</b>					
	PREPARED BY DESIGN DIVISION	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	3-15-2016 PLAN DATE	<b>R-28-J</b>	SHEET <b>1 OF 1</b>	F.H.W.A. APPROVAL
	CHECKED BY: W.K.P.	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT				



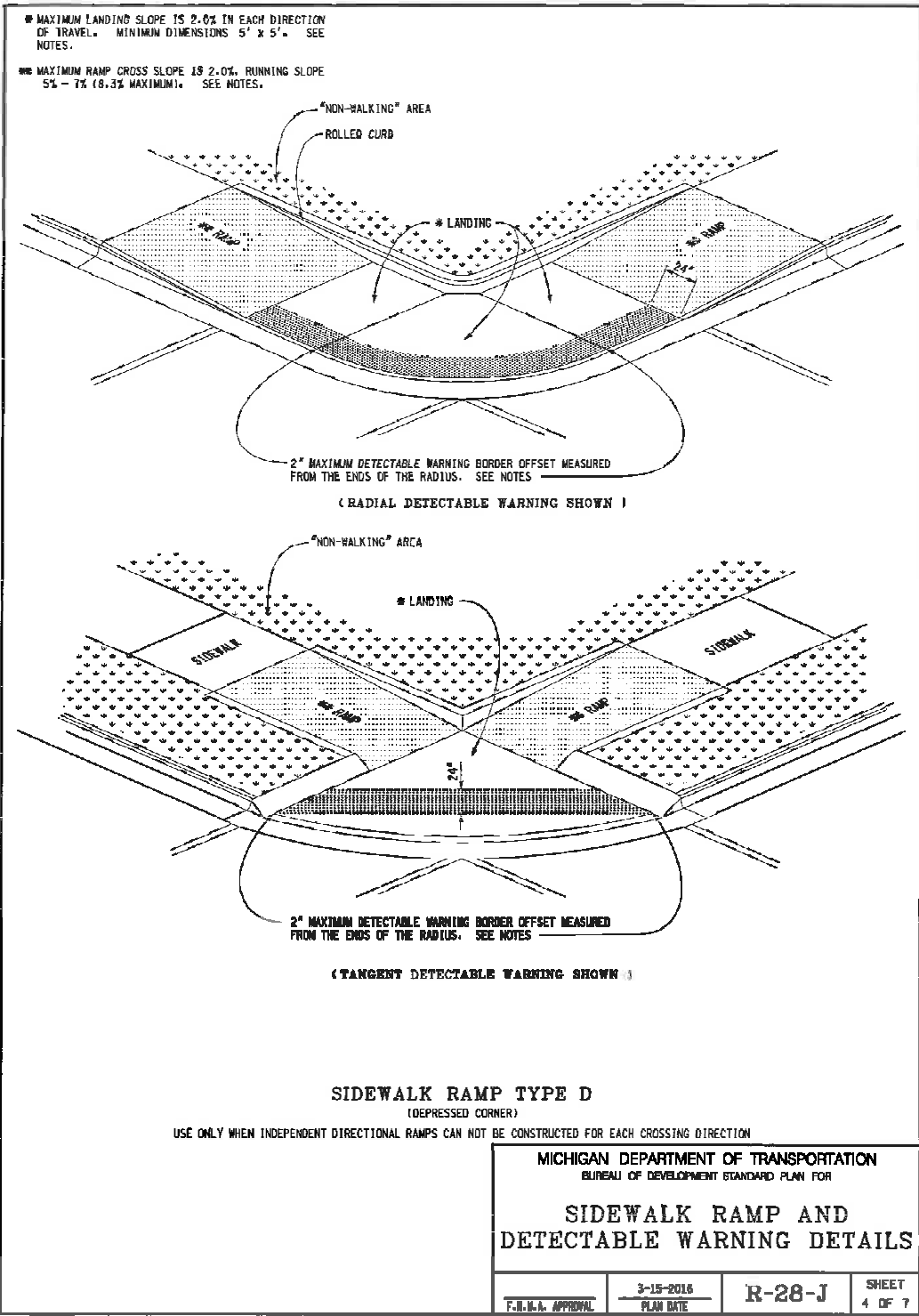
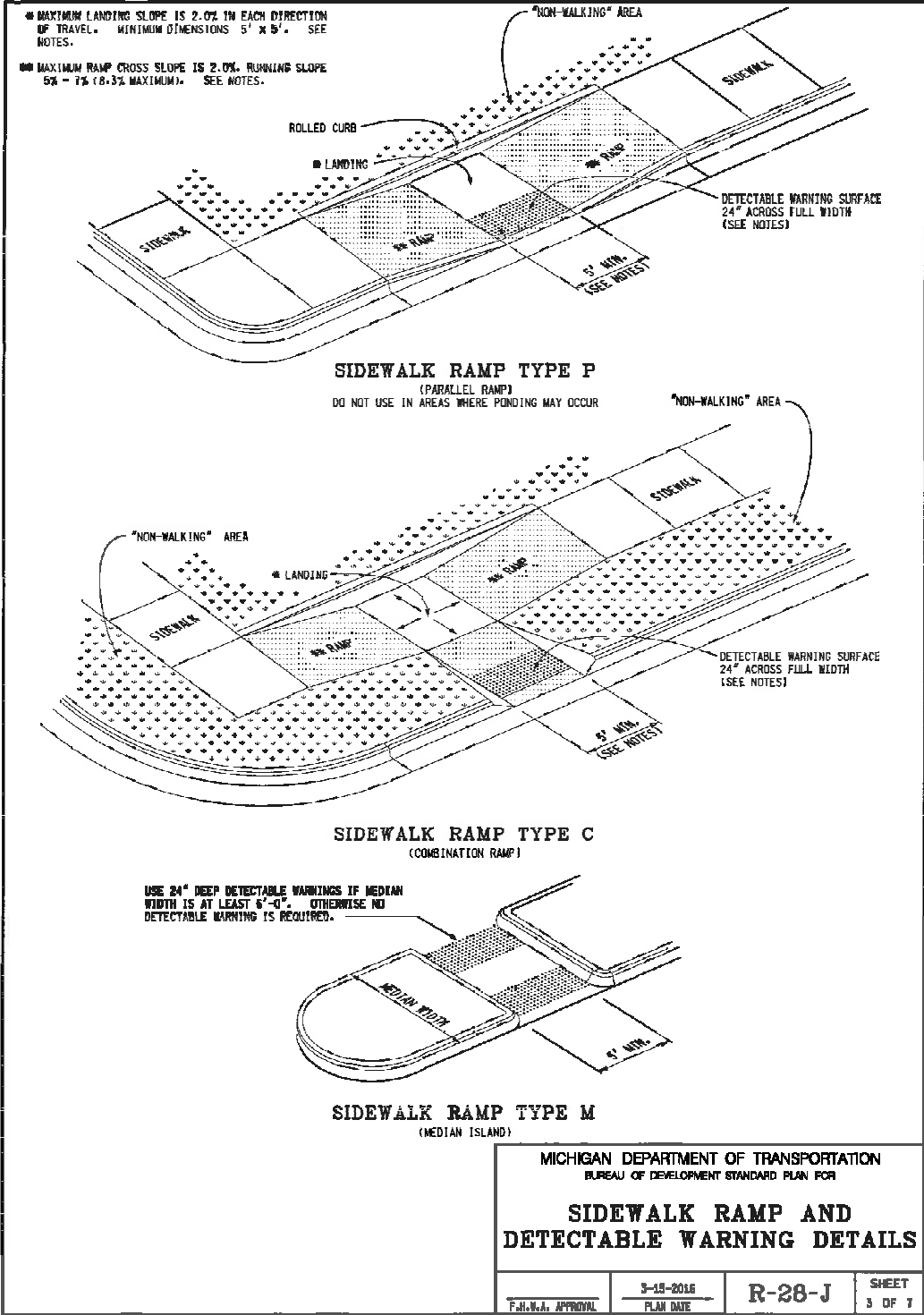
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
<b>SIDEWALK RAMP AND DETECTABLE WARNING DETAILS</b>			
F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	<b>R-28-J</b>	SHEET <b>2 OF 1</b>

REVISIONS:

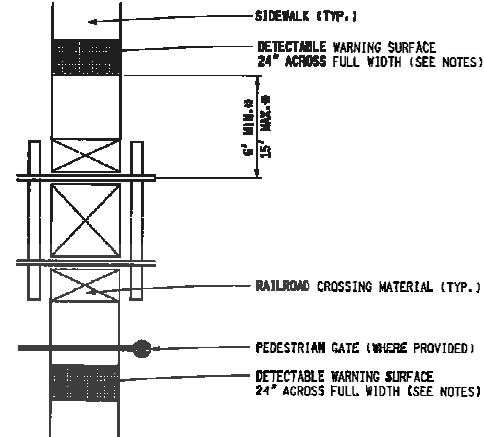
DATE: \_\_\_\_\_  
 DRAWN BY: JOE MAYHEW  
 CHECKED BY: JESUS PLASENCIA  
 PROJECT NO: \_\_\_\_\_

**RAMP DETAILS**

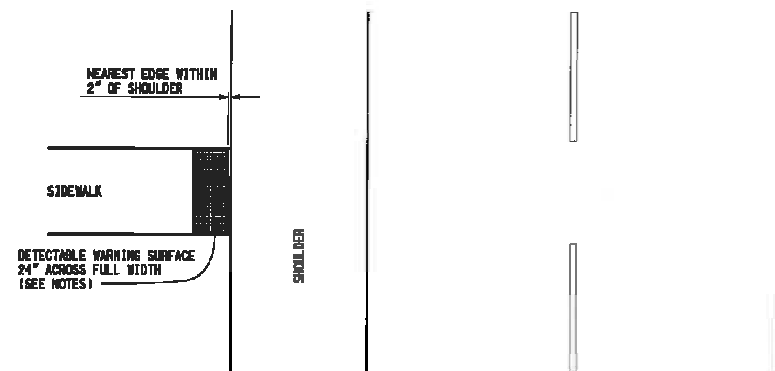
**CITY OF WYANDOTTE - DEPT. OF ENGINEERING**  
 CITY ENGINEER - MARK A. KOWALEWSKI  
 PHONE: (734) 324-4551  
 FAX: (734) 324-4535  
 3200 BIDDLE AVENUE  
 WYANDOTTE, MI 48192



\* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.

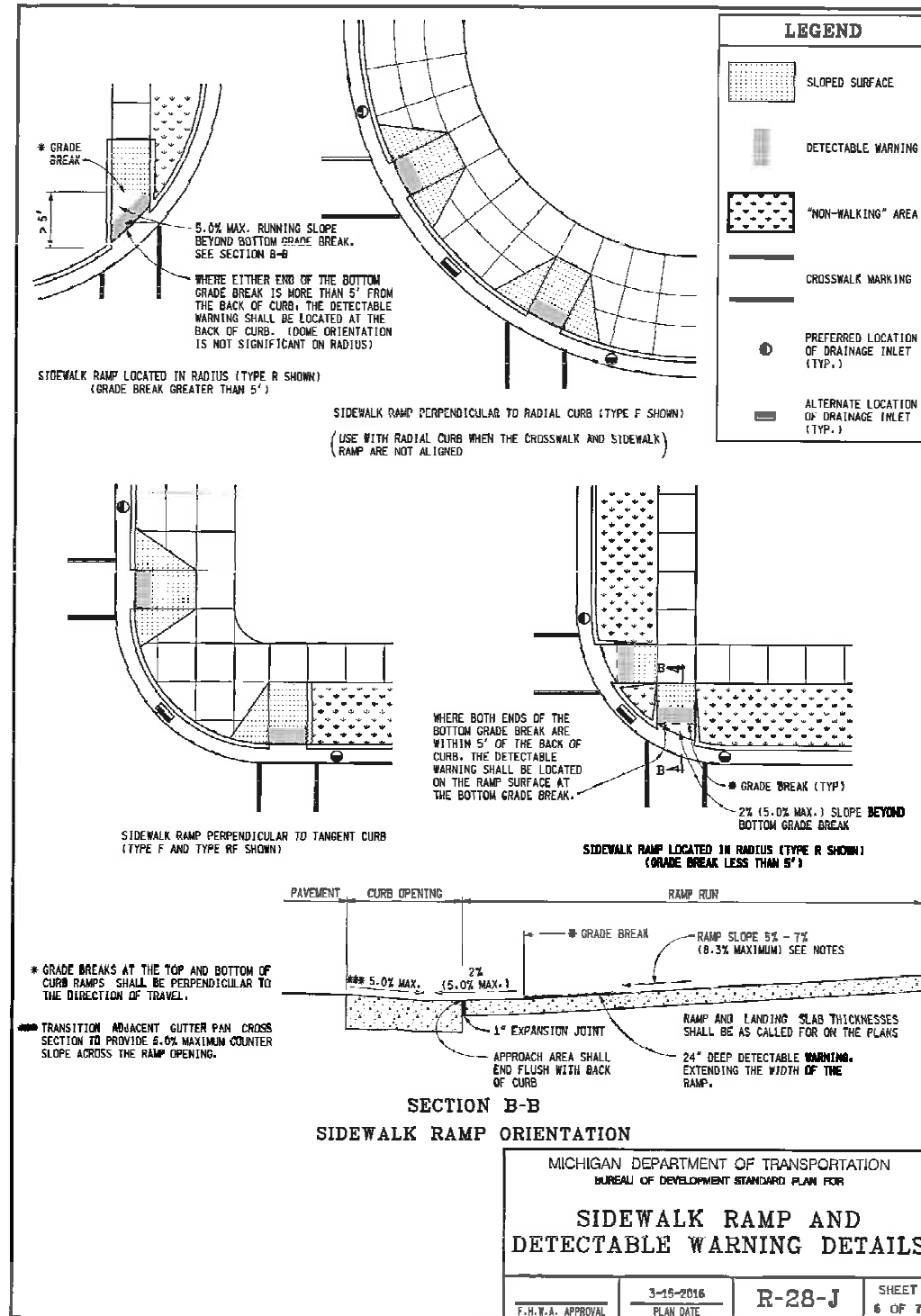


DETECTABLE WARNING AT RAILROAD CROSSING



DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS			
F.H.W.A. APPROVAL	3-15-2016 PLAN DATE	R-28-J	SHEET 5 OF 7



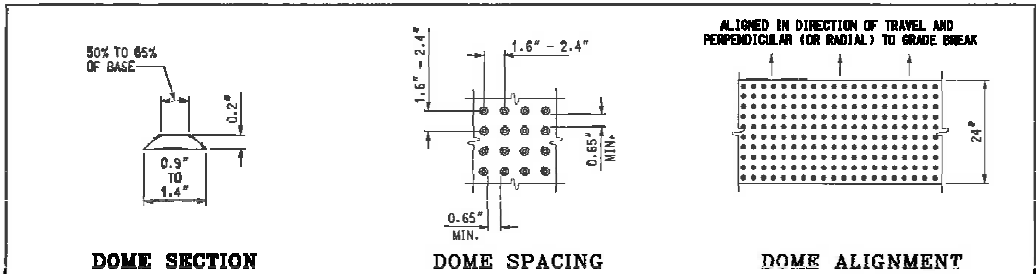
REVISIONS:

DATE:   
DRAWN BY: JOE MAYHEW  
CHECKED BY: JESUS PLENACIA  
PROJECT NO:

RAMP DETAILS

CITY OF WYANDOTTE - DEPT. OF ENGINEERING  
CITY ENGINEER - MARK A. KOWALEWSKI  
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3200 BIDDLE AVENUE  
WYANDOTTE, MI 48192

D-3



DETECTABLE WARNING DETAILS

NOTES:-

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED WTD-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT. IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADII.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 0.3% IS RELATIVE TO A FLAT 0.0% REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2", ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

TRANSITION THE BUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL BUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

NOTES:

USE OF ROLLED CURB ON ADA SIDEWALK RAMPS IS NOT PERMITTED IN THE CITY OF WYANDOTTE. CONTRACTOR IS TO REGRADE AND SOD THE ELEVATION DIFFERENCE, AS DIRECTED BY THE ENGINEER.

THE DETECTABLE/TACTILE WARNING SURFACE SHALL BE "SAFETY YELLOW". (FEDERAL COLOR NO. 33538)

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND  
DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL

3-15-2016  
PLAN DATE

R-28-J

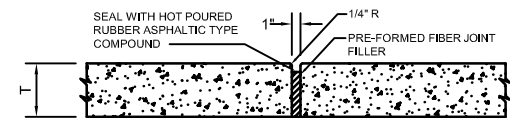
SHEET  
1 OF 1

REVISIONS:

DATE:   
DRAWN BY: JOE MAYHEW  
CHECKED BY: JESUS PLENANCIA  
PROJECT NO:

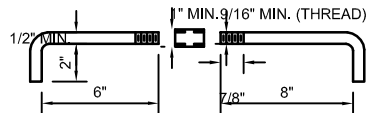
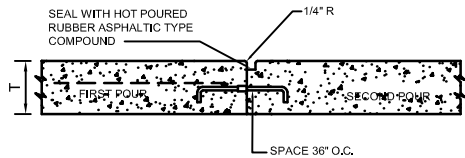
RAMP DETAILS

CITY OF WYANDOTTE - DEPT. OF ENGINEERING  
CITY ENGINEER - MARK A. KOWALEWSKI  
PHONE: (734) 324-4551  
FAX: (734) 324-4535  
3200 BIDDLE AVENUE  
WYANDOTTE, MI 48192



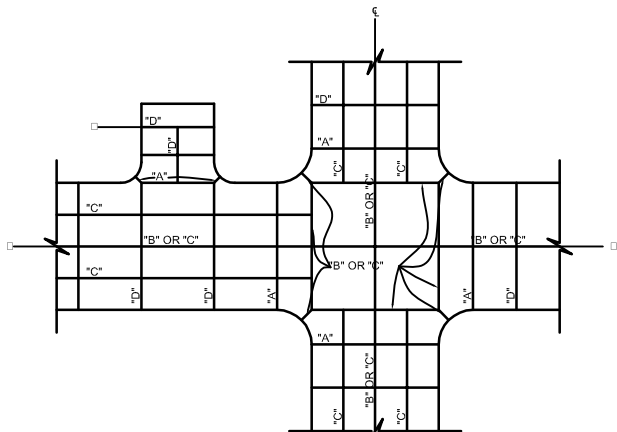
EXPANSION JOINT SHALL BE PLACED AT THE END OF THE RADIUS AT STREET INTERSECTIONS AND WHERE SHOWN ON THE PLANS. MAXIMUM SPACE OF 400' SHALL BE MAINTAINED FOR EXPANSION JOINTS.

**TRANSVERSE EXPANSION JOINT "A"**  
(RESIDENTIAL STREET STANDARD) NOT TO SCALE



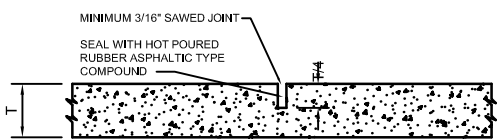
**HOOK BOLT DETAIL**

**LONGITUDINAL BULKHEAD CONSTRUCTION JOINT "B"**  
(RESIDENTIAL STREET STANDARD) NOT TO SCALE



**JOINT LAYOUT**  
NOT TO SCALE

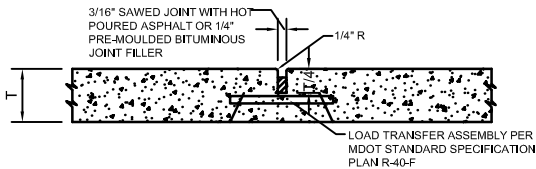
NOTE:  
TRANSVERSE EXPANSION AND WEAKENED PLANE JOINTS IN THE PAVEMENT SHALL EXTEND ENTIRELY THROUGH INTEGRAL CURB AND SHALL BE OF THE SAME THICKNESS AND KIND AS PROVIDED FOR THE PAVEMENT. THE JOINT MATERIAL SHALL BE PRECUT SO AS TO CONFORM TO THE GEOMETRIC SHAPE AND CROSS SECTION AREA OF THE CURB AND SHALL BE PLACED IN CONTACT WITH THE FILLER MATERIAL IN THE PAVEMENT.



LONGITUDINAL JOINTS SHALL BE PLACED IN ACCORDANCE WITH THE JOINTING DETAILS SHOWN ON THIS SHEET.

SAWCUT (3/16" WIDE MIN.) NO SOONER THAN 12 HOURS NOR LATER THAN 48 HOURS AFTER PLACEMENT OF CONCRETE AND SEAL WITH HOT POURED RUBBER ASPHALT TYPE JOINT SEALING COMPOUND CONFORMING TO MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION 2003, SECTION 914, JOINT MATERIALS.

**LONGITUDINAL PLANE JOINT "C"**  
(RESIDENTIAL STREET STANDARD) NOT TO SCALE



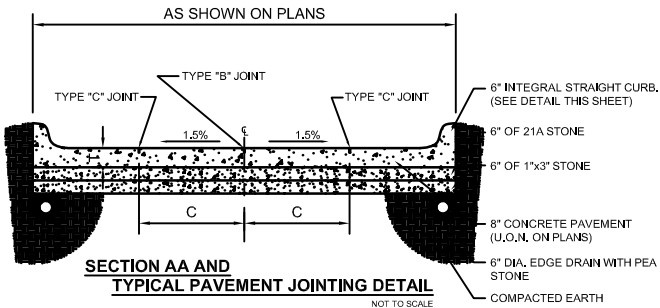
TRANSVERSE WEAKENED PLANE JOINT "D" SHALL BE PLACED AT 15' INTERVALS BETWEEN TRANSVERSE EXPANSION JOINTS UNLESS OTHERWISE SHOWN ON PLANS.

SAWCUT (3/16" WIDE MIN.) NO SOONER THAN 12 HOURS NOR LATER THAN 48 HOURS AFTER PLACEMENT OF CONCRETE AND SEAL WITH HOT POURED RUBBER ASPHALT TYPE JOINT SEALING COMPOUND CONFORMING TO MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION 2003, SECTION 914, JOINT MATERIALS.

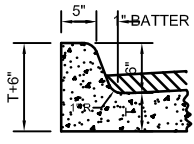
ALTERNATE:  
TRANSVERSE WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED IMMEDIATELY AFTER THE FINISHING OPERATION HAS BEEN COMPLETED. A GROOVE SHALL BE FORMED IN THE PLASTIC CONCRETE WITH A METAL FORMING STRIP. A 1/4" PRE MOULDED BITUMINOUS JOINT FILLER SHALL BE PLACED IN THE GROOVE FORMED BY THE METAL STRIP, FROM A BRIDGE OPERATION ON THE PAVEMENT FORMS. THE CONCRETE SHALL BE HARD FLOATED AGAINST THE SIDES OF THE FILLER AND THE JOINTS EDGED TO THE RADIUS SHOWN.

**TRANSVERSE WEAKENED PLANE JOINT "D"**  
(RESIDENTIAL STREET STANDARD) NOT TO SCALE

W	T	C	CENTERLINE JOINTS	REMARKS
21'	7"	8'	"B" OR "C"	
29'	7"	8'	"B"	
30'	7"	8'	"B"	IF PAVEMENT IS PLACED IN TWO POURS USE "B" JOINT WITH 40' SPACING (SEE DETAIL THIS SHEET)
37'	8"	11'	"B"	
50'	8"	13'	"B"	
27'	9"	N/A	"B" OR "C"	



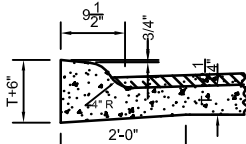
**SECTION AA AND TYPICAL PAVEMENT JOINTING DETAIL**  
NOT TO SCALE



**STRAIGHT**  
NOT TO SCALE

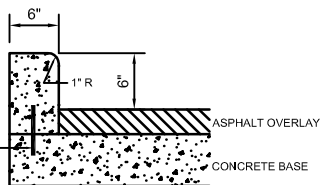


**ROLL**  
NOT TO SCALE

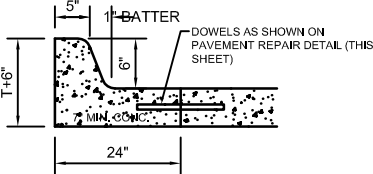


**AT DRIVEWAY RAMP**  
NOT TO SCALE

DOWELS (1/2" RE-BAR) TO BE SET IN 5/8" DIA. HOLES 4" IN DEPTH FILLED WITH EPOXY GROUT. DOWELS TO BE 24" O.C. & 8" IN LENGTH.

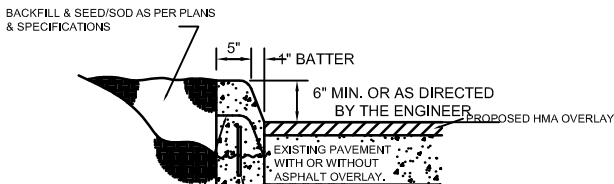


**HEADER CURB CAP**  
NOT TO SCALE



**CURB & GUTTER DETAIL**  
NOT TO SCALE

**INTEGRAL CURB DETAILS WITH OR WITHOUT EXISTING OR PROPOSED ASPHALT OVERLAY**  
NOT TO SCALE

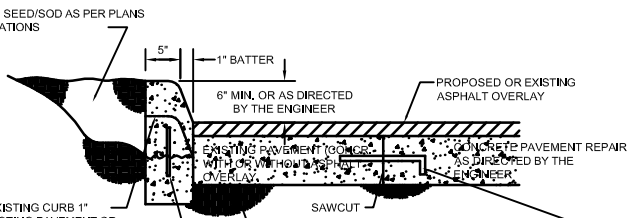


REMOVE EXISTING CURB 1" BELOW EXISTING PAVEMENT OR AS DIRECTED BY THE ENGINEER (Curb, Rem)

CONCRETE CURB CAP DOWELS (1/2" RE-BAR) TO BE SET IN 5/8" DIA. HOLES 4" IN DEPTH FILLED WITH EPOXY GROUT. DOWELS TO BE 24" O.C. & 8" IN LENGTH. (Curb, Conc, Modified)

NOTE:  
MAINTAIN EXISTING JOINTS AND/OR REPLACE AS DIRECTED BY THE ENGINEER.

**CURB CAP DETAIL**  
TYPICAL WITH OR WITHOUT ASPHALT OVERLAY NOT TO SCALE



REMOVE EXISTING CURB 1" BELOW EXISTING PAVEMENT OR AS DIRECTED BY THE ENGINEER

DOWELS (1/2" RE-BAR) TO BE SET IN 5/8" DIA. HOLES 4" IN DEPTH FILLED WITH EPOXY GROUT. DOWELS TO BE 24" O.C. & 8" IN LENGTH.

NOTE:  
MAINTAIN EXISTING JOINTS AND/OR REPLACE AS DIRECTED BY THE ENGINEER.

**CURB CAP & PAVEMENT REPAIR DETAIL**  
TYPICAL WITH OR WITHOUT ASPHALT OVERLAY NOT TO SCALE

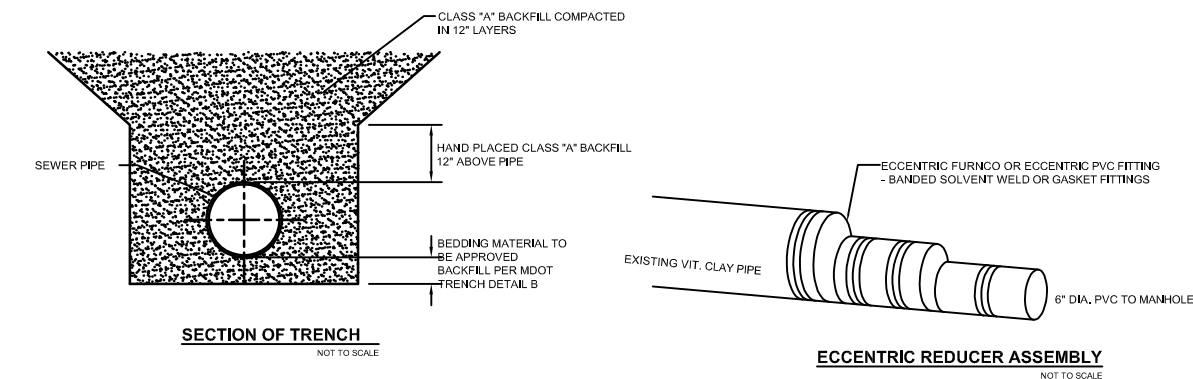
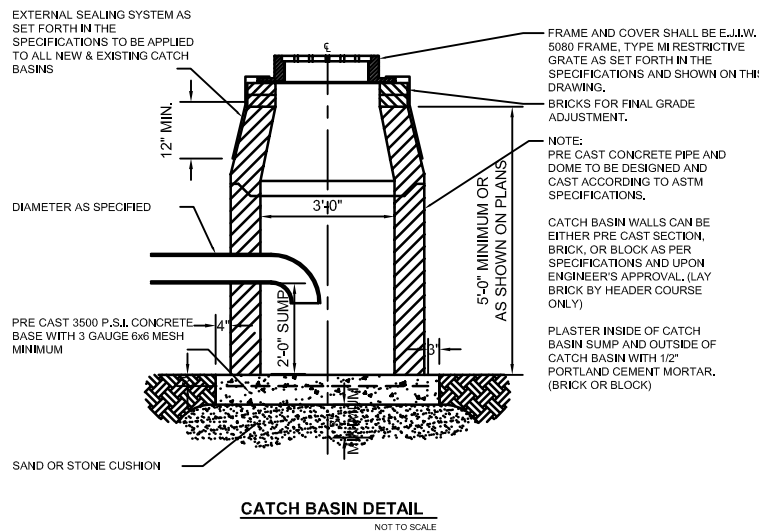
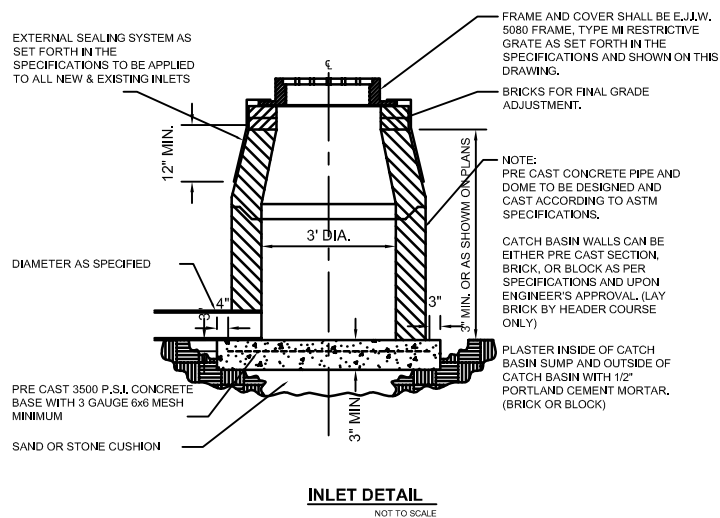
REVISIONS:

DATE:   
DRAWN BY: JOE MAYHEW  
CHECKED BY: JESUS PLENENCIA  
PROJECT NO:

DETAILS

**CITY OF WYANDOTTE - DEPT. OF ENGINEERING**  
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WYANDOTTE, MI 48192

**D-5**



DATE: \_\_\_\_\_  
 DRWN BY: JOE MAYHEW  
 CK BY: JESUS PLASENCIA  
 PROJECT NO: \_\_\_\_\_

## DETAILS

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9-2