

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PHYSICAL ROAD NUMBER (PR#) & MILEPOST (MP) DATA ARE FROM MICHIGAN GEOGRAPHIC FRAMEWORK VERSION # 17.

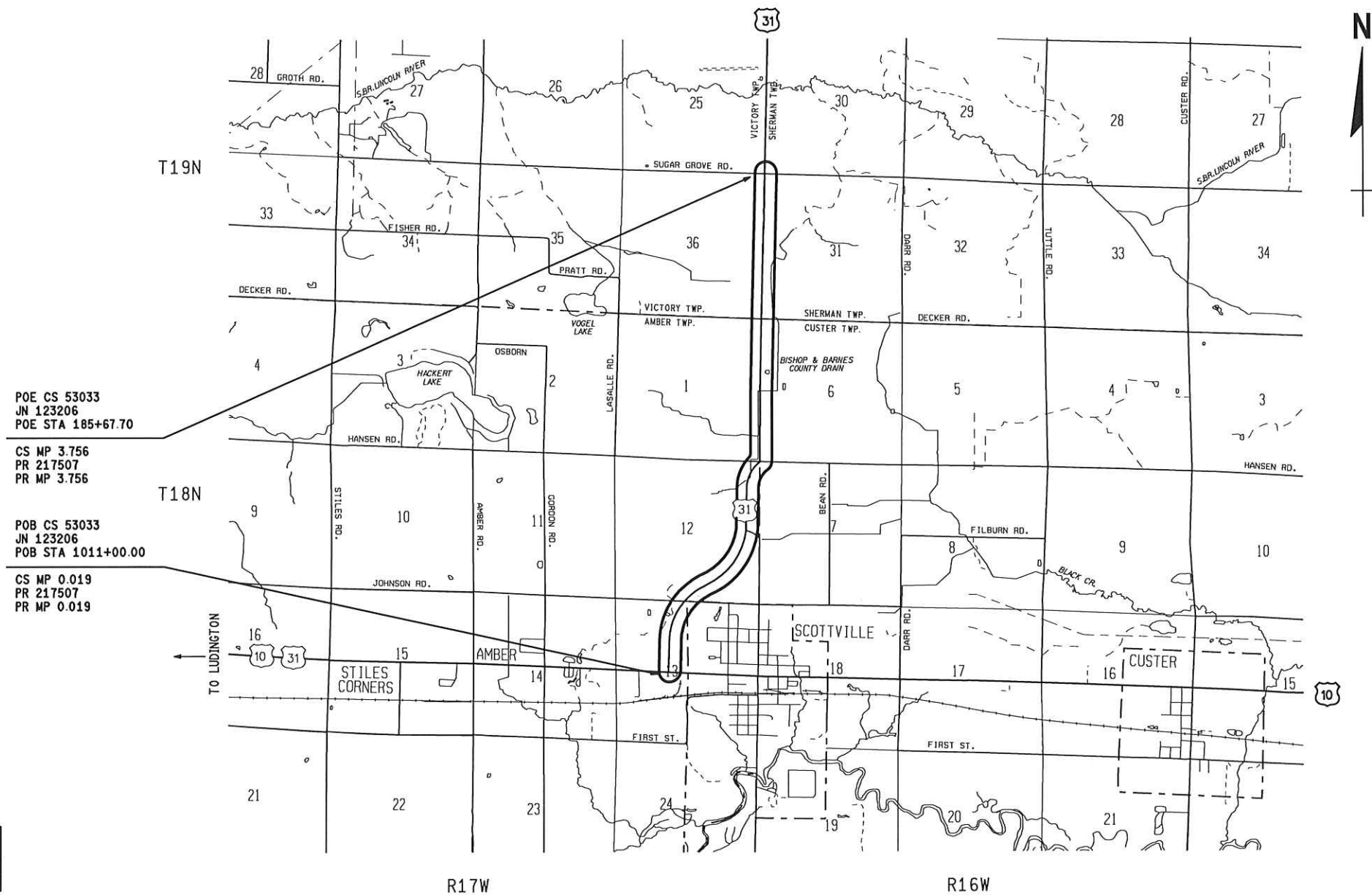
MICHIGAN DEPARTMENT OF TRANSPORTATION

ROUTE: US-31
AMBER, VICTORY, SHERMAN, AND CUSTER TOWNSHIPS
MASON COUNTY



ROAD	YEAR	TRAFFIC DATA			SPEED DATA		LIMITS
		ADT	DHV	COMM	DESIGN	POSTED	
US-31	2018	5625	16%	8%	60	55	US-10 NORTH TO SUGAR GROVE RD
	2038	2038	16%	8%	60	**	

SECTION	CONTROL SEC	JOB NO.	FED AID PROJ
1	53033	123206A	YES



STATION EQUATION
STA 1046+86.89 BK = STA 1046+88.04 AH
STA 1081+13.75 BK = STA 58+51.79 AH

APPROVALS
RECOMMENDED FOR APPROVAL BY:

Marc Fredrickson 8-20-19
MARC FREDRICKSON, P.E. - PROJECT MANAGER DATE

Gregg Zack 8/20/19
GREGG ZACK, P.E. - CONSTRUCTION ENGINEER DATE

MICHIGAN
DEPARTMENT OF TRANSPORTATION
PAUL C. AJEGBA, P.E. - DIRECTOR

MILES: 3.737
CONTRACT FOR:
HOT MIX ASPHALT PAVING, COLD MILLING, SAFETY AND DRAINAGE IMPROVEMENTS

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	NO SCALE	DATE: 07/31/19 DESIGN UNIT: JASINSKI TSC: MUSKEGON	CS: 53033 JN: 123206A	TITLE SHEET US-31, US-10 TO SUGAR GROVE RD	DRAWING US-31 TITLE 001	SHEET SECT 1
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					

PUBLIC UTILITIES

The existing utilities listed below and shown on these plans represent the best information available as obtained on our surveys. This information does not relieve the contractor of the responsibility to be satisfied as to its accuracy and the location of existing utilities.

<u>Name Of Owner</u>	<u>Type Of Utility</u>
----------------------	------------------------

Mason County Drain Commissioner
Attention: Dennis Dunlap
102 East Fifth Street
Scottville, MI 49454
Phone: (231) 757-9366
Fax: (231) 757-9253
Email: ddunlap@masoncounty.net

Consumers Energy
Attention: Eric Marr
330 Chestnut St
Cadillac, MI 49601
Phone: (231) 250-4505
Fax: (231) 775-9925
Email: eric.marr@cmsenergy.com

Wolverine Power Cooperative
Attention: Pat Spalding
10125 W. Watergate Road
Cadillac, MI 49601
Phone: (231) 775-5700
Fax: (231) 775-9925
Email: pspalding@wpsci.com

DTE
Attention: Larry Bourke
609 Bjornson Road
Big Rapids, MI 49307
Phone: (231) 349-2364
Fax: (231) 592-3280
Email: Lawrence.bourke@tteenergy.com

Charter
Attention: Dan Hornkohl
1690 Vine Street
Manistee, MI 49660
Phone: (231) 932-9231
Email: dan.hornkohl@charter.com

AT&T
Attention: Jess Shuster
205 East Harris Street
Cadillac, MI 49601
Phone: (231) 779-8451
Fax: (231) 779-5454
Email: js9865@att.com

Merit Network
Attention: Carlos Ramos
1000 Oakbrook Drive, Suite 200
Ann Arbor, MI 48104
Phone: (734) 527-5726
Email: cramosjr@merit.edu

Everstream Communications
Attention: Joseph Park
3950 Sparks Drive
Grand Rapids, MI 49546
Phone: (616) 608-8584
Email: jpark@everstream.net

NOTES APPLYING TO STANDARD PLANS

Where the following items are called for on plans, they are to be constructed according to the standard plan given below opposite each item unless otherwise indicated.

Title	Plan No.
ROAD	
MONUMENT BOXES	R-11-E
COVER G	R-12-E
DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALK	R-29-I
CONCRETE CURB AND CONCRETE CURB & GUTTER	R-30-G
BEDDING AND FILLING AROUND PIPE CULVERTS	R-82-D
UTILITY TRENCHES	R-83-C
CULVERT SLOPED END SECTION	R-95-G *
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E
CHAIN LINK FENCE (USING TENSION WIRE)	R-98-B
SEEDING AND TREE PLANTING	R-100-H
SUPERELEVATION AND PAVEMENT CROWNS	R-107-H
DELINEATOR INSTALLATIONS	R-127-G *
PAVEMENT MARKINGS	
PAVEMENT ARROW AND MESSAGE DETAILS	PAVE-900-F
LONGITUDINAL LINE TYPES AND PLACEMENT	PAVE-905-D
PAVEMENT MARKINGS FOR INTERSECTIONS	PAVE-930-C
LEFT TURN LANE MARKINGS	PAVE-935-D
RIGHT TURN LANE AND ISLAND PAVEMENT MARKINGS	PAVE-940-C
INTERSECTION, STOP BAR AND CROSSWALK MARKINGS	PAVE-945-C
SIGNING	
STANDARD SIGN INSTALLATIONS	SIGN-100-G
STEEL POSTS	SIGN-200-D

*** Denotes Special Detail**

SHEET INDEX

Section 1 - Road Plans	
Title Sheet	1
Project Information Sheet	2
Legend Sheets	3-5
Note Sheet	6
Typical Cross Sections	7-12
Survey Information Sheet	13-15
Log of Borings	16
Special Details	17-24

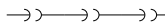
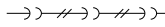
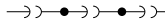
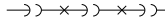
FUNDING CATEGORIES

JN 123206 HMA Cold Milling and Resurfacing
Category 0001 = Fed/State

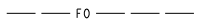
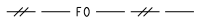
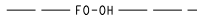
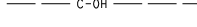
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE		DATE: 07/31/19	CS: 53033	PROJECT INFORMATION SHEET		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION				DESIGN UNIT: JASINSKI	JN: 123206A	US-31 NORTH FROM US-10 TO SUGAR GROVE ROAD		US-31 PROJ 001	SECT 1 2
										FILE: 123206_Proj_001.doc	TSC: MUSKEGON					

UTILITIES

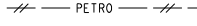
COMBINED SEWER

-  COMBINED SEWER
-  COMBINED SEWER - OUT OF SERVICE
-  COMBINED SEWER - TO BE TAKEN OUT OF SERVICE
-  COMBINED SEWER - TO BE REMOVED

COMMUNICATION

-  FIBER OPTIC
-  FIBER OPTIC - OUT OF SERVICE
-  FIBER OPTIC - OVERHEAD
-  FIBER OPTIC MARKER
-  CABLE
-  CABLE - OUT OF SERVICE
-  CABLE - OVERHEAD
-  CABLE MARKER
-  CABLE PEDESTAL
-  TELEPHONE
-  TELEPHONE - OUT OF SERVICE
-  TELEPHONE - OVERHEAD
-  TELEPHONE BOX
-  TELEPHONE MANHOLE
-  TELEPHONE PEDESTAL

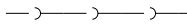
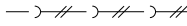
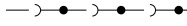
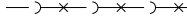
FUEL / PETROLEUM

-  GASOLINE FILLER PIPE
-  GASOLINE PUMP
-  GASOLINE UNDERGROUND TANK
-  PETROLEUM PIPELINE
-  PETROLEUM PIPELINE - OUT OF SERVICE
-  PETROLEUM PIPELINE MARKER
-  PETROLEUM WELL
-  PROPANE TANK

NATURAL GAS

-  GAS LINE
-  GAS LINE - OUT OF SERVICE
-  MARKER
-  VALVE
-  WELL

SANITARY SEWER

-  MANHOLE WITH COVER (DIA VARIES)
-  SEWER
-  SEWER - OUT OF SERVICE
-  SEWER - TO BE TAKEN OUT OF SERVICE
-  SEWER - TO BE REMOVED

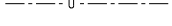
WATER

-  FIRE HYDRANT
-  GATE VALVE AND BOX
-  GATE VALVE IN WELL
-  IRRIGATION CONTROL VALVE
-  IRRIGATION SPRINKLER HEAD
-  SERVICE METER
-  SERVICE SHUTOFF
-  WATER WELL
-  IRRIGATION
-  WATER MAIN
-  WATER MAIN - OUT OF SERVICE
-  WATER MAIN - TO BE TAKEN OUT OF SERVICE
-  WATER MAIN - TO BE REMOVED

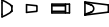
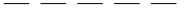
STEAM

-  STEAM
-  STEAM - OUT OF SERVICE

GENERIC EXISTING UTILITIES

-  CATCH BASIN COVER
-  MANHOLE COVER
-  MARKER
-  PEDESTAL
-  SEWER CLEANOUT ACCESS
-  STRUCTURE BOTTOM (DIA VARIES)
-  UTILITY BOX
-  UTILITY

DRAINAGE

-  CATCH BASIN W/ COVER (DIA VARIES)
-  DRAINAGE STRUCTURE NUMBER
-  DRAIN CASTING
-  DROP INLET
-  END SECTION (SIZE VARIES)
-  FLOW DIRECTION ARROW
-  HEADWALL (SIZE VARIES)
-  MANHOLE W/ COVER (DIA VARIES)
-  MANHOLE BASE W/ COVER (SIZE VARIES)
-  MANHOLE TEE W/ COVER (SIZE VARIES)
-  OUTLET HEADWALL (SIZE VARIES)
-  CULVERT - EXISTING
-  CULVERT (SIZE VARIES)
-  DITCH CENTERLINE
-  STORM SEWER - EXISTING
-  STORM SEWER
-  STORM SEWER - TO BE REMOVED
-  UNDERDRAIN
-  WATER EDGE

NOTE:

EXISTING ITEMS ARE REPRESENTED BY THIN LINE WEIGHTS.
PROPOSED ITEMS ARE REPRESENTED BY HEAVIER LINE WEIGHTS.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

FILE: 123206_Legend_Sheets.dgn

DATE: 07/31/19

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

CS: 53033

JN: 123206A

LEGEND

US-31, US-10 TO SUGAR GROVE RD.

DRAWING

US-31
LEGEND
2

SECT 1

SHEET

4

ELECTRICAL

- | | |
|---|----------------------------------|
|  | CONTROLLER CABINET - PAD MOUNTED |
|  | HANDHOLE |
|  | MANHOLE |
| ○ | POLE UTILITY - EXISTING |
| ● | POLE UTILITY |
|  | TRANSFORMER - PAD MOUNTED |
|  | TRANSFORMER - POLE MOUNTED |

— E —	CABLE
— X — E — X —	CABLE - TO BE REMOVED
— E-OH —	CABLE OVERHEAD
— X — E-OH — X —	CABLE OVERHEAD - TO BE REMOVED
— — E — — — —	CABLE IN CONDUIT
— X — — E — — X — — —	CABLE IN CONDUIT - TO BE REMOVED
 —	CABLE IN CONDUIT - DIRECTIONAL BORE

ARCHITECTURAL

- | | |
|---|--------------------------------|
|  | EXIT SIGN WITH EMERGENCY LIGHT |
|  | LIGHT RECESSED FIXTURE |
|  | MOTOR |
|  | OUTLET BOX |
|  | OUTLET SINGLE |
|  | OUTLET TELEPHONE |
|  | SERVICE DISCONNECT |
|  | SERVICE METER |
|  | SWITCH |
|  | SWITCH THREE WAY |
|  | WALL BRACKET FIXTURE |

LIGHTING

- | | |
|-------------------------------------|---|
| ☐ | CONTROL PANEL - EXISTING |
| ☒ | CONTROL PANEL |
| * R&S | LIGHT STANDARD EXISTING -
TO BE REMOVED & SALVAGED |
| *-O-* | LIGHT STANDARD DOUBLE ARM - EXISTING |
| *-●-* | LIGHT STANDARD DOUBLE ARM |
| *-O | LIGHT STANDARD POST TOP - EXISTING |
| *-● | LIGHT STANDARD POST TOP |
| *-O | LIGHT STANDARD SINGLE ARM - EXISTING |
| *-● | LIGHT STANDARD SINGLE ARM |
| O-● | LIGHT POLE - TEMPORARY |
| □ | LUMINAIRE WALL MOUNTED
UNDERBRIDGE - EXISTING |
| ■ | LUMINAIRE WALL MOUNTED UNDERBRIDGE |
| O-T- | TOWER LIGHTING UNIT - EXISTING |
| ⊕-T- | TOWER LIGHTING UNIT |

ITS / SIGNALS

- | | |
|--|---|
| | DYNAMIC MESSAGE SIGN - EXISTING |
| | DYNAMIC MESSAGE SIGN |
| | ENVIRONMENTAL SENSOR STATION SITE |
| | FIBER OPTIC SPLICE CABINET |
| | HANDHOLE, ROUND, 3 FOOT DIAMETER |
| | HANDHOLE, ROUND, COMMUNICATIONS |
| | HANDHOLE, ROUND, ELECTRIC |
| | HANDHOLE, TYPE D |
| | ITS CABINET - EXISTING |
| | ITS CABINET |
| | MICROWAVE VEHICLE DETECTION SYSTEM - EXISTING |
| | MICROWAVE VEHICLE DETECTION SYSTEM |
| | MICROWAVE VEHICLE DETECTION SYSTEM ZONE COVERAGE - EXISTING |
| | MICROWAVE VEHICLE DETECTION SYSTEM ZONE COVERAGE |
| | SPUN CONCRETE POLE - EXISTING |
| | SPUN CONCRETE POLE |
| | SURVEILLANCE SYSTEM - EXISTING |
| | SURVEILLANCE SYSTEM |
| | WIRELESS LINK - EXISTING |
| | WIRELESS LINK |
| | ITS COMMUNICATIONS CABLE IN CONDUIT |
| | ITS COMMUNICATIONS CABLE IN CONDUIT - TO BE REMOVED |

- | | |
|---|--|
|  | ANTENNA |
|  | CASE SIGN (1-WAY OR 2-WAY) |
|  | CASE SIGN (4-WAY) |
|  | DEDICATED SHORT RANGE COMMUNICATIONS |
|  | CONTROLLER CABINET - POLE MOUNTED |
|  | CONTROL EMERGENCY PREEMPTION OPTICOM |
|  | DILEMMA ZONE DETECTION |
|  | GLOBAL POSITIONING SYSTEM MODULE |
|  | GUY ANCHOR |
|  | PEDESTRIAN PEDESTAL |
|  | PEDESTRIAN PUSHBUTTON |
|  | POLE MAST ARM (LENGTH VARIES) - EXISTING |
|  | POLE MAST ARM (LENGTH VARIES) |
|  | POLE STRAIN |
|  | ROAD SIGN W/ FLASHING SIGN OPTICAL (1-WAY) |
|  | SIGNAL HANDHOLE - POLYMER CONCRETE |
|  | SIGNAL HANDHOLE - 2 FOOT ROUND |
|  | SIGNAL HANDHOLE - 3 FOOT ROUND |
|  | SIGNAL HANDHOLE - 2 FOOT SQUARE |
|  | SIGNAL HANDHOLE - 4 FOOT SQUARE |
|  | SIGNAL HEAD PEDESTRIAN - EXISTING |
|  | SIGNAL HEAD PEDESTRIAN 1-WAY |
|  | SIGNAL HEAD PEDESTRIAN 2-WAY |
|  | SIGNAL HEAD VEHICLE 1-WAY - EXISTING |
|  | SIGNAL HEAD VEHICLE 2-WAY - EXISTING |
|  | SIGNAL HEAD VEHICLE 3-WAY - EXISTING |
|  | SIGNAL HEAD VEHICLE 4-WAY - EXISTING |
|  | SIGNAL HEAD VEHICLE 1-WAY |
|  | SIGNAL HEAD VEHICLE 2-WAY |
|  | SIGNAL HEAD VEHICLE 3-WAY |
|  | SIGNAL HEAD VEHICLE 4-WAY |
|  | SIGNAL HEAD VEHICLE BAGGED |
|  | SIGNAL HEAD VEHICLE PROGRAMMABLE |
|  | VEHICLE DETECTION CAMERA |
|  | VEHICLE DETECTION CAMERA - HEMISPHERICAL |
|  | VEHICLE DETECTION LOOP |
|  | VEHICLE DETECTION - RADAR |
|  | WIRELESS VEHICLE DETECTION RADIO RECEIVER |
|  | WIRELESS VEHICLE DETECTION RADIO REPEATER |
|  | WIRELESS VEHICLE DETECTION SENSOR - EXISTING |
|  | WIRELESS VEHICLE DETECTION SENSOR |

CABLING / WIRING DIAGRAM

- | | |
|---|-----------------------|
|  | CIRCUIT BREAKER |
|  | COILED WIRE |
|  | FUSE |
|  | FUSE SWITCH |
|  | GROUND |
|  | ILLUMINATED CASE SIGN |
|  | METER |
|  | SERVICE DISCONNECT |
|  | SIGNAL HEAD |

NOTE:
EXISTING ITEMS ARE REPRESENTED BY THIN LINE WEIGHTS.
PROPOSED ITEMS ARE REPRESENTED BY HEAVIER LINE WEIGHTS.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)								 NO SCALE	DATE: 07/31/19	CS: 53033	LEGEND		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		DESIGN UNIT: JASINSKI	JN: 123206A	US-31, US-10 TO SUGAR GROVE RD.		US-31 LEGEND 3	SECT 1
									FILE: 123206_Legend_Sheets.dgn	TSC: MUSKEGON				5

GENERAL NOTES

UTILITIES

MISS DIG/UNDERGROUND UTILITY NOTIFICATION
For the protection of underground utilities and in conformance with MCL 460.171 et seq, the Contractor shall contact MISS DIG System, Inc. by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 work days prior to excavating, excluding weekends and holidays.

ROW / REAL ESTATE

PROPERTY OWNERS
The names of property owners shown on the plans are for information only, and their accuracy is not guaranteed.

MARKETABLE TIMBER
Marketable timber shall be handled in accordance with Section 201.03 of the 2012 Standard Specifications for Construction.

LAWN SPRINKLER SYSTEMS AND LANDSCAPING
Owners of existing lawn sprinkler systems and/or landscaping shall be notified (in writing with a copy sent to the Engineer) by the Contractor two weeks in advance of any work to be done that will affect those systems and/or landscaping. If the property owner fails to relocate the lawn sprinkler system prior to the Contractor beginning work, and if the Contractor cuts the system during the construction, the Contractor shall cap the system pipe and witness the location of the cap with a wooden stake for the property owner's use. The Contractor shall place the salvaged sprinkler heads on the property owner's property. If the property owner fails to relocate the landscaping prior to the Contractor beginning work, the Contractor shall carefully salvage the landscaping items and stockpile them on the property owner's property for the property owner. Any other modification to the lawn sprinkler systems and/or landscaping is the responsibility of the owner and is not part of this contract. This work is included in other items of the project.

SURVEY

ADJUSTING MONUMENT BOXES
All government corners on this project shall be preserved, whether shown or not. It may be necessary to place or adjust monument boxes, as required.

OLD PLANS

OLD ROAD PLANS
The following old road plans were referred to in the design of this project.

53023 – 21251 Bypass Construction (1990)

53033 – 26667 Grade Raise, Bit Surface (1992)

53033 – 46425 Crack Fill, Microsurface (1998)

53033 – 74679 Crack Fill, Rutfill, Chip Seal (2004)

53033 – 119801 Mill/Resurface (2013)

In addition, other old road plans that predate this project may be available. These plans may be reviewed in the Transportation Service Center (TSC) during normal working hours.

DETAILED GRADES

GRADES FOR INTERSECTIONS
All intersections are to be considered as complete units and their grades determined before construction is started.

UNSIGNALIZED SIDE ROAD TO TRUNK LINE INTERSECTIONS:
The normal edge of pavement grade of the proposed trunk line adjacent to the side road intersection shall be carried across the intersection. The side road approach grade and crown shall be established to provide for drainage.

EARTHWORK

EARTHWORK
Earthwork quantities are computed by the average end area method based upon ground survey information.

EARTH DISTURBANCE LIMITS
The earth disturbance limit for this project will be limited to 10' beyond the slope stake line or to the ROW line whichever is less for all areas except for wetland areas. For areas adjacent to wetlands, the earth disturbance limit will be limited to the slope stake line. Restoration measures have been included in this set of plans for the approved areas of disturbance. The Contractor shall submit an earth change plan for any work beyond the approved limits to the Engineer to review for approval prior to the disturbance. All costs for obtaining and executing an approved earth change plan, including restoration, shall be at the Contractor's expense.

SOIL EROSION MEASURES
Appropriate soil erosion and sedimentation control measures shall be in place prior to earth-disturbing activities. Place turf establishment items as soon as possible on potential erodable slopes as directed by the Engineer. Critical ditch grades shall be protected with either sod or seed/mulch or mulch blanket as directed by the Engineer.

BASES

AGGREGATE BASE
Aggregate bases shall use aggregate 21AA, unless otherwise specified.

DRAINAGE

ILLICIT CONNECTIONS TO STORM WATER SYSTEM
Connections to existing storm conveyance systems not shown on the plans must be reconnected with minimal interruption in service. Size, type and location by station and offset and any suspect illicit discharge observed shall be reported to the Engineer prior to reconnecting. Contractor shall proceed as directed by the Engineer.

TEMPORARY BULKHEADS
Temporary bulkheads may be required for the part width construction of the culverts and sewers. All cost associated with the temporary bulkheads are included in the item of the pipe.

PAVEMENT

PAVEMENT AND HMA SURFACE REMOVAL QUANTITIES
Pavement and HMA Surface removal as shown on the plans will be at the discretion of the Engineer. If in his/her judgment, areas of pavement may be left in place, or additional areas added to provide the proper cross-section and base. Changes will be made in the quantities.

SOIL BORINGS AND/OR PAVEMENT CORES
The soil boring logs and/or pavement cores represent point information. No inference should be made that subsurface or pavement conditions are the same at other locations.

FENCING

RIGHT OF WAY FENCE
Where fence is called for along the ROW, the Engineer will check the Right of Way as actually acquired before placing fence.

TURF ESTABLISHMENT

SEED MIXTURE
The symbol for the permanent turf seed mixture on this project is symbol TDS.

ENVIRONMENTAL

PROTECTED TURTLES
Historical records for protected turtles exist within or near this project. These turtle species warrant special consideration as they are rare in Michigan. In the event turtles are observed within the construction zone, move the turtle(s) into adjacent vegetative cover, away from physical work activities. If possible, please take a photo and immediately contact the Engineer.

PROJECT SPECIFIC NOTES

AGGREGATE PAID BY THE TON
All aggregate specified to be paid for by the ton shall have an automated ticket documented as per the 2012 Standard Specifications for Construction. Manual tickets will not be accepted for payment on this project. Any additional costs to obtain an automated ticket shall be included in the cost per ton for the aggregate item.

TRACKING OF MATERIALS
It shall be required of the Contractor to ensure that no vehicles or equipment track HMA, tack, or other debris onto newly paved surfaces and/or any existing paved state trunk line or local roadway. All such materials deposited during the project shall be removed by the Contractor at their cost. A corrective action plan shall be submitted by the Contractor and approved by the Engineer prior to undergoing any removal operations.

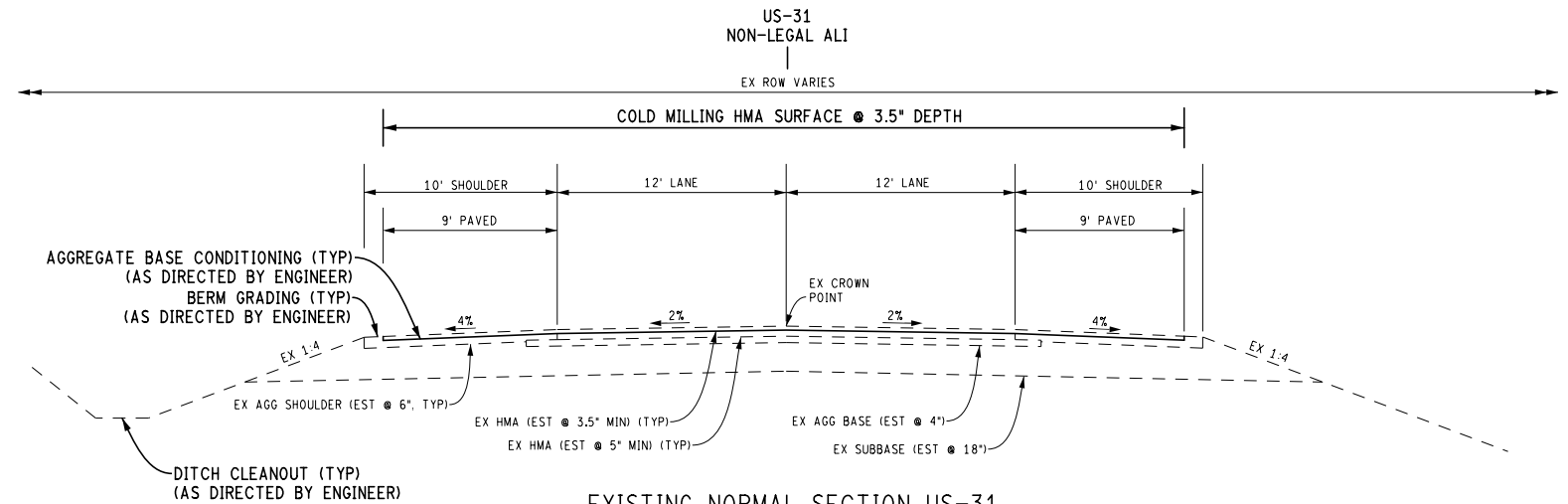
SLOPE RESTORATION
Slope restoration quantities are estimated. Items shall be placed as directed by the Engineer.

SAW CUTS
The costs for all saw cuts shall be included in the item being removed and will not be paid separately. Saw cuts are required adjacent to all removal of items as directed by the Engineer.

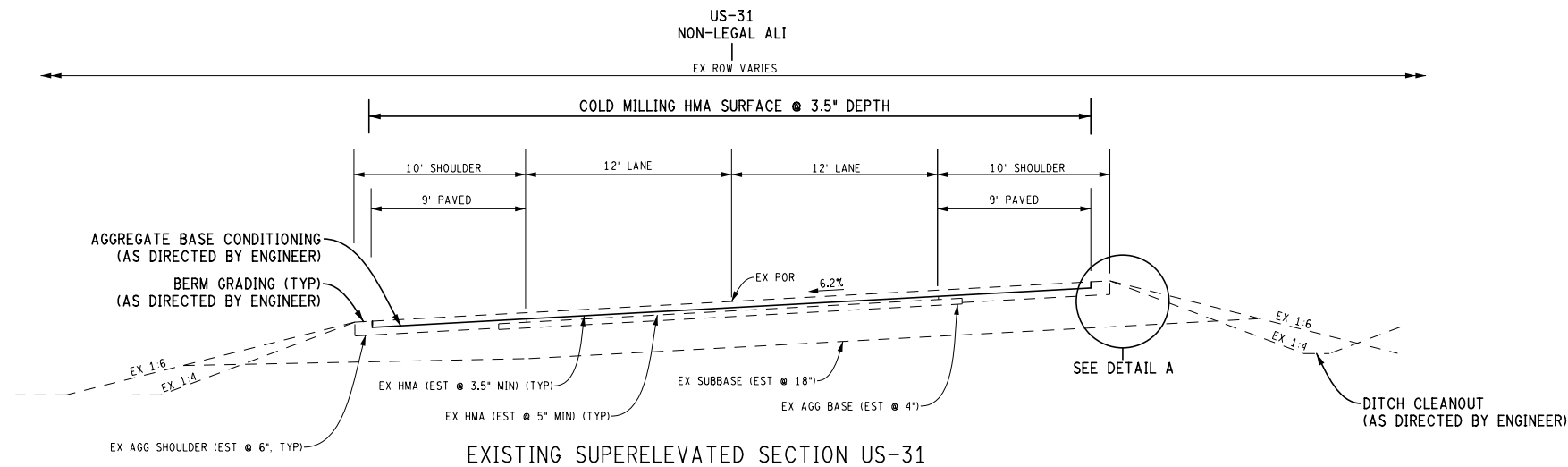
CURB AND GUTTER TRANSITIONS
Transitioning curb and gutter types shall be done in 10' distance or as directed by the Engineer and will be considered included in payment of the proposed curb and gutter.

MAILBOX RELOCATION
Mailboxes are expected to be temporarily relocated. Any change to this location shall be approved by the Engineer and the Local Post Master. The relocation of these mailboxes shall be included in the pay item Post, Mailbox. Mailboxes shall be relocated per Section 807.03 of the 2012 MDOT Standard Specifications.

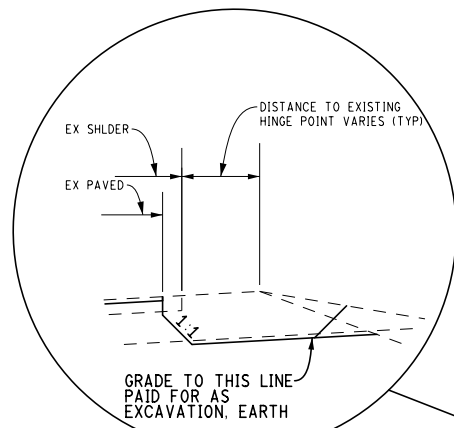
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE		DATE: 07/31/19	CS: 53033	NOTE SHEET	DRAWING	SHEET			
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										FILE: 123206_Note_001.doc	TSC: MUSKEGON							



SECTION APPLIES TO:
STA 1016+25 TO STA 1022+80
STA 1044+51 TO STA 1056+84
STA 1078+78 TO STA 1081+13.75*

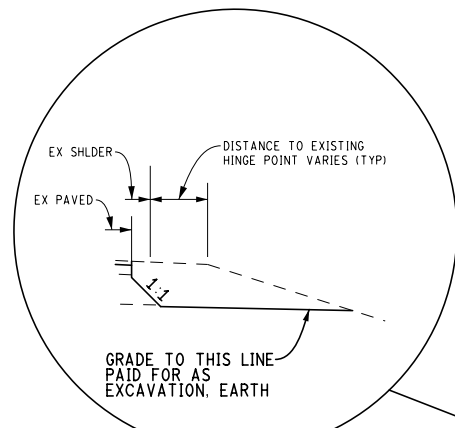


SECTION APPLIES TO:
STA 1022+80 TO STA 1036+49
STA 1039+09 TO STA 1044+51
STA 1056+84 TO STA 1063+85
STA 1075+68 TO STA 1078+78



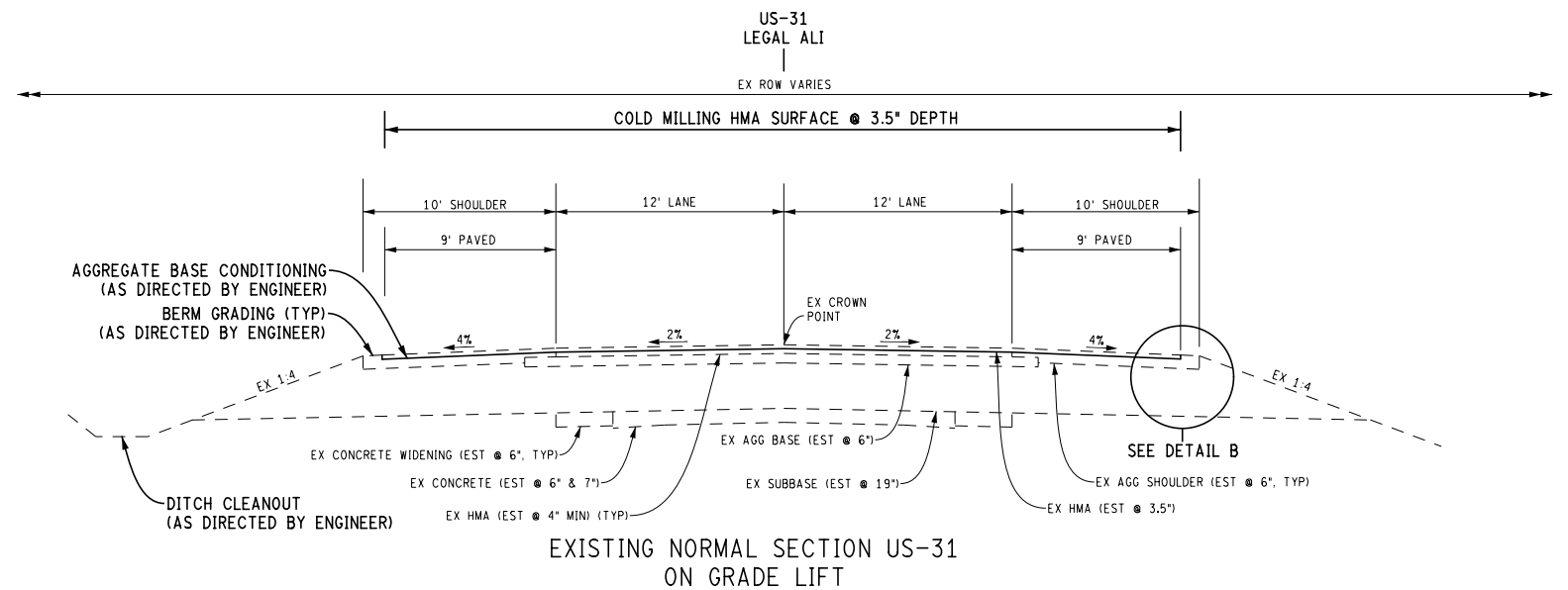
DETAIL A

DETAIL A TO APPLY:
SUPER ELEVATED SECTIONS
OF WIDENING FOR TURN
LANES AND TAPER EXTENSIONS



DETAIL B

DETAIL B TO APPLY:
IN SECTIONS OF
WIDENING FOR TURN LANES
AND TAPER EXTENSIONS



SECTION APPLIES TO:
STA 58+51.79* TO STA 179+88

* STATION EQUATIONS:
STA 1046+86.89 BK = STA 1046+88.04 AH
STA 1081+13.75 BK = STA 58+51.79 AH

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

FILE: 123206_Typ.dgn

DATE: 07/31/19

DESIGN UNIT: JASINSKI

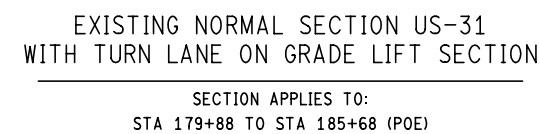
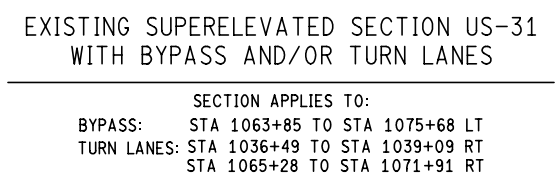
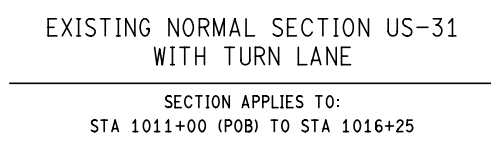
TSC: MUSKEGON

CS: 53033

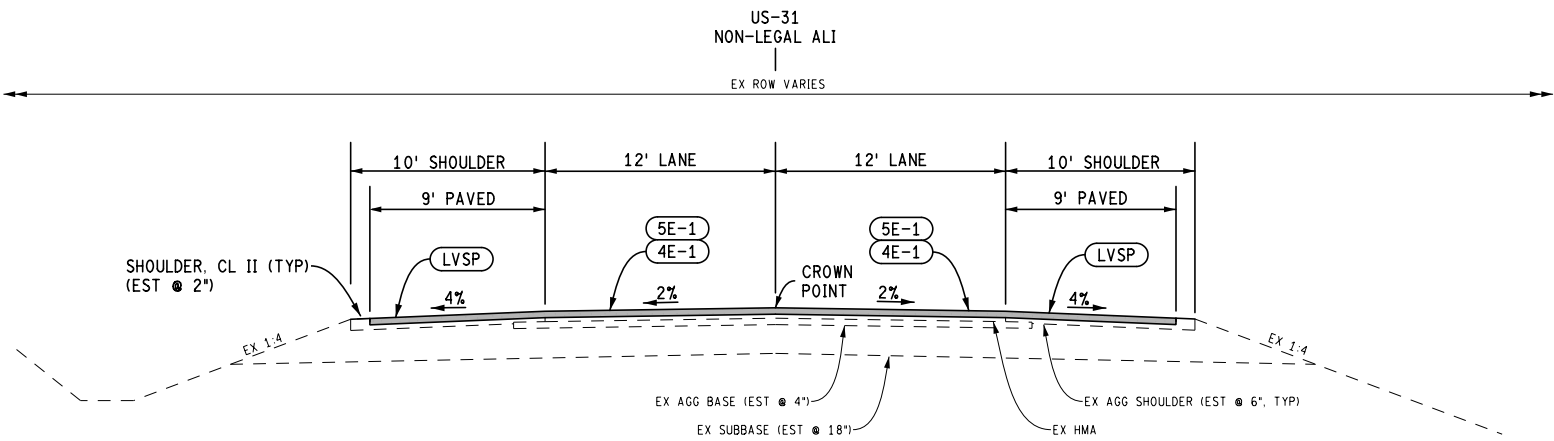
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TYPICAL CROSS SECTIONS
US-31, US-10 TO SUGAR GROVE RD

DRAWING	SHEET
US-31 TYP 001	SECT 1 7

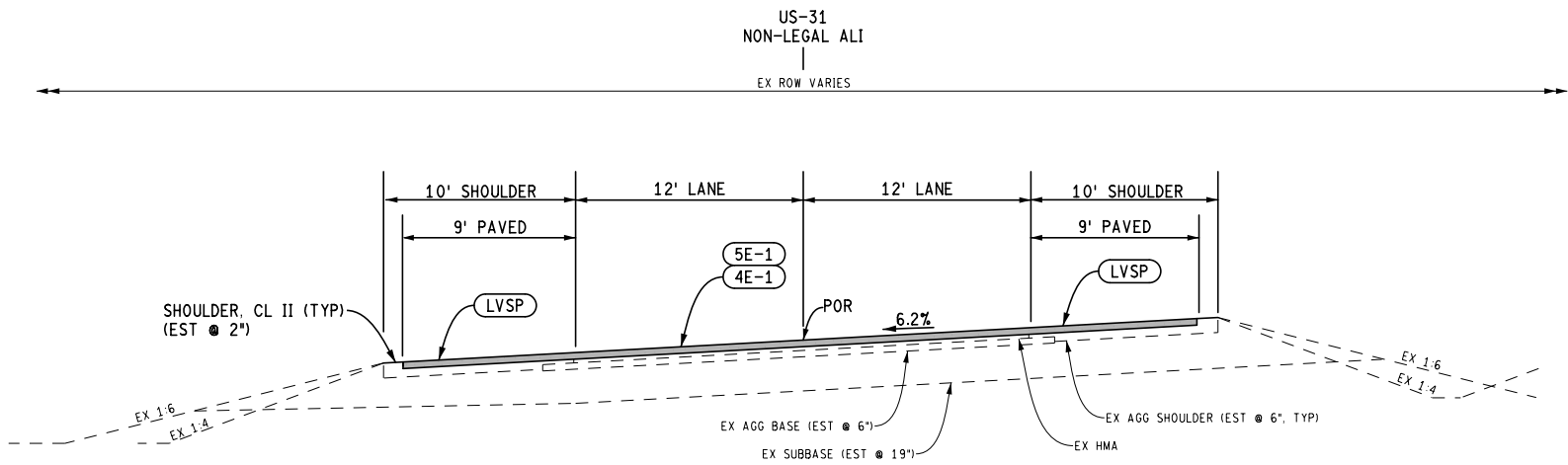


FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)											NO SCALE		DATE: 07/31/19	CS: 53033	TYPICAL CROSS SECTIONS	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		DESIGN UNIT: JASINSKI			JN: 123206A	US-31, US-10 TO SUGAR GROVE RD	US-31 TYP 002	SECT 1		
									FILE: 123206_Typ.dgn			TSC: MUSKEGON			8		



PROPOSED NORMAL SECTION US-31

SECTION APPLIES TO:
STA 1016+25 TO STA 1022+80
1044+51 TO STA 1056+84
STA 1078+78 TO STA 1081+13.75*



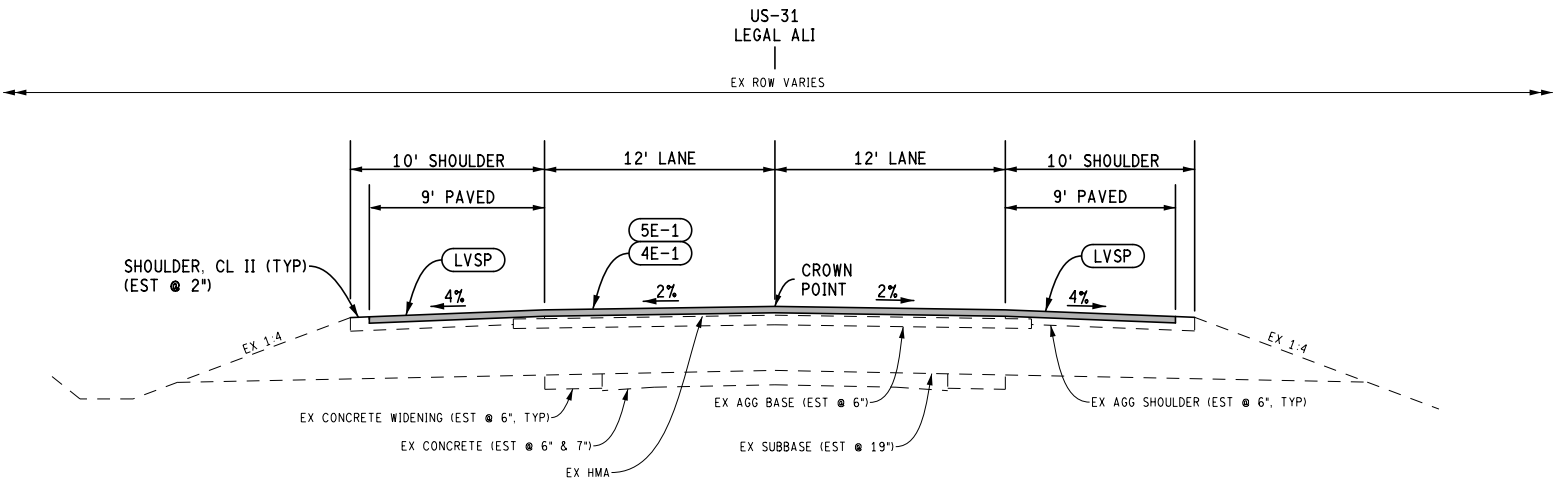
PROPOSED SUPERELEVATED SECTION US-31

SECTION APPLIES TO:
STA 1022+80 TO STA 1034+74
STA 1039+07 TO STA 1044+51
STA 1056+84 TO STA 1063+53
STA 1073+53 TO STA 1078+78

HMA APPLICATION ESTIMATE

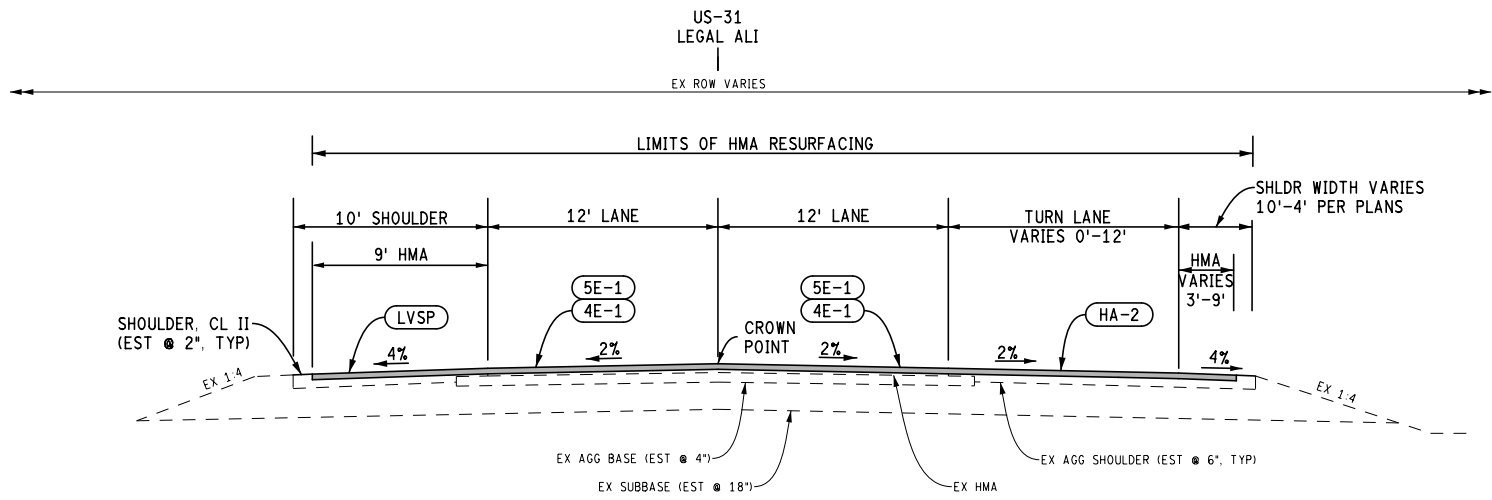
IDENT NO.	ITEM	RATE LBS PER SYD	PERFORMANCE GRADE	REMARKS
5E1	HMA, 5E1	170	58-28	TOP COURSE (AWI=260)
4E1	HMA, 4E1	220	58-28	LEVELING COURSE
LVSP	HMA, LVSP	390	58-28	TOP COURSE (AWI=260), SHOULDER PAVING
HA-1	HMA APPROACH	170	58-28	HMA 5E1 (AWI=260), ROAD AND DRIVE APPROACH
HA-2	HMA APPROACH	170	58-28	HMA 5E1, TOP COURSE (AWI=260)
		220	58-28	HMA 4E1, LEVELING COURSE
HA-3	HMA APPROACH	170	58-28	HMA 5E1, TOP COURSE (AWI=260)
		220	58-28	HMA 4E1, LEVELING COURSE
		220	58-22	HMA 4E1, BASE COURSE
HA-4	HMA APPROACH	220	58-28	HMA LVSP, SINGLE COURSE RESIDENTIAL DRIVEWAY PAVING
HA-5	HMA APPROACH	220	58-28	HMA 5E1, SINGLE COURSE COMMERCIAL DRIVEWAY PAVING
	* BOND COAT	0.05-0.15 GAL		

*FOR INFORMATION ONLY



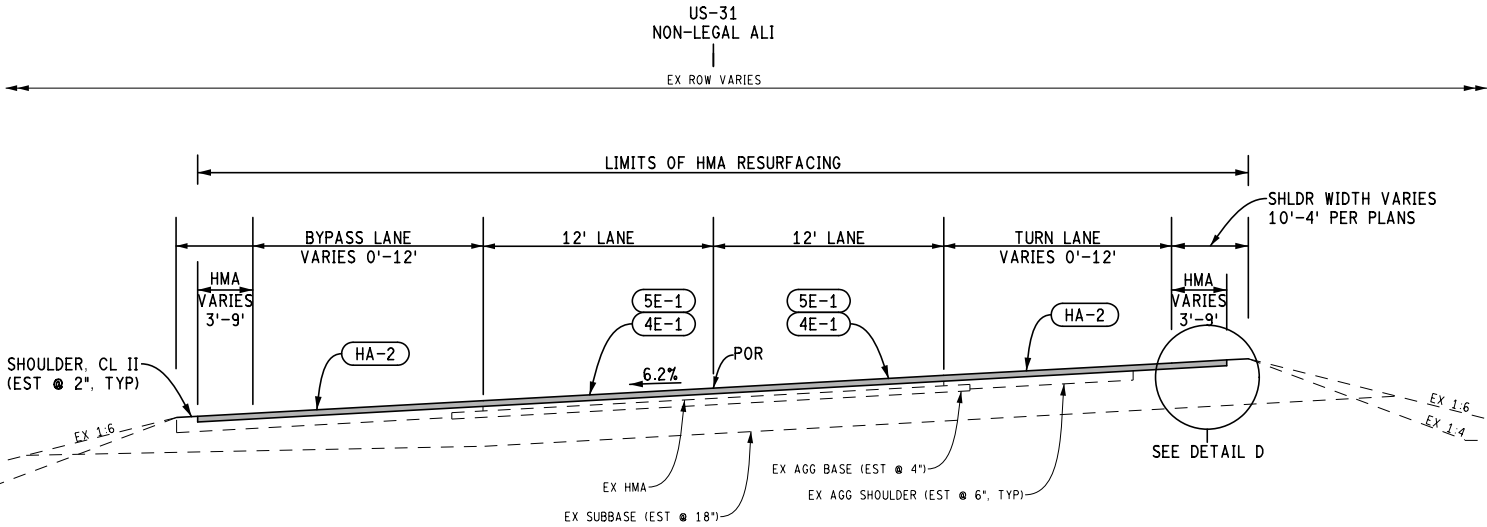
PROPOSED NORMAL SECTION US-31
ON GRADE LIFT

SECTION APPLIES TO:
STA 58+51.79* TO STA 78+02
STA 80+09 TO STA 130+58
STA 132+60 TO STA 179+17



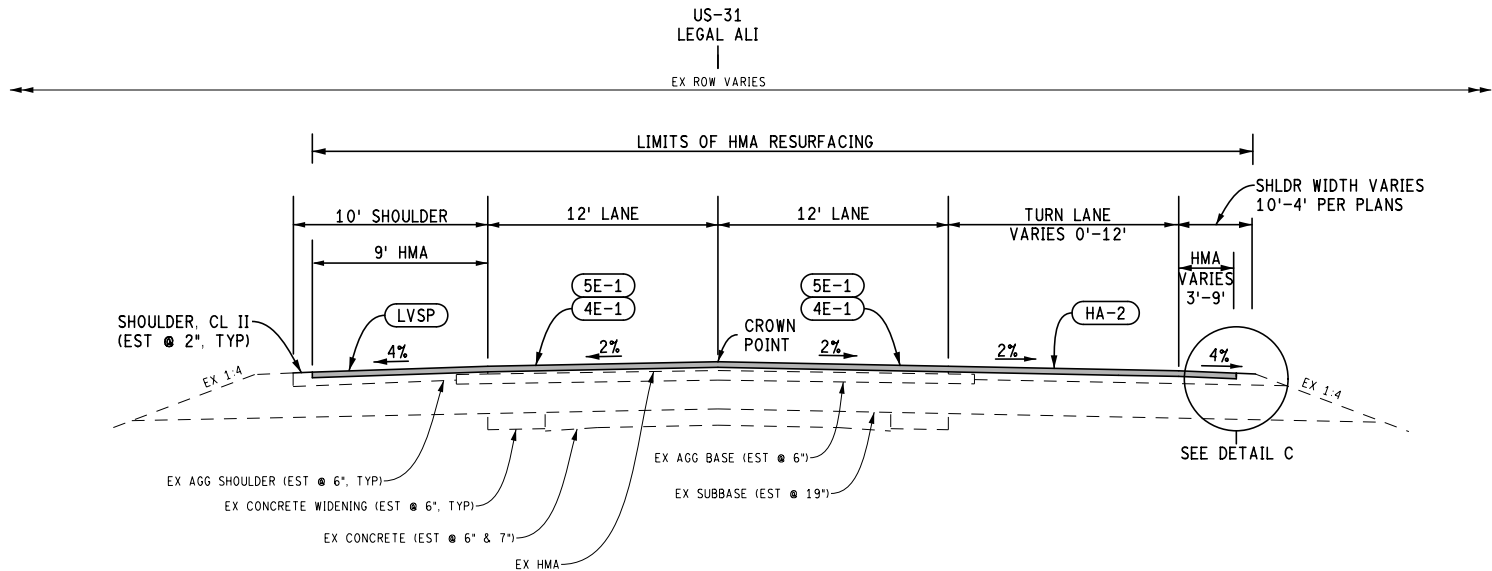
PROPOSED NORMAL SECTION US-31
WITH TURN LANE

SECTION APPLIES TO PROPOSED TURN LANES AND TAPER EXTENSIONS:
STA 1011+00 (POB) TO STA 1016+25



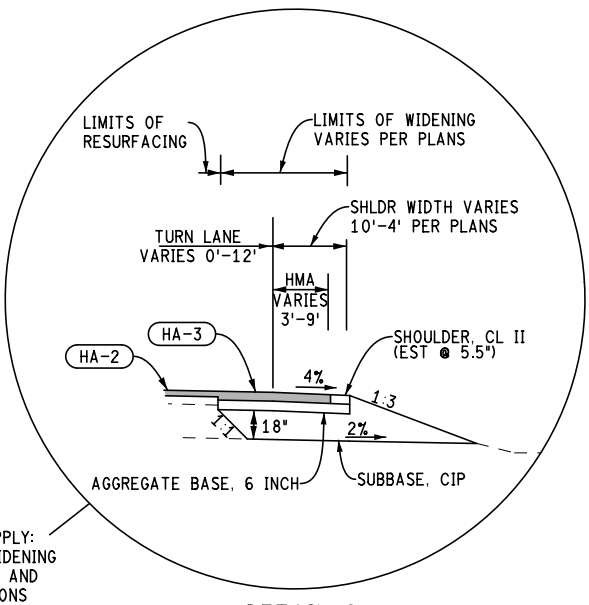
PROPOSED SUPERELEVATED SECTION US-31
WITH BYPASS AND/OR TURN LANES

SECTION APPLIES TO PROPOSED TURN LANES AND TAPER EXTENSIONS:
STA 1034+74 TO STA 1039+07
STA 1063+53 TO STA 1073+53



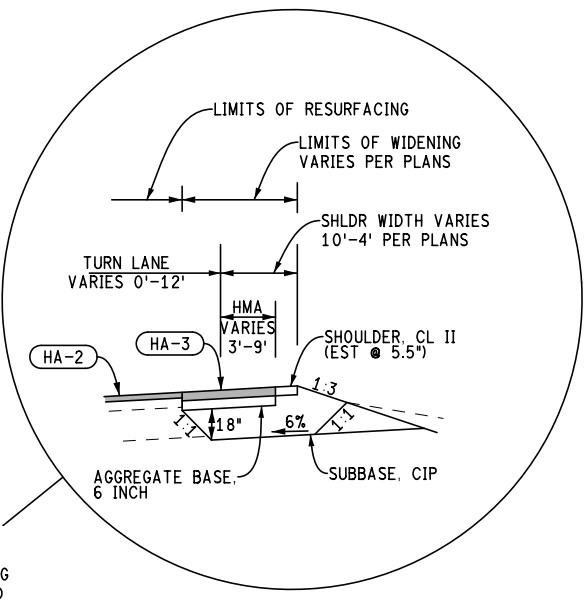
PROPOSED NORMAL SECTION US-31
WITH TURN LANE ON GRADE LIFT

SECTION APPLIES TO PROPOSED TURN LANES AND TAPER EXTENSIONS:
STA 78+02 TO STA 80+09
STA 130+58 TO STA 132+60
STA 179+17 TO STA 185+68 (POE)



DETAIL C TO APPLY:
IN SECTIONS OF WIDENING
FOR TURN LANES AND
TAPER EXTENSIONS

DETAIL C



DETAIL D TO APPLY:
IN SUPERELEVATED
SECTIONS OF WIDENING
FOR TURN LANES AND
TAPER EXTENSIONS

DETAIL D

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

FILE: 123206_Typ.dgn

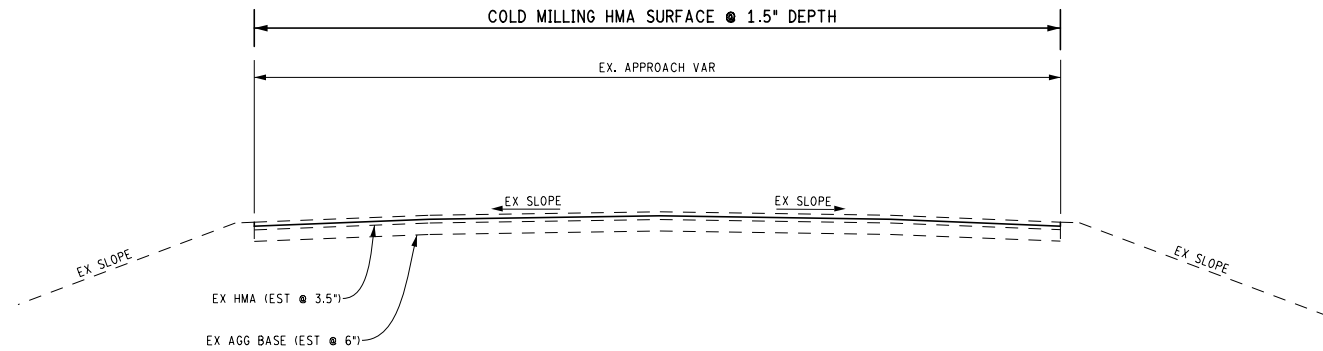
DATE: 07/31/19
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 53033
JN: 123206A

TYPICAL CROSS SECTIONS
US-31, US-10 TO SUGAR GROVE RD

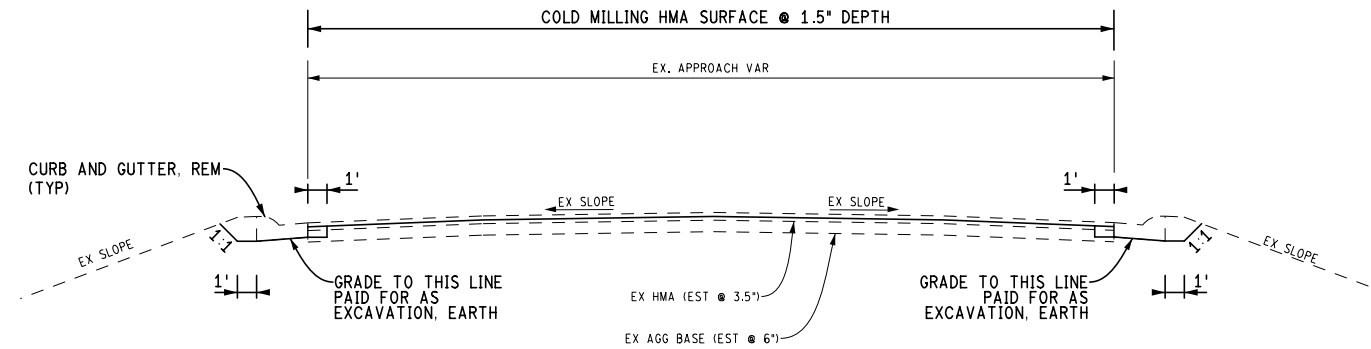
DRAWING
US-31
TYP
004

SHEET
SECT 1
10



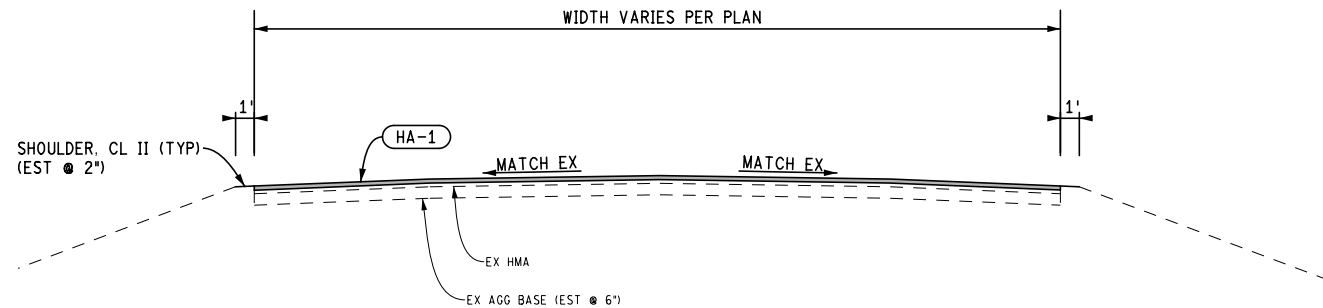
EXISTING TYPICAL FOR APPROACH ROADS

SECTION APPLIES TO:
JOHNSON ROAD LT.
HANSEN ROAD LT. & RT.
DECKER ROAD LT. & RT.



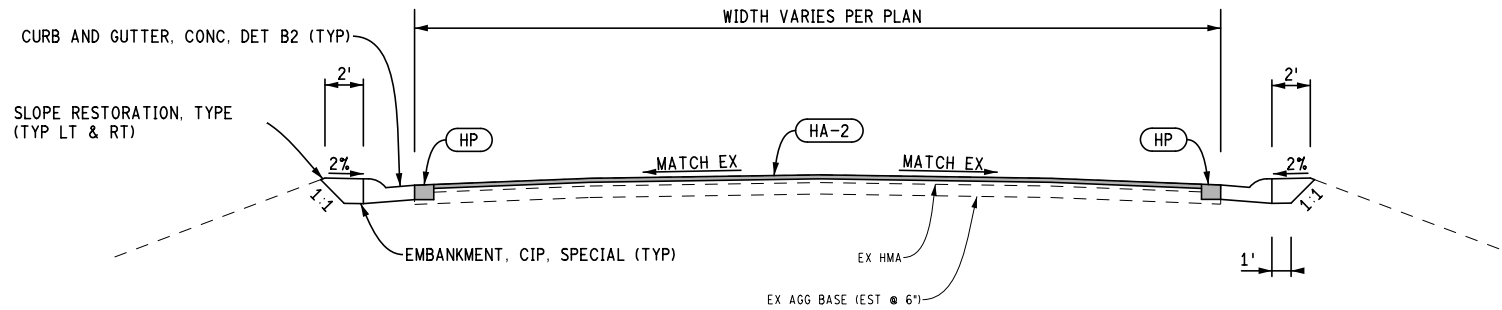
EXISTING TYPICAL FOR APPROACH ROADS WITH CURB

SECTION APPLIES TO:
JOHNSON ROAD RT.
MAIN STREET RT.
SUGAR GROVE ROAD LT. & RT.



PROPOSED TYPICAL FOR APPROACH ROADS

SECTION APPLIES TO:
JOHNSON ROAD LT.
HANSEN ROAD RT.
DECKER ROAD LT. & RT.



PROPOSED TYPICAL FOR APPROACH ROADS

SECTION APPLIES TO:
JOHNSON ROAD RT.
MAIN STREET RT.
HANSEN ROAD LT.
SUGAR GROVE ROAD LT. & RT.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

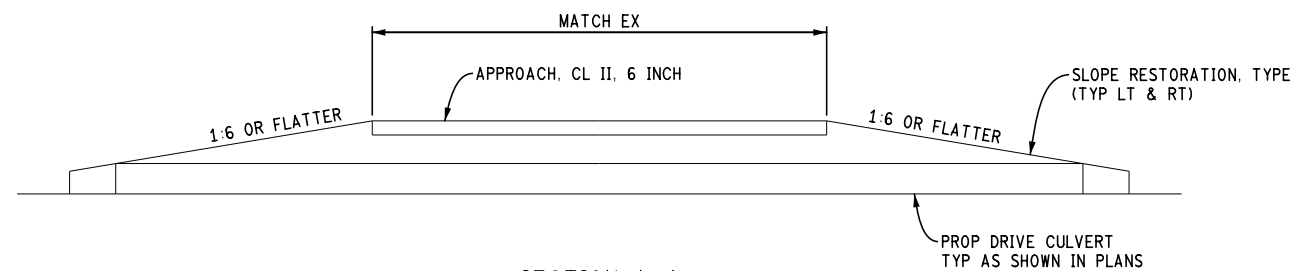
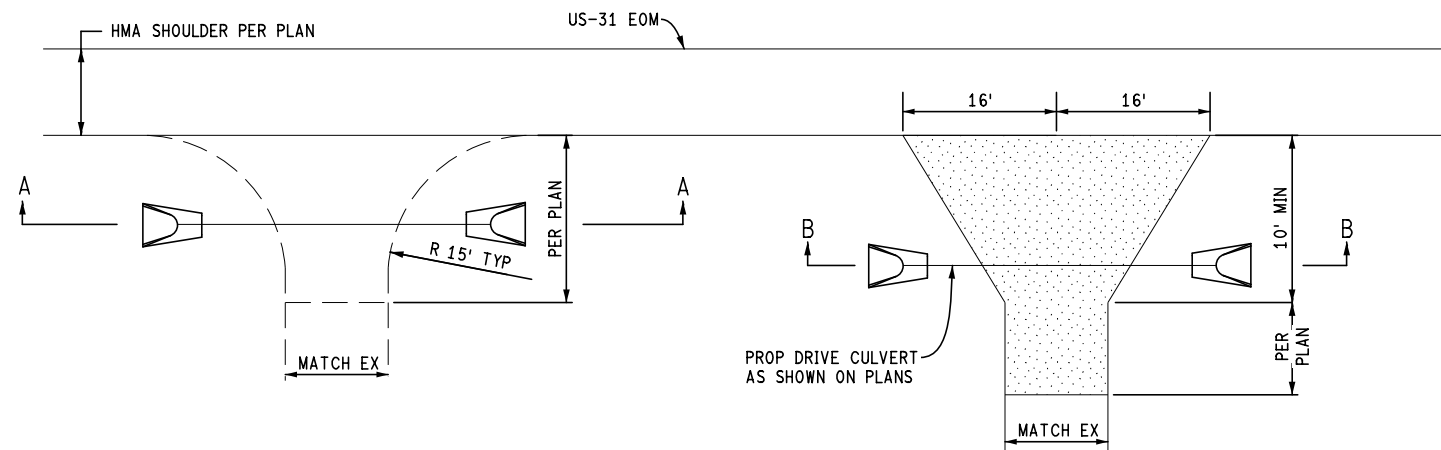
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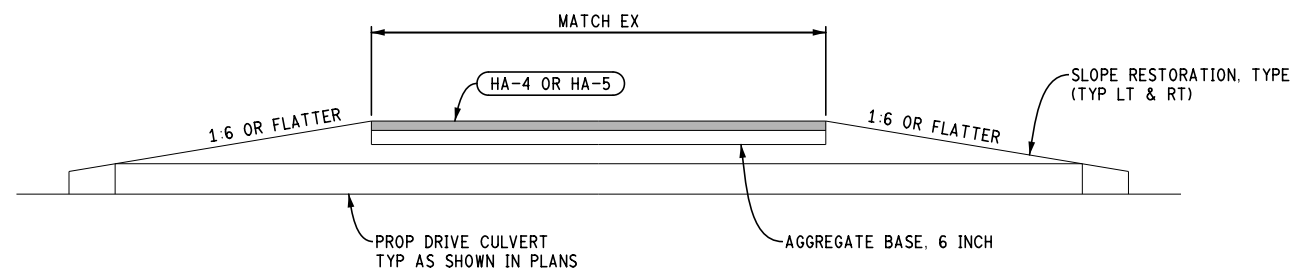
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TYPICAL CROSS SECTIONS
US-31, US-10 TO SUGAR GROVE RD

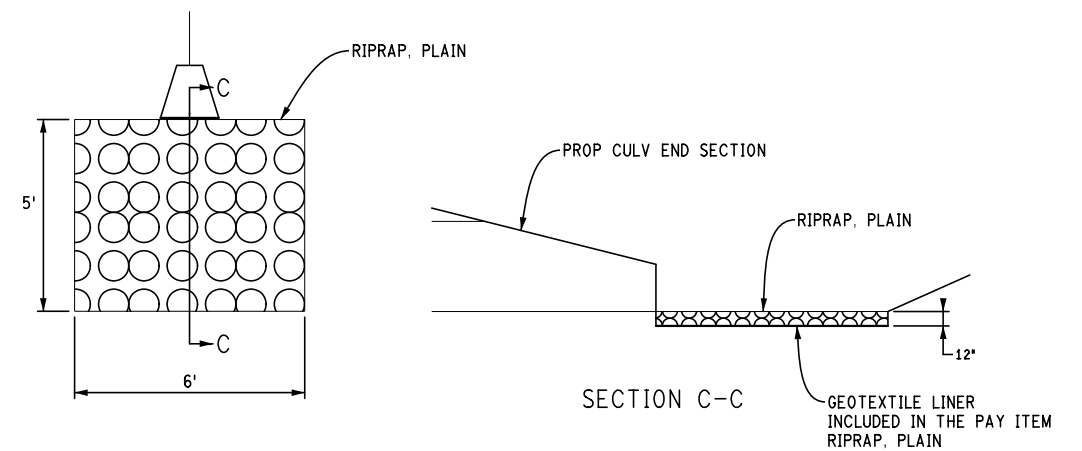
DRAWING	SHEET
US-31 TYP 005	11



SECTION A-A
TYPICAL GRAVEL RESIDENTIAL AND FIELD DRIVE APPROACH

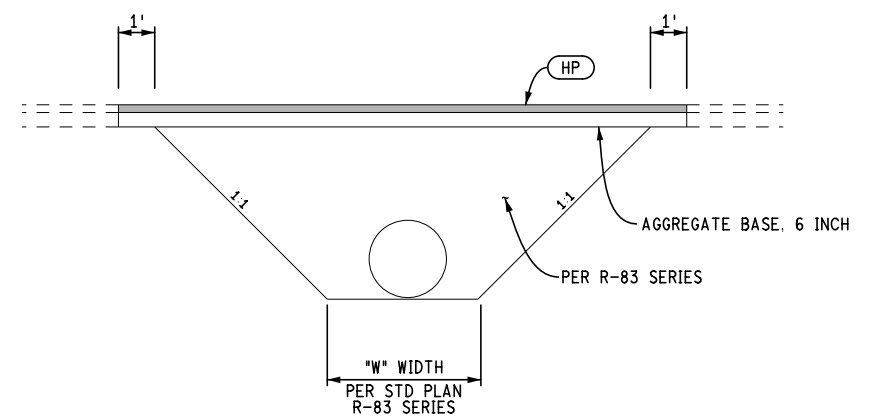


SECTION B-B
TYPICAL HMA DRIVE APPROACH



CULVERT END SECTION DETAIL

NOT TO SCALE
SECTION TO APPLY
CULVERT CROSSINGS



CULVERT CROSSING DETAIL

NOT TO SCALE
SECTION TO APPLY
CULVERT CROSSINGS

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE		DATE: 07/31/19	CS: 53033	MISCELLANEOUS DETAILS		DRAWING	SHEET		
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION				DESIGN UNIT: JASINSKI	JN: 123206A	US-31, US-10 TO SUGAR GROVE RD				US-31 MSCDET 001	SECT 1 12
										FILE: 123206_Typ.dgn	TSC: MUSKEGON							

NOTES

COORDINATE SYSTEM: STATE PLANE GRID
ZONE: MICHIGAN CENTRAL 2112
ELLIPSOID: GRS 80
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88
GEOID: GEOID 12B
UNITS: INTERNATIONAL FEET
SURVEYED BY: MDOT

GROUND DISTANCE CONVERSION

THE COMBINED SCALE FACTOR (CSF) FOR EACH CONTROL POINT IS INCLUDED IN THE CONTROL POINT LIST.

AVERAGE COMBINED SCALE FACTOR (ACSF) = (CSF1 + CSF2)/2
GROUND DISTANCE = GRID DISTANCE / ACSF

PLAN ELEVATION

ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON CP 108
OPUS SOLUTIONS AND LEVELED ON 01/03/17.

STATION / OFFSETS

STATION AND OFFSETS ARE RELATIVE TO THE US-31 LEGAL
SURVEY ALIGNMENT.

INTERMEDIATE CONTROL

CP 100
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP IN THE NORTHEAST QUADRANT OF US-31 & US-10.
COORDINATES: N= 238912.502, E= 19178165.560, ELEV= 690.824
STANDARD DEVIATION: N= 0.003, E= 0.003, Z= 0.004
COMBINED SCALE FACTOR: 1.00003248
STATION: 11+44.20, OFFSET: 95.77' RT
WITNESSES:
1. N13W 55' POWER POLE.
2. S33W 99' POWER POLE.
3. S50W 94' EAST LEG "STOP" SIGN.

CP 101
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 3.5' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER
& 1250' +/- NORTHERLY OF US-31/US-10 INTERSECTION.
COORDINATES: N= 240167.473, E= 19178141.967, ELEV= 685.379
STANDARD DEVIATION: N= 0.002, E= 0.002, Z= 0.004
COMBINED SCALE FACTOR: 1.00003172
STATION: 24+01.22, OFFSET: 26.09' RT
WITNESSES:
1. S13E 119' POWER POLE (BM51).
2. S24E 42' SOUTHERLY END 15" CMP.
3. S89E 21' NORTHERLY END 15" CMP.

CP 102
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP IN SOUTHWEST QUADRANT OF US-31 & JOHNSON RD.
COORDINATES: N= 241348.849, E= 19178588.717, ELEV= 694.493
STANDARD DEVIATION: N= 0.002, E= 0.003, Z= 0.004
COMBINED SCALE FACTOR: 1.00003032
STATION: 36+76.32, OFFSET: 36.55' LT
WITNESSES:
1. N34W 6' SOUTHERLY LEG "STOP" SIGN.
2. N28E 135' POWER POLE (BM52).
3. S34W 114' "US31 SOUTH" SIGN.

CP 103
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
PIONT" CAP 6' WEST OF SB US-31 EDGE OF ASPHALT SHOULDER
& 1270' +/- NORTHERLY OF JOHNSON ROAD CENTERLINE.
COORDINATES: N= 242091.971, E= 19179621.708, ELEV= 699.499
STANDARD DEVIATION: N= 0.002, E= 0.003, Z= 0.003
COMBINED SCALE FACTOR: 1.00002946
STATION: 49+46.66, OFFSET: 26.85' LT
WITNESSES:
1. S24E 6' SB US-31 EDGE OF ASPHALT SHOULDER.
2. N66E 44' DELINEATOR POST.
3. N62E 97' CENTERLINE FARM DRIVE.

CP 104
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 24' +/- EAST OF NB US-31 EDGE OF ASPHALT
SHOULDER & 575' +/- SOUTHERLY OF SCOTTVILLE ROAD
CENTERLINE.
COORDINATES: N= 242798.448, E= 19180811.525, ELEV= 691.875
STANDARD DEVIATION: N= 0.001, E= 0.002, Z= 0.002
COMBINED SCALE FACTOR: 1.00002923
STATION: 63+30.39, OFFSET: 37.26' RT
WITNESSES:
1. S49W 179' WEST LEG "SCOTTVILLE RD" SIGN.
2. N61W 24' NB US-31 EDGE OF ASPHALT SHOULDER.
3. N37W 21' DELINEATOR POST.

CP 105
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 13' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER
IN FRONT YARD OF WHITE VINYL HOUSE #792.
COORDINATES: N= 243825.226, E= 19181350.063, ELEV= 690.354
STANDARD DEVIATION: N= 0.002, E= 0.001, Z= 0.002
COMBINED SCALE FACTOR: 1.00002846
STATION: 74+88.06, OFFSET: 18.34' RT
WITNESSES:
1. N58E 90' POWER POLE (BM55).
2. N87E 117' NW CORNER HOUSE #792.
3. N79E 40' SOUTH END 15" CMP.

CP 106
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 13.5 ' WEST OF SB US-31 EDGE OF ASPHALT
SHOULDER DIRECTLY ACROSS FROM ZIEHM LP GAS COMPANY
#940.
COORDINATES: N= 244821.552, E= 19181359.338, ELEV= 682.528
STANDARD DEVIATION: N= 0.002, E= 0.001, Z= 0.002
COMBINED SCALE FACTOR: 1.00002804
STATION: 62+12.85, OFFSET: 46.32' LT
WITNESSES:
1. N82E 82' W FACE POWER POLE (BM56).
2. S79E 124' NW CORNER BUILDING #940.
3. S62E 137' SW CORNER BUILDING #940.

CP 107
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 30' NORTH OF DRIVE TO HOUSE #1066 & 12' EAST OF
NB US-31 EDGE OF ASPHALT SHOULDER.
COORDINATES: N= 245699.058, E= 19181442.693, ELEV= 681.880
STANDARD DEVIATION: N= 0.004, E= 0.002, Z= 0.002
COMBINED SCALE FACTOR: 1.00002736
STATION: 70+91.12, OFFSET: 28.64' RT
WITNESSES:
1. N17E 61' GUY POLE (BM57).
2. S05E 82' SOUTH END 15" CMP.
3. S08E 108' "SCHULKE PS 30894" CAPPED IRON.

CP 108
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP IN NORTHWEST QUADRANT OF US-31 & HANSEN
ROAD.
COORDINATES: N= 246581.637, E= 19181312.302, ELEV= 679.278
STANDARD DEVIATION: N= 0.000, E= 0.000, Z= 0.000
COMBINED SCALE FACTOR: 1.00002678

STATION: 79+73.06, OFFSET: 108.97' LT
WITNESSES:
1. N32E 140' NORTHERLY CLEAR VISION BRACE POST.
2. S75W 74' FIBER OPTIC MARKER.
3. S04E 28' CENTERLINE "AMERITECH" PEDESTAL.

CP 109
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 5' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER &
43' NORTH OF CENTERLINE DRIVE TO HOUSE #1414.
COORDINATES: N= 247877.785, E= 19181447.208, ELEV= 680.321
STANDARD DEVIATION: N= 0.002, E= 0.002, Z= 0.001
COMBINED SCALE FACTOR: 1.00002570
STATION: 92+69.59, OFFSET: 25.85' RT
WITNESSES:
1. N19E 91' WEST FACE POWER POLE (BM59).
2. S42E 25' NORTH END 15" CMP.
3. S21E 67' TELEPHONE PEDESTAL.

CP 110
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 12.5' WEST OF SB US-31 EDGE OF ASPHALT
SHOULDER & 240' +/- NORTH OF DRIVE TO HOUSE #1585.
COORDINATES: N= 249166.004, E= 19181389.746, ELEV= 680.862
STANDARD DEVIATION: N= 0.003, E= 0.002, Z= 0.002
COMBINED SCALE FACTOR: 1.00002465
STATION: 105+57.47, OFFSET: 25.85' RT
WITNESSES:
1. N09W 59' NORTH END 15" CPP.
2. S46W 39' NE CORNER HEADWALL BOX CULVERT.
3. S31W 18' WEST SIDE POWER POLE (BM60).

CP 111
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 8' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER &
48' SOUTH OF CENTERLINE DRIVE TO HOUSE #1814.
COORDINATES: N= 250435.118, E= 19181476.050, ELEV= 682.524
STANDARD DEVIATION: N= 0.003, E= 0.003, Z= 0.003
COMBINED SCALE FACTOR: 1.00002357
STATION: 118+27.77, OFFSET: 28.79' RT
WITNESSES:
1. N34E 40' WEST FACE GUY POLE (BM61).
2. N46E 120' SW CORNER BRICK HOUSE #1814.
3. EAST 80' NW CORNER SIDED OUTBUILDING PORCH.

CP 112
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP IN NORTHWEST QUADRANT OF US-31 & DECKER
ROAD.
COORDINATES: N= 251808.589, E= 19181424.411, ELEV= 681.652
STANDARD DEVIATION: N= 0.003, E= 0.002, Z= 0.003
COMBINED SCALE FACTOR: 1.00002253
STATION: 131+99.90, OFFSET: 50.87' LT
WITNESSES:
1. N18E 24' POWER POLE (BM62).
2. S00E 60' NORTH LEG "STOP" SIGN.
3. S54W 19' EAST FACE GUY POLE.

CP 113
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 5' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER &
420' +/- NORTH OF CENTERLINE OF DRIVE TO HOUSE #2125.
COORDINATES: N= 253049.490, E= 19181527.138, ELEV= 681.236
STANDARD DEVIATION: N= 0.002, E= 0.002, Z= 0.004
COMBINED SCALE FACTOR: 1.00002157
STATION: 144+42.64, OFFSET: 26.51' RT
WITNESSES:
1. N21W 184' EAST FACE POWER POLE (BM63).
2. S18E 61' EAST END 24" CMP.
3. S55W 85' WEST END 24" CMP.

CP 114
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 5.5' WEST OF SB US-31 EDGE OF ASPHALT SHOULDER
& 38' +/- NORTH OF CENTERLINE OF DRIVE TO BUILDING #2393.
COORDINATES: N= 254335.715, E= 19181500.152, ELEV= 685.880
STANDARD DEVIATION: N= 0.002, E= 0.002, Z= 0.004
COMBINED SCALE FACTOR: 1.00002035
STATION: 157+28.04, OFFSET: 26.72' LT
WITNESSES:
1. S65W 53' NE CORNER BUILDING #2393.
2. S33W 93' SE CORNER BUILDING #2393.
3. S40W 20' EAST FACE POWER POLE (BM64).

CP 115
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP 5' EAST OF NB US-31 EDGE OF ASPHALT SHOULDER &
250' +/- SOUTH OF CENTERLINE TO DRIVE #2606.
COORDINATES: N= 255613.994, E= 19181578.641, ELEV= 687.990
STANDARD DEVIATION: N= 0.002, E= 0.001, Z= 0.004
COMBINED SCALE FACTOR: 1.00001925
STATION: 170+07.66, OFFSET: 25.67' RT
WITNESSES:
1. N25W 147' EAST FACE POWER POLE (BM65).
2. N14E 86' FIBER OPTIC MARKER.
3. N12E 128' TELEPHONE PEDESTAL.

CP 116
DESCRIPTION: SET 5/8" X 36" REBAR WITH "MDOT TRAVERSE
POINT" CAP IN SOUTHWEST QUADRANT OF US-31 & SUGAR
GROVE ROAD.
COORDINATES: N= 257017.956, E= 19181530.095, ELEV= 682.822
STANDARD DEVIATION: N= 0.003, E= 0.003, Z= 0.004
COMBINED SCALE FACTOR: 1.00001841
STATION: 184+10.34, OFFSET: 51.52' LT
WITNESSES:
1. N21W 26' SOUTH LEG "STOP" SIGN.
2. N80W 124' CLEAR VISION BRACE POST.
3. N30E 20' EAST FACE POWER POLE (BM66).

BENCHMARKS

BM 50
DESCRIPTION: SET YELLOW BENCHTIE AND TAG IN WEST FACE
OF THE NORTHERNMOST POWER POLE IN THE NORTHWEST
QUADRANT OF US-31 & US-10.
COORDINATES: N= 238961, E= 19178140
ELEVATION: 691.730
STANDARD DEVIATION: Z= 0.004
STATION: 11+92, OFFSET: 69' RT

BM 51
DESCRIPTION: SET BENCHTIE AND TAG IN WEST FACE OF
POWER POLE ON EAST SIDE OF US-31 & 1200' +/- NORTHERLY OF
US-31/US-10 INTERSECTION.
COORDINATES: N= 240051, E= 19178169
ELEVATION: 686.355
STANDARD DEVIATION: Z= 0.004
STATION: 22+86, OFFSET: 66' RT

BM 52
DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE OF POWER
POLE IN THE NORTHWEST QUADRANT OF US-31 & JOHNSON
ROAD.
COORDINATES: N= 241468, E= 19178652
ELEVATION: 697.595
STANDARD DEVIATION: Z= 0.004
STATION: 38+05, OFFSET: 67' LT

BM 53
DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER
POLE ON WESTERLY SIDE OF SB US-31 & 980' +/- NORTHERLY OF
CP103.
COORDINATES: N= 242605, E= 19180457

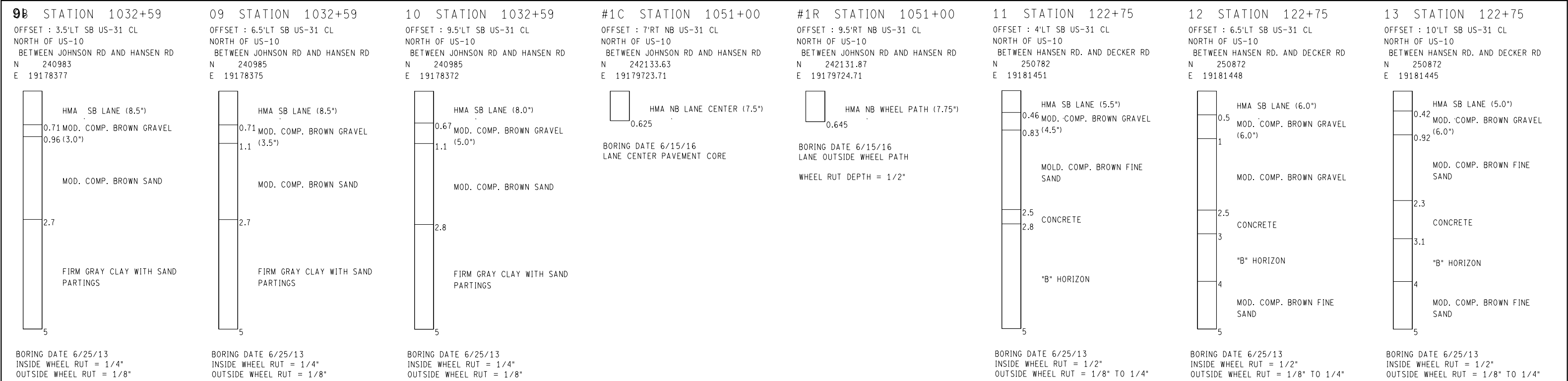
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)								 Michigan Department of Transportation	NO SCALE		DATE: 06/28/2017	CS: 53033	SURVEY INFORMATION SHEET		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION				DESIGN UNIT: JASINSKI	JN: 123206A	US-31, US-10 TO SUGAR GROVE RD.		SURVEY 001	SECT 1 13
													AMBER, CUSTER, VICTORY, SHERMAN TOWNSHIP, MASON COUNTY			
											FILE: S-123206_Survey_Info_Sheet_2017-06-28.doc	TSC: MUSKEGON				

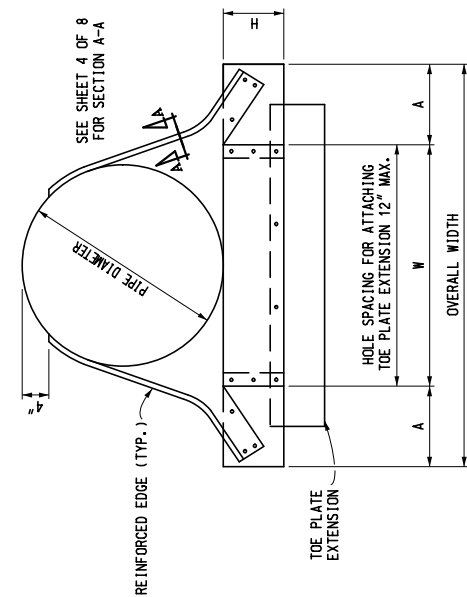
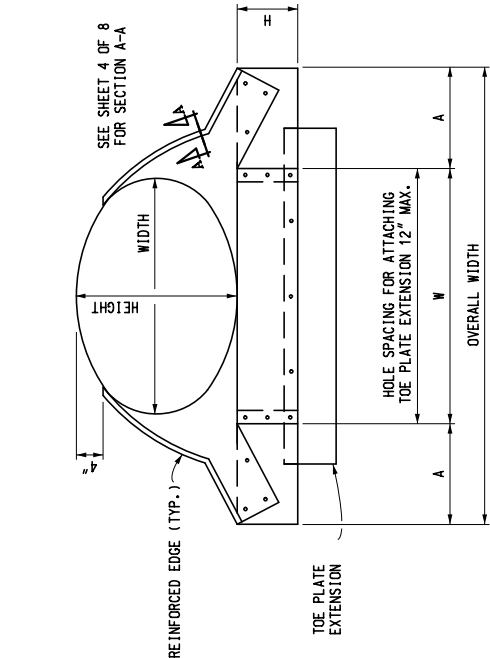
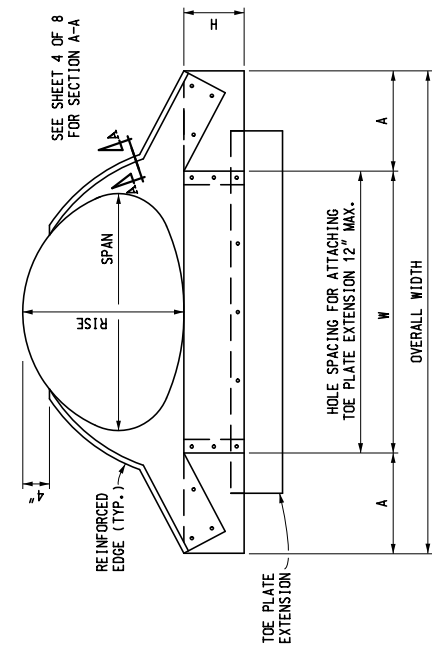
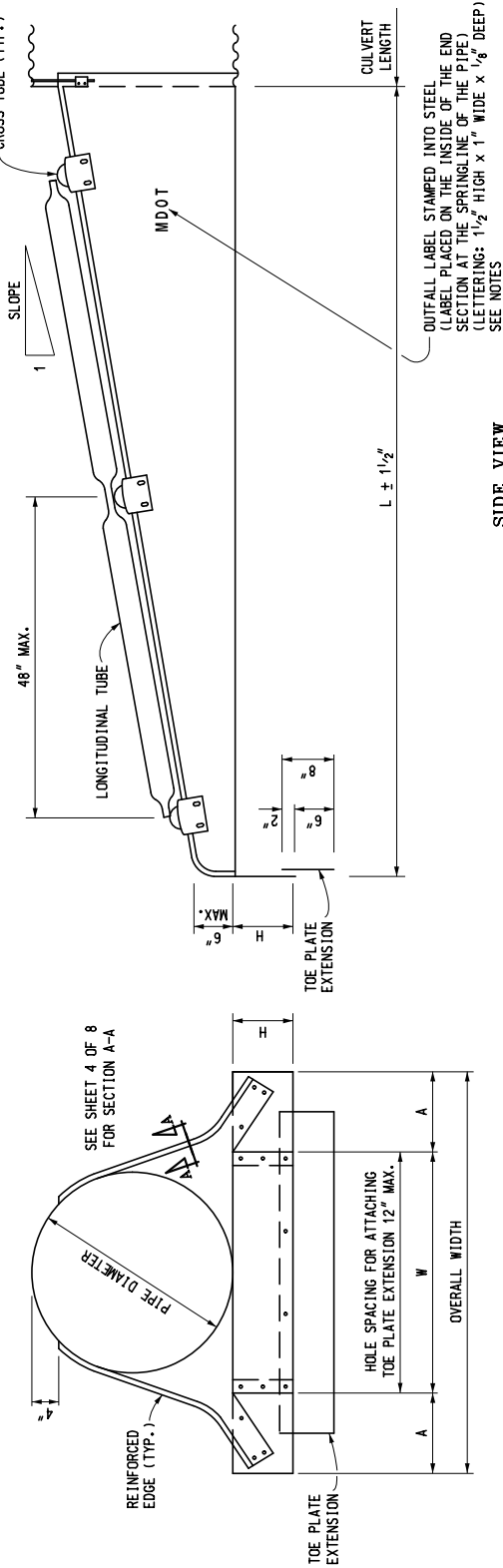
ELEVATION: 689.083 STANDARD DEVIATION: Z= 0.003 STATION: 59+36, OFFSET: 57' LT										BM 54 DESCRIPTION: SET BENCHTIE AND TAG IN WESTERLY FACE OF POWER POLE IN SOUTHEAST QUADRANT OF US-31 & SCOTTVILLE ROAD. COORDINATES: N= 243209, E= 19181126 ELEVATION: 691.630 STANDARD DEVIATION: Z= 0.002 STATION: 68+40, OFFSET: 44' RT										BM 55 DESCRIPTION: SET BENCHTIE AND TAG IN WEST FACE POWER POLE EAST OF NB US-31 BETWEEN HOUSES #792 & #806. COORDINATES: N= 243873, E= 19181426 ELEVATION: 685.614 STANDARD DEVIATION: Z= 0.002 STATION: 75+51, OFFSET: 81' RT										BM 56 DESCRIPTION: SET BENCHTIE AND TAG IN WEST FACE OF THE FIRST POWER POLE SOUTH OF BUILDING #940 DRIVEWAY EAST OF NB US-31. COORDINATES: N= 244832, E= 19181441 ELEVATION: 682.313 STANDARD DEVIATION: Z= 0.002 STATION: 62+25, OFFSET: 35' RT										BM 57 DESCRIPTION: SET BENCHTIE AND TAG IN WEST FACE OF THE FIRST GUY POLE NORTH OF DRIVE TO HOUSE #1066 EAST OF NB US-31. COORDINATES: N= 245757, E= 19181462 ELEVATION: 680.433 STANDARD DEVIATION: Z= 0.002 STATION: 71+50, OFFSET: 47' RT										BM 58 DESCRIPTION: FOUND RAILROAD SPIKE IN WEST FACE OF POWER POLE IN THE NORTHEAST QUADRANT OF US-31 & HANSEN ROAD. COORDINATES: N= 246549, E= 19181471 ELEVATION: 679.379 STANDARD DEVIATION: Z= 0.001 STATION: 79+42, OFFSET: 50' RT										BM 59 DESCRIPTION: FOUND RAILROAD SPIKE IN WEST FACE OF FIRST POWER POLE NORTH OF DRIVE TO HOUSE #1414 EAST OF NB US-31. COORDINATES: N= 247964, E= 19181477 ELEVATION: 678.404 STANDARD DEVIATION: Z= 0.002 STATION: 93+56, OFFSET: 55' RT										BM 60 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE OF FIRST POWER POLE NORTH OF DRIVE TO HOUSE #1585 WEST OF SB US-31. COORDINATES: N= 249151, E= 19181381 ELEVATION: 680.988 STANDARD DEVIATION: Z= 0.002 STATION: 105+42, OFFSET: 42' LT										BM 61 DESCRIPTION: FOUND RAILROAD SPIKE IN WEST FACE OF FIRST GUY POLE SOUTH OF DRIVE TO HOUSE #1814 EAST OF NB US-31. COORDINATES: N= 250466, E= 19181497 ELEVATION: 682.733 STANDARD DEVIATION: Z= 0.003 STATION: 118+59, OFFSET: 49' RT										BM 62 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER POLE IN NORTHWEST QUADRANT OF US-31 & DECKER ROAD. COORDINATES: N= 251832, E= 19181432 ELEVATION: 683.546 STANDARD DEVIATION: Z= 0.003 STATION: 132+23, OFFSET: 44' LT										BM 63 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER POLE 580' +/- NORTH OF CENTERLINE OF DRIVE TO HOUSE #2125 WEST OF SB US-31. COORDINATES: N= 253221, E= 19181462 ELEVATION: 679.876 STANDARD DEVIATION: Z= 0.004 STATION: 146+13, OFFSET: 42' LT										BM 64 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER POLE 24' +/- NORTH OF CENTERLINE OF DRIVE TO BUILDING #2393 WEST OF SB US-31. COORDINATES: N= 254321, E= 19181488 ELEVATION: 684.618 STANDARD DEVIATION: Z= 0.004 STATION: 157+13, OFFSET: 39' LT										BM 65 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER POLE 150' +/- NORTHERLY OF CP115 WEST OF SB US-31. COORDINATES: N= 255746, E= 19181516 ELEVATION: 686.437 STANDARD DEVIATION: Z= 0.004 STATION: 171+39, OFFSET: 40' LT										BM 66 DESCRIPTION: SET BENCHTIE AND TAG IN EAST FACE POWER POLE IN SOUTHWEST QUADRANT OF US-31 & SUGAR GROVE ROAD. COORDINATES: N= 257036, E= 19181540 ELEVATION: 683.929 STANDARD DEVIATION: Z= 0.004 STATION: 184+28, OFFSET: 42' LT									
GOVERNMENT CORNERS																																																																																																																																											
K-6, T18N-R17W SECTION CORNER COMMON TO SECTIONS 13 & 14. DESCRIPTION: FOUND 5/8" IRON IN MON BOX ON CENTERLINE OF US-10. COORDINATES: N= 238864.223, E= 19176092.229 STANDARD DEVIATION: N= 0.007, E= 0.007 COMBINED SCALE FACTOR: 1.00003264956 STATION: 10+40.06, OFFSET: 1975.51' LT WITNESSES: 1. SOUTH 75.43' CONCRETE PLAT MONUMENT. 2. NORTH 74.81' 1ROSS #17635 CAP. 3. N64W 157.46' N'LY BOLT MANHOLE COVER. 4. N46W 103.44' FOUND 60D NAIL IN SW SIDE PP.																																																																																																																																											
M-6, T18N-R17W / A-6, T18N-R16W SECTION CORNER COMMON TO SECTION 13 OF T18N-R17W & SECTION 18 OF T18N-R16W. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP STAMPED "MASON COUNTY MONUMENT 17634" IN MONUMENT BOX ON CENTERLINE OF US-31 AND MAIN STREET. COORDINATES: N= 238608.788, E= 19181334.339 STANDARD DEVIATION: N= 0.012, E= 0.006 COMBINED SCALE FACTOR: 1.00003282879 STATION: 48+04.22, OFFSET: 3851.95' RT WITNESSES: 1. N48W 49.78' NE BUILDING CORNER. 2. S48W 47.32' SE BUILDING CORNER. 3. S53E 48.34' NW BUILDING CORNER.																																																																																																																																											
L-5, T18N-R17W SECTION CORNER COMMON TO SECTIONS 12 & 13. DESCRIPTION: FOUND ILLEGIBLE CAP IN MONUMENT BOX IN CENTERLINE OF JOHNSON RD. & 76' +/- EAST OF US-31 CENTERLINE. COORDINATES: N= 241369.262, E= 19178734.374 STANDARD DEVIATION: N= 0.001, E= 0.002 COMBINED SCALE FACTOR: 1.00003039058 STATION: 37+87.50, OFFSET: 60.45' RT WITNESSES: 1. S12E 70.65' CENTER AT BOTTOM CHAIN LINK FENCE. 2. N72E 131.48' CHAIN LINK FENCE CORNER POST. 3. N34E 133.95' CENTER OF US-31 FENCE POST. 4. N57W 128.95' SET MAG NAIL/MDOT TAG IN SIDE PP.																																																																																																																																											
K-5, T18N-R17W SECTION CORNER COMMON TO SECTIONS 11, 12, 13 & 14. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT, P.S. #16345" IN MONUMENT BOX 10' NORTH OF JOHNSON RD. CENTERLINE & 5' WEST OF LASALLE RD. CENTERLINE. COORDINATES: N= 241493.028, E= 19176094.480 STANDARD DEVIATION: N= 0.008, E= 0.006 COMBINED SCALE FACTOR: 1.00002948722 STATION: 29+28.47, OFFSET: 2297.99' LT WITNESSES: 1. N45E 47.26' FOUND 60D NAIL IN NW SIDE TREATED FENCE POST. 2. N71E 58.40' FOUND 60D NAIL IN NW SIDE 30" WALNUT. 3. S02E 33.49' FOUND 60D NAIL IN W. SIDE TREATED FENCE POST. 4. S49E 74.41' FOUND 60D NAIL IN SW. SIDE PP.																																																																																																																																											
M-5, T18N-R17W / A-5 T18N-R16W SECTION CORNER COMMON TO SECTIONS 12 & 13 OF T18N-R17W & SECTIONS 7 & 18 OF T18N-R16W. DESCRIPTION: FOUND 3/4" IRON IN MONUMENT BOX 1' +/- WEST OF MAIN ST. CENTERLINE & JOHNSON CENTERLINE. COORDINATES: N= 241244.861, E= 19181371.227 STANDARD DEVIATION: N= 0.010, E= 0.014 COMBINED SCALE FACTOR: 1.00003031635 STATION: 58+81.85, OFFSET: 1580.80' RT WITNESSES: 1. S60W 64.71' CENTER OF BOLT TOP OF FIRE HYDRANT. 2. S25W 55.75' FOUND P.K. NAIL IN NW SIDE PP. 3. N38W 42.99' FOUND P.K. NAIL IN SW SIDE PP. 4. S44E 63.01' FOUND P.K. NAIL IN NE SIDE 10" SPRUCE STUMP.																																																																																																																																											
M-4, T18N-R17W / A-4 T18N-R16W SECTION CORNER COMMON TO SECTION 12 OF T18N-R17W & SECTION 7 OF T18N-R16W. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT 19846" 2" ABOVE GROUND & 5' NORTH OF NORTH EDGE OF ASPHALT DRIVE #732. COORDINATES: N= 243872.382, E= 19181383.447 STANDARD DEVIATION: N= 0.010, E= 0.014 COMBINED SCALE FACTOR: 1.00002849224 STATION: 75+41.02, OFFSET: 39.86' RT WITNESSES: 1. N60E 106.23' NW. CORNER BRICK HOUSE. 2. S60E 93.24' NW. CORNER HOUSE ADDITION. 3. N21E 164.21' FOUND 60D NAIL IN SE SIDE SERVICE POLE. 4. S88E 43.15' FOUND 60D NAIL IN S. SIDE PP. 5. S42E 90.33' FOUND 60D NAIL IN SW. SIDE 36" WILLOW. 6. N78E 86.22' SW. CORNER BRICK HOUSE.																																																																																																																																											
K-4, T18N-R17W SECTION CORNER COMMON TO SECTIONS 11 & 12. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP STAMPED "MASON COUNTY MONUMENT 19846" 2" ABOVE GROUND 1'+/- EAST OF 15" POPLAR TREE. COORDINATES: N= 244127.829, E= 19176106.103																																																																																																																																											
STANDARD DEVIATION: N= 0.010, E= 0.004 COMBINED SCALE FACTOR: 1.00002801768 STATION: 38+93.97, OFFSET: 3745.92' LT WITNESSES: 1. S78E 0.84' FOUND 60D SPIKE IN N. SIDE 15" POPLAR. 2. S75W 2.64' FOUND 60D SPIKE IN NW. SIDE 15" POPLAR. 3. N16E 18.84' FOUND 60D SPIKE IN W. SIDE 24" MAPLE. 4. N75E 64.80' FOUND PK NAIL IN SE SIDE 4X4 FENCE POST.																																																																																																																																											
C-4, T18N-R16W SECTION CORNER COMMON TO SECTIONS 7 & 8. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT, P.S. #16345 2005" 6" BELOW GROUND AT THE P.I. OFF DARR RD. & FILBURN RD. COORDINATES: N= 243750.837, E= 19186615.324 STANDARD DEVIATION: N= 0.010, E= 0.012 COMBINED SCALE FACTOR: 1.00002889824 STATION: 78+28.21, OFFSET: 5240.95' RT WITNESSES: 1. N40E 43.33' FOUND 16D NAIL IN N. SIDE GUY POLE. 2. N10E 35.25' SET MAG NAIL/ MDOT TAG IN W. SIDE APPLE CLUMP. 3. S32E 64.10' FOUND 3" STEEL POST FLUSH WITH GRAVEL ROAD.																																																																																																																																											
M-3, T18N-R17W / A-3 T18N-R16W SECTION CORNER COMMON TO SECTIONS 1 & 12, T18N-R17W & SECTIONS 6 & 7, T18N-R16W. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP STAMPED "MASON COUNTY MONUMENT 17634" IN MONUMENT BOX WITH NO LID 1.5' +/- EAST OF US-31 CENTERLINE. COORDINATES: N= 246511.272, E= 19181421.823 STANDARD DEVIATION: N= 0.006, E= 0.010 COMBINED SCALE FACTOR: 1.00002671400 STATION: 79+03.09, OFFSET: 0.84' RT WITNESSES: 1. S75W 121.71' FOUND MAG NAIL IN N. SIDE PP. 2. N52E 62.30' FOUND RR SPIKE IN W. SIDE PP. 3. S78E 177.96' FOUND MAG NAIL IN N. SIDE PP. 4. S52W 68.50' FOUND MAG NAIL IN N. SIDE PP.																																																																																																																																											
L-3, T18N-R17W SECTION CORNER COMMON TO SECTIONS 1 & 12. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT 17634" IN MON BOX NO LID. COORDINATES: N= 246590.095, E= 19178706.464 STANDARD DEVIATION: N= 0.005, E= 0.004 COMBINED SCALE FACTOR: 1.00002648004 STATION: 79+72.12, OFFSET: 2717.82' LT WITNESSES: 1. S65E 81.98' FOUND MAG NAIL IN NE SIDE PP. 2. S75W 131.09' FOUND MAG NAIL IN N SIDE PP. 3. N27W 35.17' FOUND 60D NAIL IN E SIDE 12" MAPLE. 4. N14E 42.84' FOUND 60D NAIL IN E SIDE 22" TRIPLE MAPLE.																																																																																																																																											
B-3, T18N-R16W SECTION CORNER COMMON TO SECTIONS 6 & 7. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT P.S. #16345, 2005" 6" BELOW GRAVEL ON CENTERLINE OF HANSEN RD AND BEAN RD. COORDINATES: N= 246440.182, E= 19183995.359 STANDARD DEVIATION: N= 0.014, E= 0.013 COMBINED SCALE FACTOR: 1.00002647610 STATION: 78+46.02, OFFSET: 2574.71' RT WITNESSES: 1. S39E 43.70' FOUND 60D NAIL IN NE SIDE 18" WALNUT. 2. S21E 88.79' NW COR HOUSE PORCH. 3. N37E 63.39' FOUND NAIL/MDOT TAG IN NW SIDE PP. 4. N51W 46.81' C/L TPED.																																																																																																																																											
M-2, T18N-R17W / A-2, T18N-R16W SECTION CORNER COMMON TO SECTIONS 1 OF T18N-R17W & SECTION 6 OF T18N-R16W																																																																																																																																											

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE				DATE: 06/28/2017		CS: 53033		SURVEY INFORMATION SHEET		DRAWING		SHEET	
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION						DESIGN UNIT: JASINSKI		JN: 123206A		US-31, US-10 TO SUGAR GROVE RD.		SURVEY 002		SECT 1 14	
											FILE: S-123206_Survey_Info_Sheet_2017-06-28.doc		TSC: MUSKEGON				AMBER, CUSTER, VICTORY, SHERMAN TOWNSHIP, MASON COUNTY					

DESCRIPTION: FOUND 1/2" REBAR IN MONUMENT BOX WITH NO LID +/- 1' WEST OF US-31 C/L COORDINATES: N= 249125.336, E= 19181421.388 STANDARD DEVIATION: N= 0.005, E= 0. 011 COMBINED SCALE FACTOR: 1.00002463762 STATION: 105+17.15, OFFSET: 1.02' LT WITNESSES: 1. N79E 53.34' FOUND CHISELED "X" IN N SIDE CONC HEADWALL BOX CULVERT. 2. N78W 61.66' FOUND CHISELED "X" IN N SIDE CONC HEADWALL BOX CULVERT. 3. S88W 106.25' FOUND PK NAIL IN S SIDE CUT OFF PP. 4. N30W 115.80' SET MAG NAIL IN SW SIDE 18" RED OAK. K-2, T18N-R17W SECTION CORNER COMMON TO SECTIONS 1 & 2. DESCRIPTION: FOUND BROKEN CAP 8" BELOW LASALLE RD C/L. COORDINATES: N= 249363.929, E= 19176146.652 STANDARD DEVIATION: N= 0.006, E= 0.007 COMBINED SCALE FACTOR: 1.00002406026 STATION: 106+78.75, OFFSET: 5278.26' LT WITNESSES: 1. N83W 22.29' FOUND 60D NAIL IN SE SIDE 20" SUGAR MAPLE. 2. S65E 16.87' FOUND 60D NAIL IN N SIDE 52" BLACK OAK. 3. N31W 30.32' SET MAG/TAG IN E FACE 14" OAK. 4. N25E 61.10' SET MAG/TAG IN W FACE 18" OAK. C-2, T18N-R16W SECTION CORNER COMMON TO SECTIONS 5 & 6. DESCRIPTION: FOUND 4" HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT, P.S. #16345, 2005" FLUSH WITH GROUND IN ROCK PILE. COORDINATES: N= 248968.042, E= 19186672.666 STANDARD DEVIATION: N= 0.010, E= 0.007 COMBINED SCALE FACTOR: 1.00002440416 STATION: 103+87.34, OFFSET: 5251.28' RT WITNESSES: 1. S85E 76.01' FOUND 60D NAIL IN N SIDE PP. 2. S66E 157.74' FOUND 60D NAIL IN SW SIDE 14" TWIN ASH. 3. SOUTH 58.55' FOUND 60D NAIL IN E SIDE 12" SPRUCE. 4. N62E 100.24' FOUND 60D NAIL IN SE SIDE 32" WILLOW. M-1, T18N-R17W / M-13, T19N-R17W / A-13, T19N-R16W / A-1, T18N-R16W SECTION CORNER COMMON TO SECTIONS 1 T18N-R17W, 36 T19N-R17W, 31 T19N-R16W, & 6 T18N-R16W. DESCRIPTION: FOUND 2 ½" ALUMINUM CAP IN MON BOX +/- 1' WEST OF US-31 C/L AND DEXTER RD. COORDINATES: N= 251767.666, E= 19181473.327 STANDARD DEVIATION: N= 0.007, E= 0.013 COMBINED SCALE FACTOR: 1.00002241584 STATION: 131+59.98, OFFSET: 1.13' LT WITNESSES: 1. S61E 83.08' FOUND PK IN SE SIDE PP. 2. N64W 71.39' FOUND PK IN N SIDE GUY POLE. 3. N67E 121.15' SET MAG NAIL IN SE SIDE 30" MAPLE. 4. N57E 62.74' SET MAG NAIL IN NW SIDE PP. L-1, T18N-R17W NORTH QUARTER CORNER OF SECTION 1. DESCRIPTION: FOUND 5/8" REBAR WITH CAP #19846. COORDINATES: N= 251869.953, E= 19178846.059 STANDARD DEVIATION: N= 0.013, E= 0.012 COMBINED SCALE FACTOR: 1.00002238495 STATION: 132+08.64, OFFSET: 2629.93' LT WITNESSES: 1. S78E 136.59' FOUND 60D NAIL IN N SIDE PP. 2. N04W 26.84' N AND TOP-CENTER OF CULVERT. B-13, T19N-R16W SOUTH QUARTER CORNER OF SECTION 31. DESCRIPTION: FOUND 2" ALUMINUM CAP 8" BELOW GRAVEL OF DEXTER RD. COORDINATES: N= 251677.529, E= 19184015.501							
STANDARD DEVIATION: N= 0.009, E= 0.010 COMBINED SCALE FACTOR: 1.00002249982 STATION: 131+21.75, OFFSET: 2542.35' RT WITNESSES: 1. N05W 35.47' FOUND 60D NAIL IN W SIDE OF PP. 2. S81W 103.86' FOUND NAIL/TAG IN SE SIDE OF PP. 3. N02E 32.97' FOUND 1" IRON PIPE A-12, T19N-R16W / M-12, T19N-R17W SECTION CORNER COMMON TO SECTIONS 31 T19N-R16W & 36 T19N-R17W. DESCRIPTION: FOUND 2" ALUMINUM CAP IN MON BOX (NO LID) 2' WEST OF US-31 C/L. COORDINATES: N= 254417.153, E= 19181526.480 STANDARD DEVIATION: N= 0.007, E= 0.014 COMBINED SCALE FACTOR: 1.00002021475 STATION: 158+10.00, OFFSET: 2.06' LT WITNESSES: 1. N83E 70.55' FOUND 60D NAIL IN S SIDE 6" BOX ELDER. 2. S56E 62.32' FOUND 60D NAIL IN SW SIDE 8" MAPLE. 3. S22W 104.21' SET MAG/TAG IN SE SIDE PP. 4. S36W 128.04' NE BUILDING COR HOUSE #2393. C-12, T19N-R16W SECTION CORNER COMMON TO SECTIONS 31 & 32. DESCRIPTION: FOUND HARRISON MONUMENT STAMPED "MASON COUNTY MONUMENT, P.S. #16345" 12" BELOW GRAVEL OF N DARR RD. COORDINATES: N= 254296.063, E= 19186646.574 STANDARD DEVIATION: N= 0.014, E= 0.015 COMBINED SCALE FACTOR: 1.00002028637 STATION: 157+93.43, OFFSET: 5119.45' RT WITNESSES: 1. S60E 39.32' FOUND 60D NAIL IN NE SIDE 15" MAPLE. 2. N26E 93.65' FOUND NAIL/TAG IN NW SIDE OF PP. 3. S73E 83.33' NW COR HOUSE #2400. 4. N76E 61.18' FOUND 60D NAIL IN SE SIDE 8" WHITE PINE. 5. S25W 72.91' FOUND 60D NAIL IN SE SIDE 10" CHERRY A-11, T19N-R16W / M-11, T19N-R17W SECTION CORNER COMMON TO SECTIONS 30 & 31 T19N-R16W, & 25 & 36 T19N-R17W. DESCRIPTION: FOUND 1/2" REBAR WITH CAP (NO ALUMINUM CAP) +/- 2' WEST US-31 C/L AT SUGAR GROVE RD. COORDINATES: N= 257066.415, E= 19181580.726 STANDARD DEVIATION: N= 0.004, E= 0.008 COMBINED SCALE FACTOR: 1.00001834427 STATION: 184+59.82, OFFSET: 1.89' LT WITNESSES: 1. N60E 68.71' FOUND 60D NAIL IN NW SIDE PP. 2. S56E 59.19' FOUND 60D NAIL IN SW SIDE PP. 3. S54W 50.97' SET MAG/TAG IN N SIDE PP. 4. N22W 101.64' SET MAG/TAG IN W SIDE PP. L-11, T19N-R17W SECTION CORNER COMMON TO SECTIONS 25 & 36. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP IN MONUMENT BOX C/L SUGAR GROVE RD. COORDINATES: N= 257149.527, E= 19178951.097 STANDARD DEVIATION: N= 0.008, E= 0.013 COMBINED SCALE FACTOR: 1.00001827791 STATION: 184+89.25, OFFSET: 2632.66' LT WITNESSES: 1. S73E 74.50' FOUND 60D NAIL IN NE SIDE OF PP. 2. N15E 80.37' FOUND 60D NAIL IN W SIDE OF PP. 3. N21E 132.85' SW CORNER POLE BUILDING 4. S35W 84.44' SET MAG/TAG E SIDE 18" RED PINE B-11, T19N-R16W SECTION CORNER COMMON TO SECTIONS 30 & 31. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP IN MONUMENT BOX C/L SUGAR GROVE RD. COORDINATES: N= 256994.363, E= 19184102.100							
STANDARD DEVIATION: N= 0.016, E= 0.005 COMBINED SCALE FACTOR: 1.00001885718 STATION: 184+39.25, OFFSET: 2520.42' RT WITNESSES: 1. N32E 54.38' FOUND 60D NAIL IN SE SIDE OF 44" MAPLE. 2. S65W 83.43' FOUND 60D NAIL IN NW SIDE OF 16" RED PINE. 3. S05E 54.95' SET MAG/TAG E SIDE PP. A-10, T19N-R16W / M-10, T19N-R17W SECTION CORNER COMMON TO SECTIONS 30 T19N-R16W & 25 T19N-R17W. DESCRIPTION: FOUND 2 1/2" ALUMINUM CAP IN MONUMENT BOX +/- 3' WEST OF C/L US-31. COORDINATES: N= 259713.858, E= 19181634.956 STANDARD DEVIATION: N= 0.006, E= 0.016 COMBINED SCALE FACTOR: 1.00001722807 STATION: N/A, OFFSET: N/A WITNESSES: 1. N89W 80.40' FOUND 60D NAIL IN S SIDE OF 30" MAPLE. 2. N27W 138.95' FOUND 60D NAIL IN SW SIDE OF 40" MAPLE. 3. N50E 83.27' FOUND DUPLEX NAIL SE SIDE FENCE POST. C-10, T19N-R16W SECTION CORNER COMMON TO SECTIONS 30 & 29. DESCRIPTION: FOUND HARRISON MONUMENT +/- 6" BELOW GRAVEL OF DARR RD. COORDINATES: N= 259560.318, E= 19186780.309 STANDARD DEVIATION: N= 0.003, E= 0.006 COMBINED SCALE FACTOR: 1.00001736804 STATION: N/A, OFFSET: N/A WITNESSES: 1. S77W 71.19' FOUND 60D NAIL IN S SIDE OF PP. 2. S44W 50.35' NE CORNER METAL BUILDING. 3. S56W 66.21' NW CORNER METAL BUILDING. 4. S68E 48.90' FOUND NAIL/TAG N SIDE WOOD POST. 5. N51E 38.61' FOUND 60D NAIL NW SIDE 12" MAPLE. 6. N05W 141.78' FOUND 60D NAIL W SIDE GUARD RAIL POST.							

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE		DATE: 06/28/2017	CS: 53033	SURVEY INFORMATION SHEET		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION				DESIGN UNIT: JASINSKI	JN: 123206A	US-31, US-10 TO SUGAR GROVE RD.		SURVEY 003	SECT 1 15
										FILE: S-123206_Survey_Info_Sheet_2017-06-28.doc	TSC: MUSKEGON	AMBER, CUSTER, VICTORY, SHERMAN TOWNSHIP, MASON COUNTY				





	DEPARTMENT DIRECTOR Kirk T. Steudle		MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR	
	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES		CULVERT SLOPED END SECTIONS (CONCRETE AND METAL)	
PREPARED BY DESIGN DIVISION	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT		F.H.W.A. APPROVAL	9-19-2018 PLAN DATE
DRAWN BY: <u>B.L.T.</u>			R-95-G	SHEET 1 OF 7
CHECKED BY: <u>W.K.P.</u>				

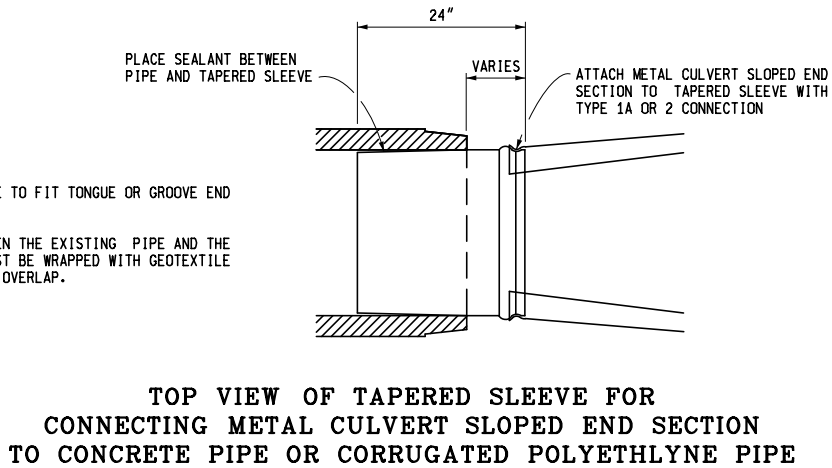
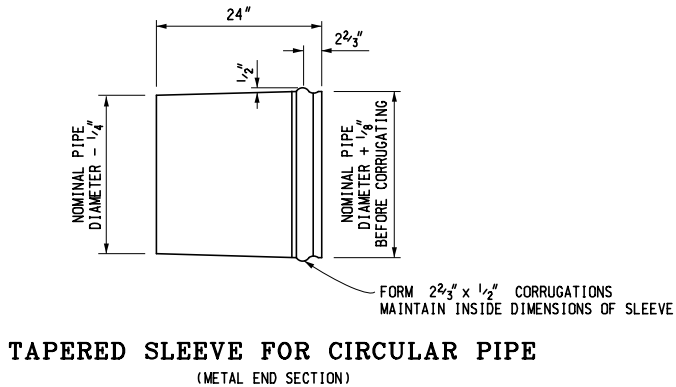
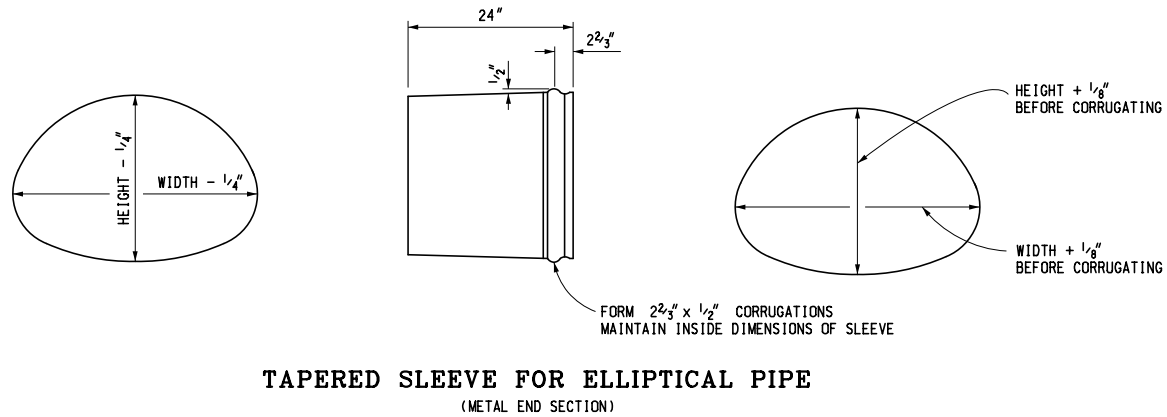
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR CULVERT SLOPED END SECTIONS (CONCRETE AND METAL)			
<u> </u> F.H.W.A. APPROVAL	<u>9-19-2018</u> PLAN DATE	R-95-G	SHEET 2 OF 7

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION


MDOT
 Michigan Department of Transportation

	DATE:
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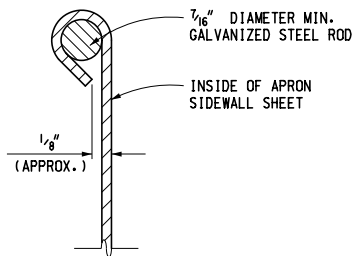
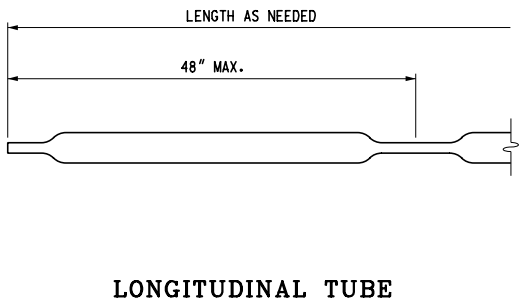
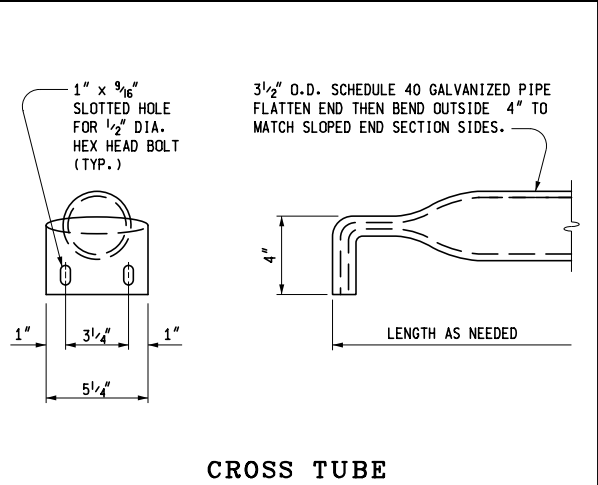
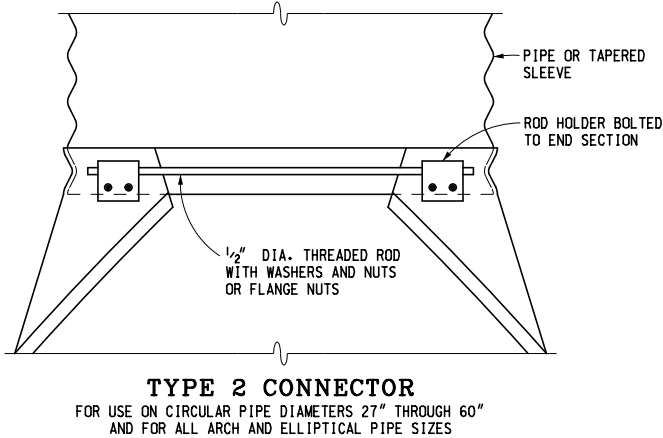
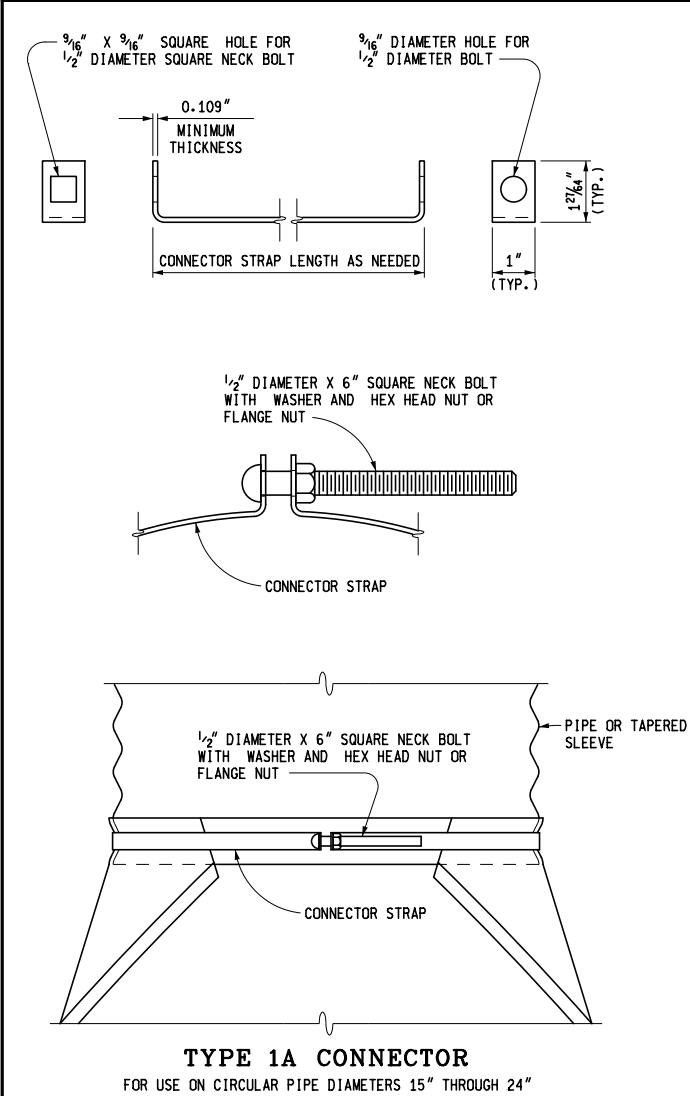


NOTE:
TAPERED SLEEVE SHALL BE MADE TO FIT TONGUE OR GROOVE END OF PIPE.
THE CONNECTION JOINT BETWEEN THE EXISTING PIPE AND THE METAL SLOPED END SECTION MUST BE WRAPPED WITH GEOTEXTILE BLANKET 36" WIDE WITH A 12" OVERLAP.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CULVERT
SLOPED END SECTIONS
(CONCRETE AND METAL)

F.H.W.A. APPROVAL	9-19-2018 PLAN DATE	R-95-G	SHEET 3 OF 7
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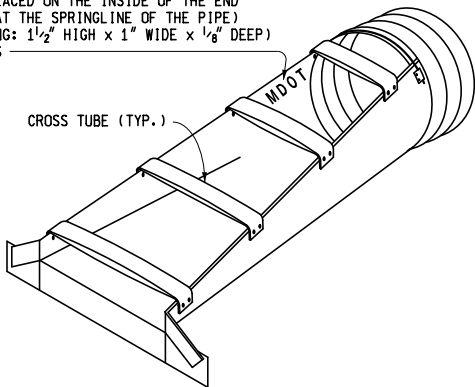
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CULVERT
SLOPED END SECTIONS
(CONCRETE AND METAL)

F.H.W.A. APPROVAL	9-19-2018 PLAN DATE	R-95-G	SHEET 4 OF 7
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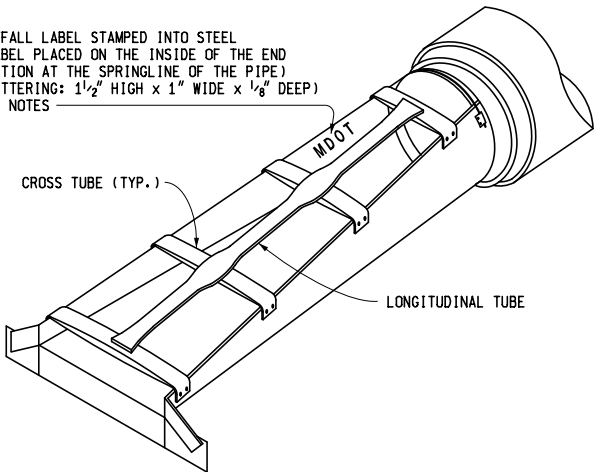
NOTE:
IN LONGITUDINAL DRAINAGE SITUATIONS, CROSS TUBES ARE REQUIRED AT A 24" MAXIMUM SPACING. THE NUMBER OF CROSS TUBES REQUIRED WILL VARY DEPENDING ON THE LENGTH OF THE CULVERT SLOPED END SECTION.

OUTFALL LABEL STAMPED INTO STEEL
(LABEL PLACED ON THE INSIDE OF THE END SECTION AT THE SPRINGLINE OF THE PIPE)
(LETTERING: 1½" HIGH x 1" WIDE x ⅛" DEEP)
SEE NOTES



METAL CULVERT SLOPED END SECTION
SHOWING CROSS TUBES USED FOR
LONGITUDINAL DRAINAGE INSTALLATIONS

OUTFALL LABEL STAMPED INTO STEEL
(LABEL PLACED ON THE INSIDE OF THE END SECTION AT THE SPRINGLINE OF THE PIPE)
(LETTERING: 1½" HIGH x 1" WIDE x ⅛" DEEP)
SEE NOTES



NOTE:
IN TRANSVERSE DRAINAGE SITUATIONS, NO TUBES ARE REQUIRED WHEN THE "W" DIMENSION IS 30" OR LESS. CROSS TUBES ARE REQUIRED WHEN THE CLEAR SPAN DIMENSION IS LARGER THAN 30". THE NUMBER OF CROSS TUBES WILL VARY DEPENDING ON THE LENGTH OF THE LONGITUDINAL TUBE REQUIRED. WHEN THE "W" DIMENSION IS 36" TO 60", ONE LONGITUDINAL TUBE IS REQUIRED. WHEN THE "W" DIMENSION IS LARGER THAN 60", TWO LONGITUDINAL TUBES EQUALLY SPACED ARE REQUIRED. LONGITUDINAL TUBES SHALL BE WELDED TO CROSS TUBES TO ATTAIN A SINGLE PIECE STRUCTURE.

METAL CULVERT SLOPED END SECTION
SHOWING CROSS TUBES AND LONGITUDINAL TUBE
USED FOR TRANSVERSE DRAINAGE INSTALLATIONS
(CONNECTED TO CONCRETE PIPE SHOWN)

METAL SLOPED END SECTIONS FOR
ARCH PIPES

SPAN/ RISE (INCHES)	MINIMUM THICKNESS (INCHES)	DIMENSIONS (INCHES)				L DIMENSIONS (INCHES)	
		A	H	W	OVERALL WIDTH	LENGTH (SLOPE 4:1)	LENGTH (SLOPE 6:1)
21 X 15	.064	8	6	27	43	20	30
24 X 18	.064	8	6	30	46	32	48
28 X 20	.064	8	6	34	50	40	60
35 X 24	.079	12	9	41	65	56	84
42 X 29	.109	12	9	48	72	76	114
49 X 33	.109	16	12	55	87	92	138
57 X 38	.109	16	12	63	95	112	168
64 X 43	.109	16	12	70	102	132	198
71 X 47	.109	16	12	77	109	148	222
77 X 52	.109	16	12	83	115	168	252
83 X 57	.109	16	12	89	121	188	282

METAL SLOPED END SECTIONS FOR
CIRCULAR PIPES
(STEEL OPTION)

PIPE DIA. (INCHES)	MINIMUM THICKNESS (INCHES)	DIMENSIONS (INCHES)				L DIMENSIONS (INCHES)	
		A	H	W	OVERALL WIDTH	LENGTH (SLOPE 4:1)	LENGTH (SLOPE 6:1)
15	.064	8	6	21	37	20	30
18	.064	8	6	24	40	32	48
21	.064	8	6	27	43	44	66
24	.064	8	6	30	46	56	84
27	.109	12	9	33	57	68	102
30	.109	12	9	36	60	80	120
36	.109	12	9	42	66	104	156
42	.109	16	12	48	80	128	192
48	.109	16	12	54	86	152	228
54	.109	16	12	60	92	176	264
60	.109	16	12	66	98	200	300

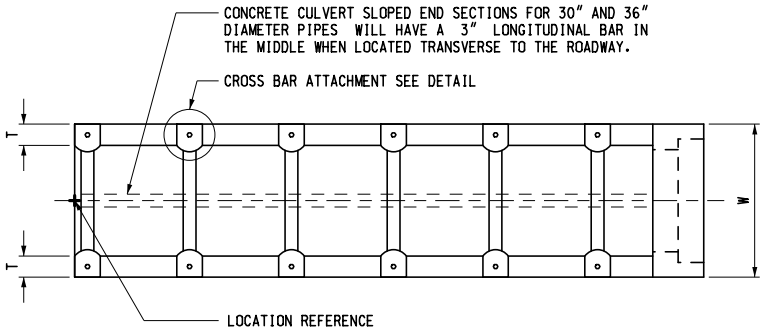
METAL SLOPED END SECTIONS FOR
ELLIPTICAL PIPES

HEIGHT/ WIDTH (INCHES)	MINIMUM THICKNESS (INCHES)	DIMENSIONS (INCHES)				L DIMENSIONS (INCHES)	
		A	H	W	OVERALL WIDTH	LENGTH (SLOPE 4:1)	LENGTH (SLOPE 6:1)
14 X 23	.064	8	6	29	45	16	24
19 X 30	.064	8	6	36	52	36	54
22 X 34	.079	12	9	40	64	48	72
24 X 38	.079	12	9	44	68	56	84
27 X 42	.109	12	9	48	72	68	102
29 X 45	.109	16	12	51	83	76	114
34 X 53	.109	16	12	59	91	96	144
38 X 60	.109	16	12	66	98	112	168
43 X 68	.109	16	12	74	106	132	198
48 X 76	.109	16	12	80	112	152	228

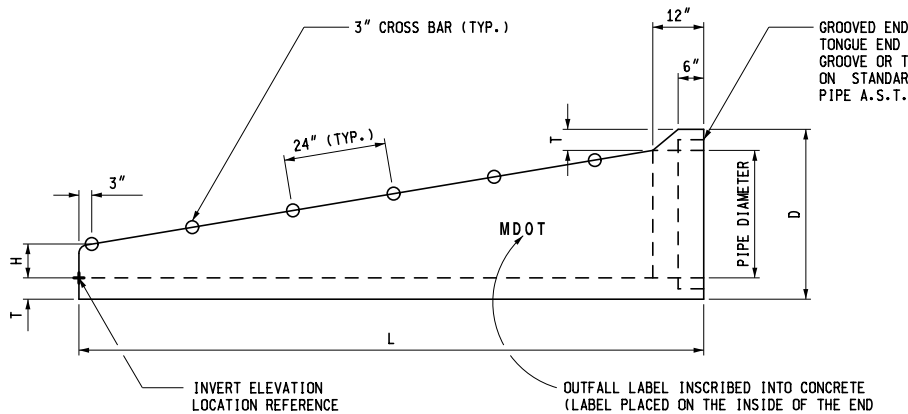
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CULVERT
SLOPED END SECTIONS
(CONCRETE AND METAL)

F.H.W.A. APPROVAL	9-19-2018 PLAN DATE	R-95-G	SHEET 5 OF 7
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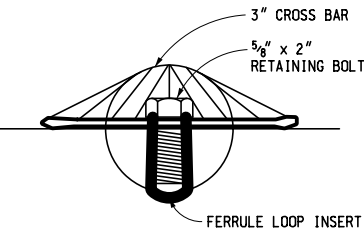
PLAN VIEW



SIDE VIEW

END VIEW

CONCRETE CULVERT SLOPED END FOR CIRCULAR PIPE



CROSS BAR ATTACHMENT DETAIL

CONCRETE SLOPED END SECTIONS
FOR CIRCULAR PIPES

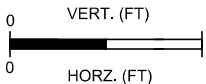
PIPE DIA. (INCHES)	SLOPE	DIMENSIONS (INCHES)				
		D	L	W	T	H
15	6:1	25	57	25	5	8
18	4:1	28	55	28	5	8
	6:1	28	75	28	5	8
24	4:1	34	79	36	5	8
	6:1	34	111	36	5	8
30	4:1	40	104	43	5	8
	6:1	40	147	43	5	8
36	4:1	47	127	51	5½	8
	6:1	47	183	51	5½	8

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CULVERT
SLOPED END SECTIONS
(CONCRETE AND METAL)

F.H.W.A. APPROVAL	9-19-2018 PLAN DATE	R-95-G	SHEET 6 OF 7
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AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

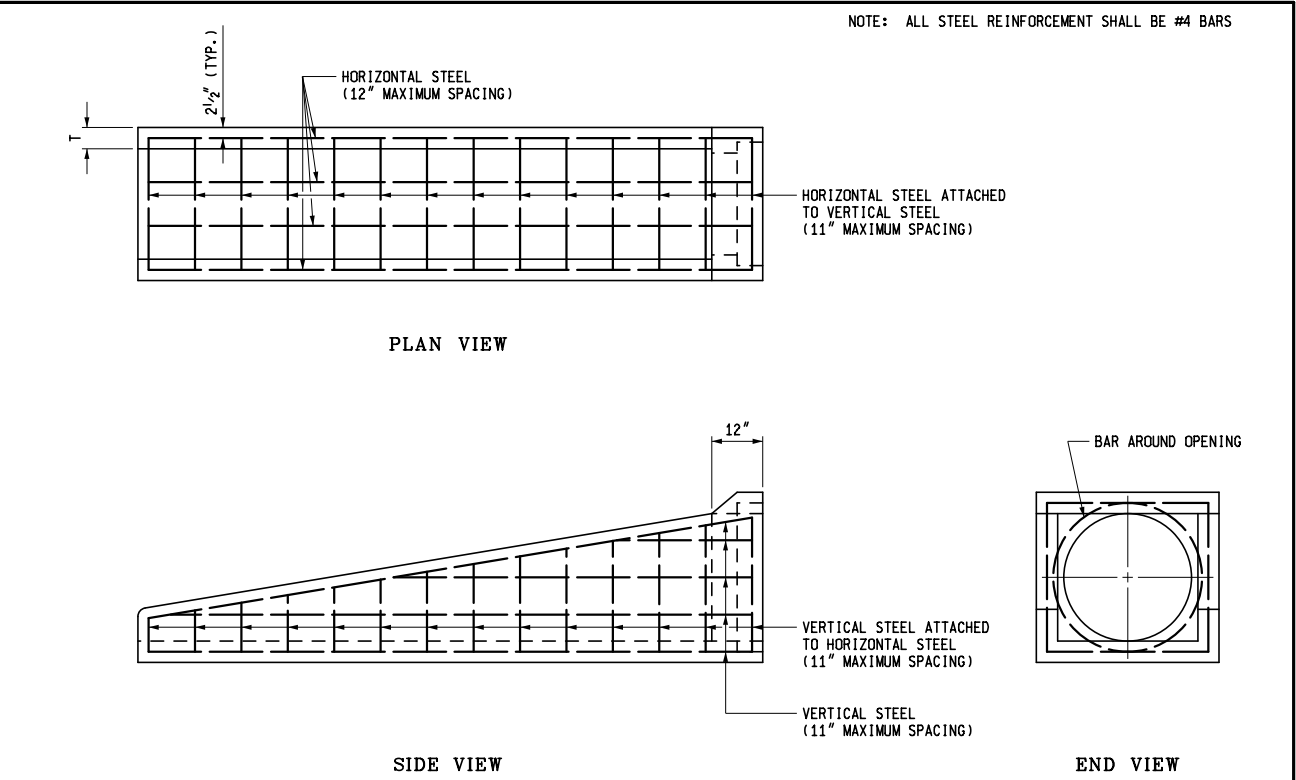


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19



STEEL REINFORCEMENT FOR CONCRETE CULVERT SLOPED END

NOTES:

GALVANIZED STEEL SHALL MEET THE REQUIREMENTS IN THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

GALVANIZED TOE PLATE EXTENSIONS ARE REQUIRED ON METAL CULVERT SLOPED END SECTIONS WHEN INDICATED ON THE PLANS OR BY AUTHORIZATION WHEN EITHER HEIGHT OF FILL IS 10'-0" OR MORE OR WHEN THE CULVERT GRADE IS 10% OR MORE. THEY SHALL BE MATCHED-PUNCHED TO FIT HOLES IN TOE PLATE AND SUPPLIED LOOSE, COMPLETE WITH $\frac{3}{8}$ " DIAMETER GALVANIZED BOLTS. TOE PLATE EXTENSIONS SHALL BE THE SAME THICKNESS AS THE METAL CULVERT SLOPED END SECTION. LENGTH OF TOE PLATE EXTENSION IS "OVERALL WIDTH" LESS 6".

CORRUGATED METAL PIPES, ARCHED PIPES, AND SMOOTH TAPERED SLEEVES THAT ARE SHOWN ON THIS PLAN HAVE $2\frac{1}{2}" \times \frac{1}{2}"$ CORRUGATIONS. EQUIVALENT PIPE AND SLEEVE SIZES WITH $3" \times 1"$ OR $5" \times 1"$ CORRUGATIONS WILL BE ALLOWED.

FOR BOTH METAL AND CONCRETE CULVERT SLOPED END SECTIONS, CROSS AND LONGITUDINAL BARS/TUBES SHALL BE SCHEDULE 40 GALVANIZED PIPE, A.S.T.M. A53. WHEN PARALLEL BARS/TUBES ARE WELDED TO CROSS TUBES, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED ACCORDING TO SECTION 716 OF THE STANDARD SPECIFICATIONS.

SLOTTED HOLES FOR PARALLEL TUBE ATTACHMENT SHALL BE PROVIDED FOR ALL METAL CULVERT SLOPED END SECTIONS.

SMOOTH TAPERED SLEEVES (FOR METAL END SECTIONS) SHALL BE GALVANIZED AND HAVE A MINIMUM THICKNESS AS FOLLOWS:

- 0.079" FOR NOMINAL PIPE DIAMETERS LESS THAN 27"
- 0.109" FOR NOMINAL PIPE DIAMETERS 27" AND LARGER
- 0.079" FOR ELLIPTICAL PIPES LESS THAN 24" x 38"
- 0.109" FOR ELLIPTICAL PIPES 24" x 38" AND LARGER

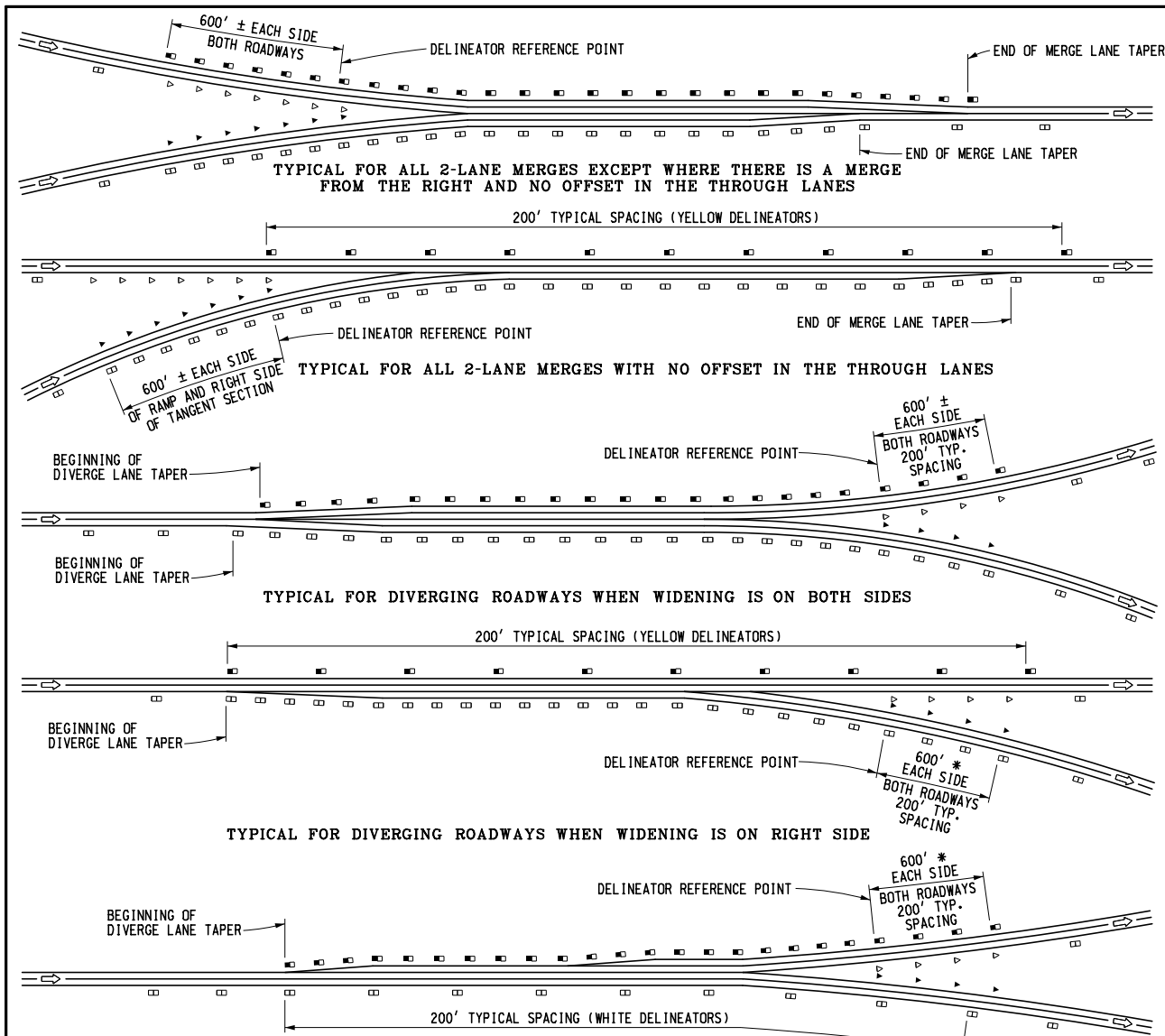
ANY SEAMS IN SMOOTH TAPERED SLEEVES SHALL BE BUTT WELDED.

A TYPE 2 CONNECTOR (FOR METAL END SECTIONS) DESIGNATED FOR ROUND PIPES 27" AND LARGER MAY BE USED ON SMALLER PIPE SIZES.

OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

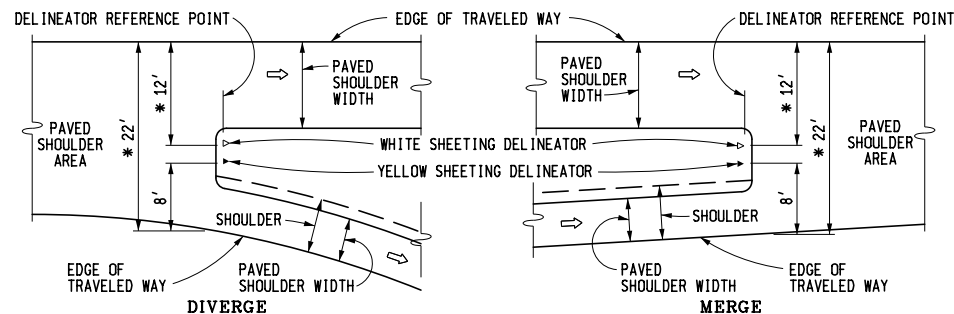
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR CULVERT SLOPED END SECTIONS (CONCRETE AND METAL)			
F.H.W.A. APPROVAL	9-19-2018 PLAN DATE	R-95-G	SHEET 7 OF 7

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
F.H.W.A. APPROVAL	PLAN DATE		SHEET OF



DELINEATION OF FREEWAY TO FREEWAY CONNECTIONS

* WHEN THE PAVED SHOULDER WIDTH IS 12', PLACE DELINEATOR 14' FROM THE EDGE OF TRAVELED WAY. THE WIDTH OF THE PAVED GORE WILL BE INCREASED TO 24'.



DELINEATOR REFERENCE POINTS FOR NORMAL 10' SHOULDERS (9' OR 10' PAVED)



PREPARED BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Paul C. Ajegba

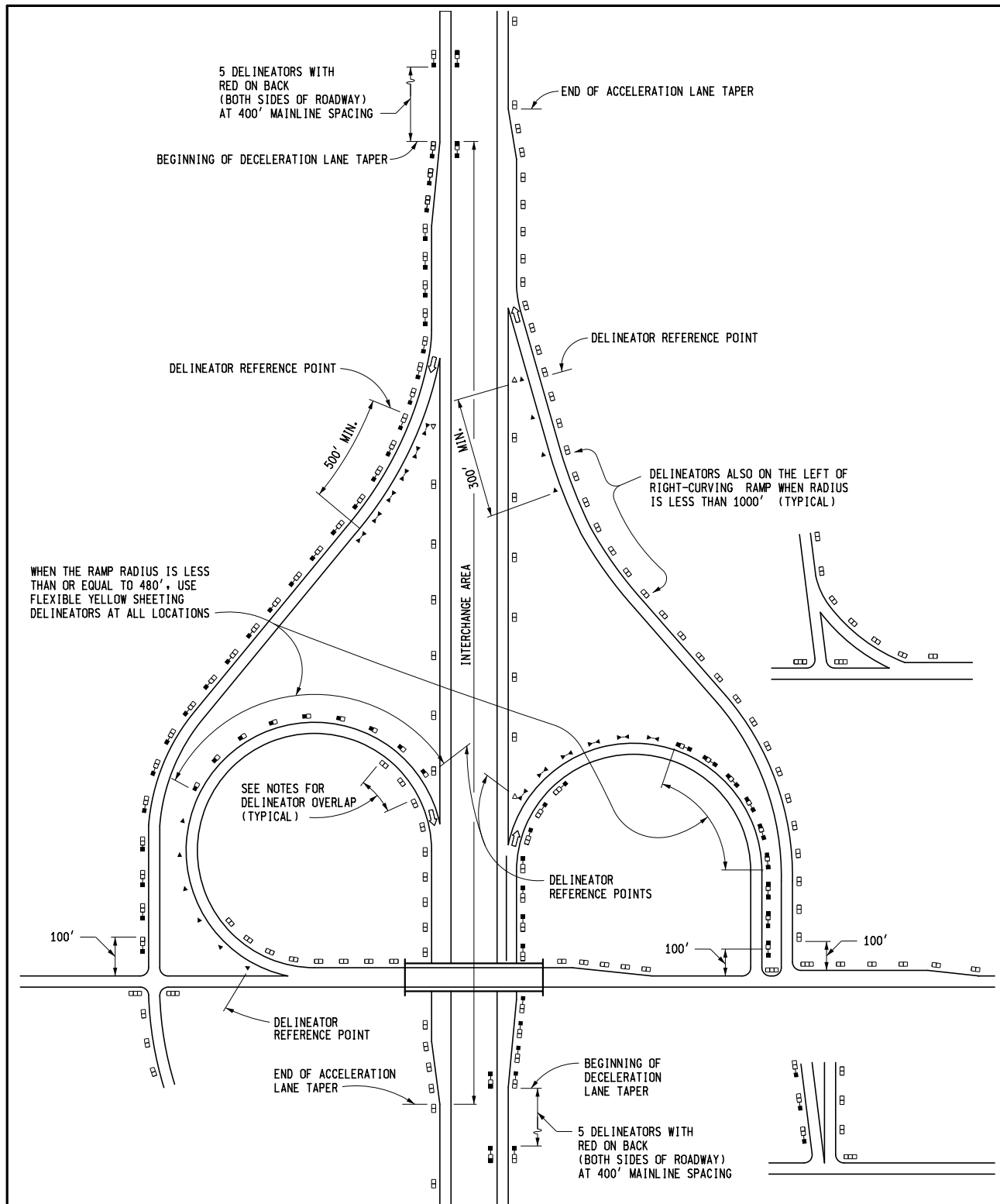
APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

DELINEATOR INSTALLATIONS

F.H.W.A. APPROVAL	3-4-2019 PLAN DATE	R-127-G	SHEET 1 OF 8
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INTERCHANGE DELINEATION

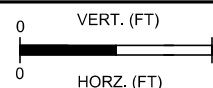
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

DELINEATOR INSTALLATIONS

F.H.W.A. APPROVAL	3-4-2019 PLAN DATE	R-127-G	SHEET 2 OF 8
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AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE:

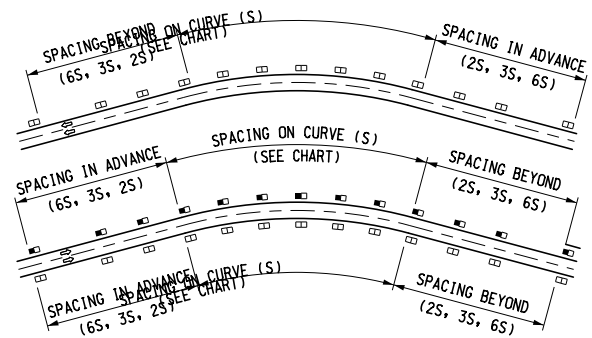
DATE:
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TSC:

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DRAWING SHEET

CURVE RADIUS KNOWN				
MIN. RADIUS (R) OF CURVE (FT)	SPACING (S) ON CURVE (FT)	SPACING BEFORE/AFTER CURVE		
		2S	3S	6S
50	20	40	60	120
150	30	60	90	180
230	40	80	120	240
325	50	100	150	300
450	60	120	180	300
595	70	140	210	300
760	80	160	240	300
950	90	180	270	300
1160	100	200	300	300
1395	110	220	300	300
1650	120	240	300	300
1930	130	260	300	300
2230	140	280	300	300
2550	150	300	300	300
2895	160	300	300	300
3260	170	300	300	300
3650	180	300	300	300
4060	190	300	300	300
4495	200	300	300	300
4950	210	300	300	300
5430	220	300	300	300
5930	230	300	300	300
6450	240	300	300	300
6995	250	300	300	300
7560	260	300	300	300
8150	270	300	300	300
8760	280	300	300	300
9395	290	300	300	300
10,050 - 17,830	300	300	300	300
> 17,830	NORMAL SPACING			

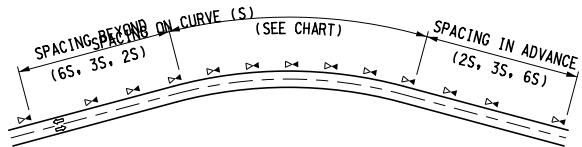
THE SPACING "S" IS FOUND USING THE FORMULA
 $S = 3 \sqrt{R - 50}$ WHERE "R" IS THE RADIUS OF
THE CURVE IN FEET.



DELINEATOR LOCATION ON
FREEWAY AND DIVIDED ROADWAY CURVES

CURVE RADIUS UNKNOWN				
CURVE ADVISORY SPEED (MPH)*	SPACING (S) ON CURVE (FT)	SPACING BEFORE/AFTER CURVE		
		2S	3S	6S
< 25	25	50	75	150
25	40	80	120	240
30	50	100	150	300
35	60	120	180	300
40	70	140	210	300
45	80	160	240	300
50	90	180	270	300
55	100	200	300	300
60	115	230	300	300
65	130	260	300	300
70	140	280	300	300
75	160	300	300	300

* POSTED OR STATUTORY SPEED LIMIT IF NO ADVISORY POSTED



NOTE:
DELINEATORS SHALL BE PLACED ON TWO LANE TWO WAY
ROADWAY HORIZONTAL CURVES WITH A RADIUS OF 1900' OR
LESS, OR AS DIRECTED BY THE REGION/TSC TRAFFIC AND
SAFETY ENGINEER.

DELINEATOR FACE SHALL BE INSTALLED PERPENDICULAR
(OR RADIAL) TO ROADWAY.

DELINEATOR LOCATION ON
TWO LANE TWO WAY ROADWAY CURVES

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

DELINEATOR INSTALLATIONS

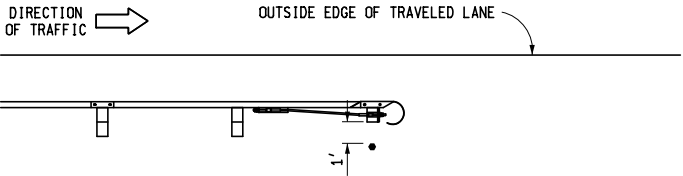
F.H.W.A. APPROVAL

3-4-2019
PLAN DATE

R-127-G

SHEET
5 OF 8

GUARDRAIL APPROACH TERMINAL	DELINEATOR LOCATED 1 FOOT BEHIND
TYPE 1	LAST POST (FROM APPROACH END)
TYPE 2	FIRST POST (FROM APPROACH END)



GUARDRAIL DEPARTING TERMINAL TYPES B, T, & MGS

GREEN DELINEATORS AT GUARDRAIL INSTALLATIONS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

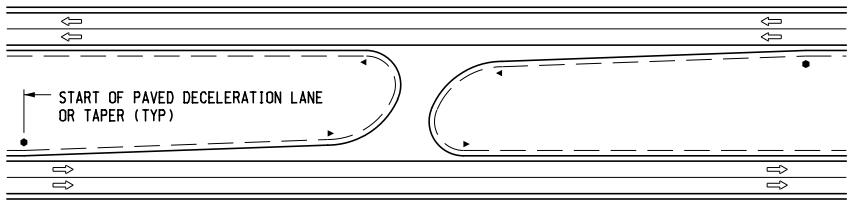
DELINEATOR INSTALLATIONS

F.H.W.A. APPROVAL

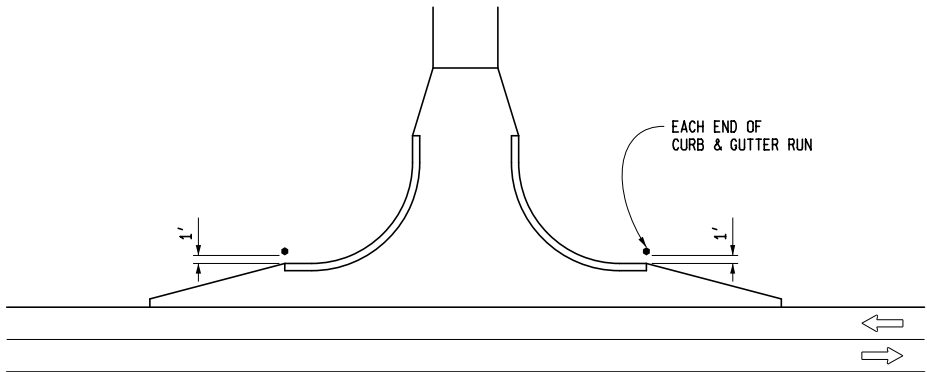
3-4-2019
PLAN DATE

R-127-G

SHEET
6 OF 8

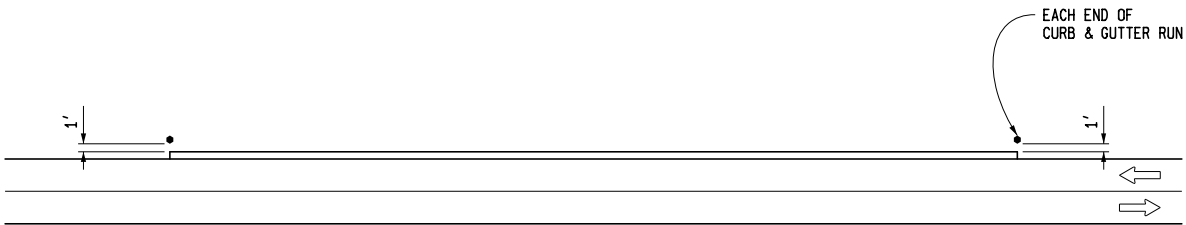


MAINTENANCE CROSSOVER



INTERSECTION

NOTE: MAY BE OMITTED AT FREEWAY RAMP TERMINALS DUE TO THE PRESENCE OF OTHER DELINEATORS



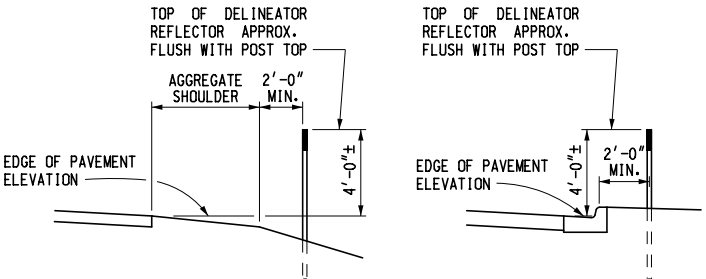
CURB & GUTTER AND CATCH BASINS

GREEN DELINEATOR LOCATIONS

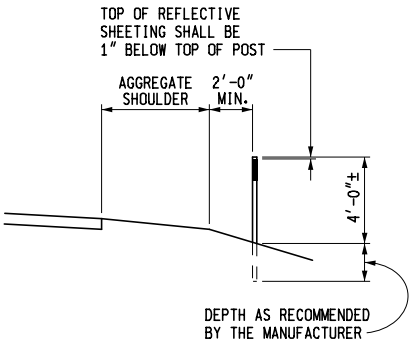
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

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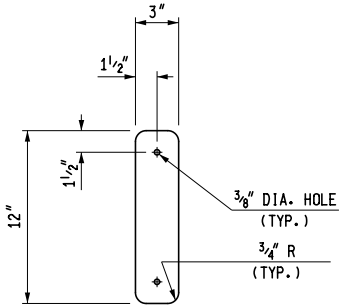
F.H.W.A. APPROVAL	3-4-2019 PLAN DATE	R-127-G	SHEET 7 OF 8
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INSTALLATION OF
DELINEATOR REFLECTORS
ON RIGID STEEL POST



INSTALLATION OF
REFLECTIVE SHEETING
ON FLEXIBLE POST



DELINEATOR REFLECTOR DETAIL

NOTES:

DELINEATORS SHOULD BE PLACED 2'-0" BEYOND THE AGGREGATE SHOULDER, 2'-0" BEYOND THE FACE OF A BARRIER CURB, IMMEDIATELY BEHIND THE GUARDRAIL POST, OR AS NEAR AS POSSIBLE BEHIND CONCRETE BARRIER. DELINEATORS INSTALLED ON FLEXIBLE POSTS SHALL NOT BE PLACED BEHIND GUARDRAIL.

FLEXIBLE POST DELINEATORS SHALL BE INSTALLED ACCORDING TO THE CURRENT SPECIFICATIONS AND INSTALLED AT ALL LOCATIONS SPECIFIED ON THIS STANDARD PLAN, OR WHERE DIRECTED BY THE ENGINEER.

ON RAMP, WHITE DELINEATORS SHALL BE PLACED ON THE RIGHT AND YELLOW DELINEATORS SHALL ALSO BE PLACED ON THE LEFT FOR A RIGHT-CURVING RAMP WITH A RADIUS OF 1000' OR LESS.

WHERE DELINEATION ON ONE SIDE OF THE ROADWAY OR RAMP ENDS AND DELINEATION ON THE OTHER SIDE APPEARS, AN OVERLAP OF TWO DELINEATOR INSTALLATIONS SHALL BE USED.

RED DELINEATORS SHALL BE LOCATED ON THE BACK OF RAMP DELINEATORS TO FACE WRONG-WAY TRAFFIC MOVEMENTS. PLACEMENT SHALL START AT RAMP TERMINAL AND END 1/4 MILE IN ADVANCE OF THE DECELERATION LANE.

DELINEATORS SHALL BE PLACED ON ALL RAMP AT RURAL INTERCHANGES WHETHER OR NOT THE INTERCHANGES ARE LIGHTED. DELINEATORS SHALL BE OMITTED ALONG THE THROUGH ROADWAY BETWEEN INTERCHANGES WHERE FIXED SOURCE LIGHTING EXISTS.

DELINEATOR PLACEMENT SHOULD CONTINUE WHERE GUARDRAIL OR CONCRETE BARRIER IS PRESENT. DO NOT PLACE DELINEATORS BEHIND GUARDRAIL APPROACH TERMINALS EXCEPT AS SHOWN ON SHEET 6 OF THIS STANDARD. IF TERRAIN OR OTHER FACTORS PROHIBIT POST MOUNTED DELINEATOR PLACEMENT, INSTALLATION OF GUARDRAIL OR BARRIER MOUNTED ENHANCED DELINEATORS IS RECOMMENDED.

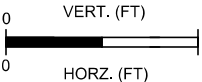
ALTERNATE DELINEATOR LOCATION METHOD:
THE FIRST DELINEATOR ON EACH SIDE OF THE ROADWAY IS LOCATED FROM THE AGGREGATE SHOULDER. A NEW OFFSET REFERENCE IS GENERATED BY MEASURING FROM THE LOCATED DELINEATOR TO THE STRIPED EDGELINE. THIS MEASUREMENT CAN BE USED TO LOCATE THE OTHER DELINEATORS IN A CORRIDOR OF SIMILAR CROSS SECTION.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

DELINEATOR INSTALLATIONS

F.H.W.A. APPROVAL	3-4-2019 PLAN DATE	R-127-G	SHEET 8 OF 8
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DRAWING	SHEET
	24